

July 18, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N031081

RE: PG&E Topock - PMP

Attention: Dan Bush

Enclosed are the results for sample(s) received on July 03, 2018 by ASSET Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,



Quennie Manimtim  
Laboratory Director

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - PMP  
**Lab Order:** N031081

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**CASE NARRATIVE****SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time except for pH. pH testing is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

**Analytical Comments for EPA 200.7\_Dissolved:**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Calcium in QC samples N031080-001E-MS1 and N031080-001E-MSD1 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Sodium in QC samples N031081-001D-MS2 and N031081-001D-MSD2 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

**Analytical Comments for EPA 200.8\_Dissolved:**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Chromium in QC samples N031080-001E-MS and N031080-001E-MSD since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.



**CLIENT:** ARCADIS U.S., Inc. - California

**Project:** PG&E Topock - PMP

**Lab Order:** N031081

**Work Order Sample Summary**

**Contract No:**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N031081-001A	PE-01-0718	Groundwater	7/3/2018 8:00:00 AM	7/3/2018	7/18/2018
N031081-001B	PE-01-0718	Groundwater	7/3/2018 8:00:00 AM	7/3/2018	7/18/2018
N031081-001C	PE-01-0718	Groundwater	7/3/2018 8:00:00 AM	7/3/2018	7/18/2018
N031081-001D	PE-01-0718	Groundwater	7/3/2018 8:00:00 AM	7/3/2018	7/18/2018
N031081-002A	TW-03D-0718	Groundwater	7/3/2018 7:50:00 AM	7/3/2018	7/18/2018
N031081-002B	TW-03D-0718	Groundwater	7/3/2018 7:50:00 AM	7/3/2018	7/18/2018
N031081-002C	TW-03D-0718	Groundwater	7/3/2018 7:50:00 AM	7/3/2018	7/18/2018
N031081-002D	TW-03D-0718	Groundwater	7/3/2018 7:50:00 AM	7/3/2018	7/18/2018



**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180705A</b>	QC Batch: <b>R126032</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	2400	0.10	0.10		umhos/cm	1	7/5/2018 11:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180705A</b>	QC Batch: <b>R126032</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	7200	0.10	0.10		umhos/cm	1	7/5/2018 11:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID	<b>N031080-003ADUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>120.1_WPGE</b>	Units:	<b>umhos/cm</b>	Prep Date:		RunNo:	<b>126032</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126032</b>	TestNo:	<b>EPA 120.1</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3071935</b>			
Analyte		Result		PQL		SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		52600.000		0.10							52500	0.190		2

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180705B</b>	QC Batch: <b>R126033</b>				PrepDate		Analyst: <b>LR</b>
pH	7.4	0.10	0.10	H	pH Units	1	7/5/2018 09:45 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	7/5/2018 09:45 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: NV00922-WC_180705B	QC Batch: R126033	PrepDate	Analyst: LR				
pH	7.2	0.10	0.10	H	pH Units	1	7/5/2018 09:45 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	7/5/2018 09:45 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 150.1\_4500H+B\_W**

Sample ID	<b>N031081-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>150.1_4500H</b>	Units:	<b>pH Units</b>	Prep Date:		RunNo:	<b>126033</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R126033</b>	TestNo:	<b>SM4500-H+B</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3071940</b>			
Analyte		Result		PQL		SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH		7.480		0.10							7.450	0.402	10	H
Temp. at time of pH Analysis		25.000		0.10							25.00	0	10	H

**Qualifiers:**

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- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_180705G</b>	QC Batch: <b>68710</b>				PrepDate	<b>7/5/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	1500	17	17		mg/L	1	7/5/2018 01:15 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
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 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_180705G</b>	QC Batch: <b>68710</b>				PrepDate	<b>7/5/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	4300	50	50		mg/L	1	7/5/2018 01:15 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 160.1\_2540C\_W**

Sample ID	<b>LCS-68710</b>	SampType:	<b>LCS</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>7/5/2018</b>	RunNo:	<b>126038</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>68710</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072690</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		961.000		10	1000	0		96.1	80	120				

Sample ID	<b>MB-68710</b>	SampType:	<b>MBLK</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>7/5/2018</b>	RunNo:	<b>126038</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>68710</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072691</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		ND		10										

Sample ID	<b>N031080-003ADUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>7/5/2018</b>	RunNo:	<b>126038</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>68710</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072697</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		45750.000		500						43900		4.13	5	

**Qualifiers:**

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- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 200.7**

RunID: NV00922-ICP2_180716D	QC Batch: 68721			PrepDate	7/6/2018	Analyst: CEI
Calcium	130000	85	500	µg/L	1	7/16/2018 05:34 PM
Iron	1200	18	20	µg/L	1	7/16/2018 05:34 PM
Magnesium	34000	48	100	µg/L	1	7/16/2018 05:34 PM
Sodium	510000	2400	12000	µg/L	25	7/17/2018 01:05 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
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 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
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 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 200.7**

RunID: NV00922-ICP2_180716D	QC Batch: 68721			PrepDate	7/6/2018	Analyst: CEI
Calcium	200000	85	500	µg/L	1	7/16/2018 05:44 PM
Iron	48	18	20	µg/L	1	7/16/2018 05:44 PM
Magnesium	26000	48	100	µg/L	1	7/16/2018 05:44 PM
Sodium	1400000	4800	25000	µg/L	50	7/17/2018 01:24 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>MB-68721</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126268</b>						
Client ID: <b>PBW</b>	Batch ID: <b>68721</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080643</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	500									
Iron	ND	20									
Magnesium	ND	100									

Sample ID <b>LCS1-68721</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126268</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>68721</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080644</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9909.496	500	10000	0	99.1	85	115				
Iron	108.225	20	100.0	0	108	85	115				
Magnesium	10338.383	100	10000	0	103	85	115				

Sample ID <b>N031080-001E-MS1</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126268</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>68721</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080648</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	212105.159	500	10000	198200	139	75	125				S
Iron	103.423	20	100.0	0	103	75	125				
Magnesium	35247.994	100	10000	25770	94.8	75	125				

Sample ID <b>N031080-001E-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126268</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>68721</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080649</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	212619.549	500	10000	198200	144	75	125	212100	0.242	20	S
Iron	108.761	20	100.0	0	109	75	125	103.4	5.03	20	
Magnesium	35301.681	100	10000	25770	95.3	75	125	35250	0.152	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGPPB**

Sample ID <b>MB-68721</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126272</b>						
Client ID: <b>PBW</b>	Batch ID: <b>68721</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081436</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium ND 500

Sample ID <b>LCS2-68721</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126272</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>68721</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081437</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium 18759.544 500 20000 0 93.8 85 115

Sample ID <b>N031081-001D-MS2</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126272</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>68721</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081441</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium 549115.667 12000 20000 507100 210 75 125 S

Sample ID <b>N031081-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126272</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>68721</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081442</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium 545442.207 12000 20000 507100 192 75 125 549100 0.671 20 S

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICPMS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180712D</b>	QC Batch: <b>68723</b>			PrepDate	<b>7/6/2018</b>	Analyst: <b>CEI</b>
Manganese	500	1.3	2.5	µg/L	5	7/12/2018 03:12 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICPMS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180712D</b>	QC Batch: <b>68723</b>			PrepDate	<b>7/6/2018</b>	Analyst: <b>CEI</b>
Manganese	17	0.26	0.50	µg/L	1	7/12/2018 03:17 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>MB-68723</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126187</b>
Client ID: <b>PBW</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077237</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			

Sample ID <b>LCS-68723</b>	SampType: <b>LCS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126187</b>
Client ID: <b>LCSW</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077238</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	104.811	0.50	100.0	0	105 85 115

Sample ID <b>N031080-001E-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126187</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077247</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	105.329	0.50	100.0	6.871	98.5 75 125

Sample ID <b>N031080-001E-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126187</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077249</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	105.608	0.50	100.0	6.871	98.7 75 125 105.3 0.265 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180705A</b>	QC Batch: <b>R126039</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	7/5/2018 12:18 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180712D</b>	QC Batch: <b>68723</b>				PrepDate	<b>7/6/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	7/12/2018 03:06 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180705A</b>	QC Batch: <b>R126039</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	480	3.3	20		µg/L	100	7/5/2018 12:37 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180712D</b>	QC Batch: <b>68723</b>				PrepDate	<b>7/6/2018</b>	Analyst: <b>CEI</b>
Chromium	500	0.65	5.0		µg/L	5	7/12/2018 03:34 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>MB-68723</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126187</b>
Client ID: <b>PBW</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077923</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	ND	1.0			
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Sample ID <b>LCS-68723</b>	SampType: <b>LCS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126187</b>
Client ID: <b>LCSW</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077923</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	10.817	1.0	10.00	0	108 85 115
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Sample ID <b>N031080-001E-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126187</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077933</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	464.643	5.0	10.00	475.5	-108 75 125 S
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Sample ID <b>N031080-001E-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126187</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077935</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	470.367	5.0	10.00	475.5	-51.2 75 125 464.6 1.22 20 S
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID: <b>MB-R126039</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072020</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      ND                      0.20

Sample ID: <b>LCS-R126039</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072021</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      4.963                      0.20                      5.000                      0                      99.3                      90                      110

Sample ID: <b>N031080-001CMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072024</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      981.140                      20                      500.0                      488.3                      98.6                      90                      110

Sample ID: <b>N031080-001CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072025</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      981.600                      20                      500.0                      488.3                      98.7                      90                      110                      981.1                      0.0469                      20

Sample ID: <b>N031081-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072029</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      0.910                      0.20                      1.000                      0                      91.0                      90                      110

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N031081-002ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072031</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	485.110	20						484.3	0.175	20	

Sample ID <b>N031081-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072032</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	971.200	20	500.0	484.3	97.4	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_180705D</b>	QC Batch: <b>R126035</b>				PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	210	1.2	5.0		mg/L	1	7/5/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

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Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_180705D</b>	QC Batch: <b>R126035</b>			PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	150	1.2	5.0	mg/L	1	7/5/2018 10:00 AM

---

**Qualifiers:** B Analyte detected in the associated Method Blank E Value above quantitation range  
H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit  
S Spike/Surrogate outside of limits due to matrix interference Results are wet unless otherwise specified  
DO Surrogate Diluted Out



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 2320\_W\_SP**

Sample ID	<b>LCS-R126035</b>	SampType:	<b>LCS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126035</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R126035</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3071946</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		93.617		5.0	100.0	0		93.6	85	115				

Sample ID	<b>MB-R126035</b>	SampType:	<b>MBLK</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126035</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R126035</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3071947</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		ND		5.0										

Sample ID	<b>N031081-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126035</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126035</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3071950</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		151.064		5.0							153.2	1.40	30	

Sample ID	<b>N031081-002BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126035</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126035</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3071951</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		246.809		5.0	100.0	153.2		93.6	75	125				

Sample ID	<b>N031081-002BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126035</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126035</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3071952</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		246.809		5.0	100.0	153.2		93.6	75	125	246.8	0	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180705A	QC Batch: R126053				PrepDate		Analyst: RAB
Chloride	550	0.91	50		mg/L	100	7/5/2018 02:23 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180705A	QC Batch: R126053				PrepDate		Analyst: RAB
Sulfate	290	1.1	25		mg/L	50	7/5/2018 01:37 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180705A	QC Batch: R126053				PrepDate		Analyst: RAB
Chloride	2200	4.6	250		mg/L	500	7/5/2018 01:53 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180705A	QC Batch: R126053				PrepDate		Analyst: RAB
Sulfate	500	1.1	25		mg/L	50	7/5/2018 02:08 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_CLPGE**

Sample ID	<b>MB-R126053_CL</b>	SampType:	<b>MBLK</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072485</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		ND		0.50										

Sample ID	<b>LCS-R126053_CL</b>	SampType:	<b>LCS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072486</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		2.130		0.50	2.000	0		106	90	110				

Sample ID	<b>N031081-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072491</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		550.110		50							552.5	0.441	20	

Sample ID	<b>N031081-001BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072492</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		754.300		50	200.0	552.5		101	80	120				

Sample ID	<b>N031081-001BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072493</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		761.910		50	200.0	552.5		105	80	120	754.3	1.00	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID	<b>MB-R126053_SO4</b>	SampType:	<b>MBLK</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072500</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate	ND	0.50												
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Sample ID	<b>LCS-R126053_SO4</b>	SampType:	<b>LCS</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072501</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate	3.961	0.50	4.000	0	99.0	90	110							
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Sample ID	<b>N031081-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072508</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate	293.070	25								289.3	1.28	20		
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Sample ID	<b>N031081-001BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072509</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate	490.120	25	200.0	289.3	100	80	120							
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Sample ID	<b>N031081-001BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072510</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate	486.265	25	200.0	289.3	98.5	80	120	490.1	0.790	20				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENT, ENERGY & WATER

CALIFORNIA | P: 562.219.7435 F: 562.219.7436  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 ELAP Cert 2921  
 EPA ID CA01638

NEVADA | P: 702.307.2659 F: 702.307.2691  
 3151 W. Post Rd., Las Vegas, NV 89118  
 ELAP Cert 2676 | NV Cert NVO0922  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
----------	--------	-----	-----	------	-------	----	---------------

**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180711B</b>	QC Batch: <b>R126141</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	ND	0.032	0.050		mg/L	1	7/11/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180711B</b>	QC Batch: <b>R126141</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	2.7	0.16	0.25		mg/L	5	7/11/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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CLIENT: ARCADIS U.S., Inc. - California  
Work Order: N031081  
Project: PG&E Topock - PMP

### ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F\_W

Sample ID	MB-R126141	SampType:	MBLK	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	126141	
Client ID:	PBW	Batch ID:	R126141	TestNo:	SM4500-NO3			Analysis Date:	7/11/2018	SeqNo:	3074978	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N ND 0.050

Sample ID	LCS-R126141	SampType:	LCS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	126141	
Client ID:	LCSW	Batch ID:	R126141	TestNo:	SM4500-NO3			Analysis Date:	7/11/2018	SeqNo:	3074979	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 0.473 0.050 0.5000 0 94.7 85 115

Sample ID	N031081-001CDUP	SampType:	DUP	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	126141	
Client ID:	ZZZZZ	Batch ID:	R126141	TestNo:	SM4500-NO3			Analysis Date:	7/11/2018	SeqNo:	3074981	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N ND 0.050 0 0 20

Sample ID	N031081-002CMS	SampType:	MS	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	126141	
Client ID:	ZZZZZ	Batch ID:	R126141	TestNo:	SM4500-NO3			Analysis Date:	7/11/2018	SeqNo:	3074983	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 5.329 0.25 2.500 2.706 105 75 125

Sample ID	N031081-002CMSD	SampType:	MSD	TestCode:	4500N03F_W	Units:	mg/L	Prep Date:		RunNo:	126141	
Client ID:	ZZZZZ	Batch ID:	R126141	TestNo:	SM4500-NO3			Analysis Date:	7/11/2018	SeqNo:	3074984	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 4.999 0.25 2.500 2.706 91.7 75 125 5.328 6.39 20

#### Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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# ASSET LABORATORIES

ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

## CHAIN OF CUSTODY RECORD

Page 1 of 1

**Contact us:**  
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 California: 11060 Artesia Blvd., Ste C, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
[www.assetlaboratories.com](http://www.assetlaboratories.com)

<b>Client:</b> Arcadis		<b>Report to:</b> Dan Bush		<b>Bill to:</b> Lisa Kellog		<b>EDD Requirement</b>		<b>QA/QC</b>		<b>Sample Receipt Condition</b>											
<b>Address:</b> 1410 Rocky Ridge Dr. #330		<b>Company:</b> Arcadis		<b>Address:</b> 2999 Oak Road, Suite 300		Excel EDD <input type="checkbox"/>		RTNE <input type="checkbox"/>		1. Chilled <input checked="" type="checkbox"/>											
<b>Address:</b> Roseville, CA 95661		<b>Email:</b> dan.bush@arcadis.com daniel.moore@critigen.com		<b>Address:</b> Walnut Creek, CA 94597		Geotracker <input type="checkbox"/>		RWQCB <input type="checkbox"/>		2. Headspace <input type="checkbox"/>											
<b>Phone:</b> 916.786.3302		<b>Address:</b> 1410 Rocky Ridge Dr. #330		<b>Email to:</b> lisa.kellog@arcadis.com		Labspec <input type="checkbox"/>		CalTrans <input type="checkbox"/>		3. Container Intact <input checked="" type="checkbox"/>											
<b>Submitted By:</b>		<b>Address:</b> Roseville, CA 95661		<b>Phone:</b> 951.677.0577		Others <input type="checkbox"/>		Level III <input type="checkbox"/>		4. Seal Present <input type="checkbox"/>											
<b>Title:</b>		<b>Phone:</b> 916.786.3302		<b>Fax:</b>		Specify:		LEVEL IV <input checked="" type="checkbox"/>		5. IR number <input type="checkbox"/>											
<b>Signature:</b>		<b>Date:</b>		<b>Sampled By:</b>		<b>Matrix</b>		<b>Analyses Requested</b>		6. Method of Cooling <input type="checkbox"/>											
I hereby authorize ASSET Labs to perform the tests indicated below:				Ground <input checked="" type="checkbox"/>		Sediment <input type="checkbox"/>				7. Method of Cooling <input checked="" type="checkbox"/>											
<b>Project Name:</b> PG&E Topock - PMP		<b>Signature:</b>		<b>Date:</b>		Potable <input type="checkbox"/>				8. Method of Cooling <input type="checkbox"/>											
<b>Project Number:</b>		<b>Signature:</b> Spencer D		<b>Date:</b> 7/3/18		Soil <input type="checkbox"/>				Sample Temp: 1.8°C											
						NPDES <input type="checkbox"/>				Tracking No. ASSET											
						Other Solid <input type="checkbox"/>				Remarks											
						Surface <input type="checkbox"/>															
<b>Item No.</b>	<b>Laboratory Work Order No.</b>	<b>Sample ID/Location</b>	<b>Date</b>	<b>Time</b>	<b>Water</b>	<b>Solid</b>	<b>Others</b>	<b>Cr+6 by SM3500</b>	<b>Alkalinity</b>	<b>pH</b>	<b>Chloride</b>	<b>Specific Conductance</b>	<b>Sulfate</b>	<b>TDS</b>	<b>NO2/NO3 by SM 4500</b>	<b>Ca, Fe, Mg, Na by EPA 200.7</b>	<b>Cr, Mn by 200.8</b>	<b>Turn Around Time</b>	<b>No. of container</b>	<b>Container Type</b>	<b>PRESERVATION</b>
1	N031081-01	PE-01-0218	7/3/18	0900	X			X	X	X	X	X	X	X	X	X	X	4	P	N/S	
2	-02	TW-03D-0218	7/3/18	0750	X			X	X	X	X	X	X	X	X	X	X	4	P	N/S	
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
<b>Relinquished by (Signature and Printed Name):</b>			<b>Date / Time:</b>			<b>Received by (Signature and Printed Name):</b>			<b>Date / Time:</b>			<b>Turn Around Time (TAT)</b>			<b>Special Instruction:</b>						
SD			1550 7/3/18			[Signature]			7/3/18 @ 1550			<input type="checkbox"/> A < 24 Hrs or Same Day TAT <input type="checkbox"/> B = Next Workday <input type="checkbox"/> C = 2 Workdays <input type="checkbox"/> D = 3 Workdays <input checked="" type="checkbox"/> E = Routine 5-7 Workdays TAT Starts at 8 AM the following day if samples received after 3:00 PM.									
[Signature]			7/3/18 @ 1845			[Signature]			7/3/18 @ 1845												
[Signature]						[Signature]															
<b>Terms</b>																					
1. All samples will be disposed in 45 days upon receipt and records will be destroyed in 5 years upon submission of final report. 2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis. Less than 24 Hrs = 200% Next Day = 100% 2 Workdays = 50% 3 Workdays = 35% 4 Workdays = 20% 3. Custom EDD formats will be an additional 3% of the total project price. 4. Add 10% surcharge for Level III Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.											5. Trip Blanks and Equipment Blanks are billable sample. 6. ASSET Laboratories is not responsible for samples collected using incorrect methodology. 7. Terms are net 30 Days. 8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed. 9. For subcontract analysis, TAT and Surcharges will vary.										
<b>Preservatives:</b>											<b>Container Type:</b>										
H = HCl			N = HNO3			S = H2SO4			C = 4°C			T = Tube			V = VOA			P = Pint			
Z = Zn(AC)2			O = NaOH			T = Na2S2O3						J = Jar			B = Tedlar			G = Glass			
Others/Specify:											M = Metal			P = Plastic			C = Can				

White = Laboratory Copy

Yellow = Customer's Copy

**Subject:** RE: PG&E Topock - PMP (Asset Labs No. N031081)  
**From:** "Madsen, Laura" <Laura.Madsen@arcadis.com>  
**Date:** 7/5/2018 1:11 PM  
**To:** Yoandra Rodriguez <yoandra@assetlaboratories.com>  
**CC:** Lucille Golosinda <lucille.golosinda@assetlaboratories.com>, "maryann.balilu@assetlaboratoriesph.com" <maryann.balilu@assetlaboratoriesph.com>, "Sonny. Lorenzo" <sonny.lorenzo@assetlaboratories.com>, "Andreafe. Gallardo" <andrea.gallardo@assetlaboratories.com>

Hi Yoandra,  
Please use "0718" per the labels.

Thanks!  
Laura

-----Original Message-----

From: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
Sent: Thursday, July 5, 2018 2:35 PM  
To: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
Cc: Lucille Golosinda <[lucille.golosinda@assetlaboratories.com](mailto:lucille.golosinda@assetlaboratories.com)>; [maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com); 'Sonny. Lorenzo' <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>; 'Andreafe. Gallardo' <[andrea.gallardo@assetlaboratories.com](mailto:andrea.gallardo@assetlaboratories.com)>  
Subject: PG&E Topock - PMP (Asset Labs No. N031081)

Hi Laura,

Please kindly advise which sample ID to use: ..-0218 as per COC or ..-0718 as per labels.

Thanks,

--  
Yoandra Rodriguez  
Sample Control Officer  
Asset Laboratories

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# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.


If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 7/3/2018 Workorder: N031081  
 Rep sample Temp (Deg C): 1.8 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |  |  |  |
|---|--|--|--|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>                       |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>            |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>            |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 7. Chain of custody agrees with sample labels?  | Yes <input type="checkbox"/>   | No <input checked="" type="checkbox"/>                     |  |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 11. All samples received within holding time?   | Yes <input type="checkbox"/>   | No <input checked="" type="checkbox"/>                     |  |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>                     |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input checked="" type="checkbox"/><br>Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input type="checkbox"/><br>NA <input type="checkbox"/> |

Comments: See Correspondence.  
 Samples for pH were past holding time upon receipt.  
 Samples for Metals are field filtered as per labels.

For:  7/5/2018  
 Checklist Completed By: MBC

Reviewed By:  LG 7/5/18

# ASSET Laboratories

## WORK ORDER Summary

05-Jul-18

WorkOrder: N031081

Client ID: ARCUS02

Project: PG&E Topock - PMP

QC Level: Level IV

Date Received: 7/3/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N031081-001A	PE-01-0718	7/3/2018 8:00:00 AM	7/18/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031081-001B			7/18/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		SM 1030F1	Cation-Anion Balance Calculation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N031081-001C			7/18/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031081-001D			7/18/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			7/18/2018		EPA 200.7	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			7/18/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			7/18/2018		EPA 200.8	DISSOLVED METALS BY ICPMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			7/18/2018		EPA 200.8	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031081-002A	TW-03D-0718	7/3/2018 7:50:00 AM	7/18/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031081-002B			7/18/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR

# ASSET Laboratories

## WORK ORDER Summary

05-Jul-18

**WorkOrder:** N031081

**Client ID:** ARCUS02

**Project:** PG&E Topock - PMP

**QC Level:** Level IV

**Date Received:** 7/3/2018

**Comments:**

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N031081-002B	TW-03D-0718	7/3/2018 7:50:00 AM	7/18/2018	Groundwater	EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		SM 1030F1	Cation-Anion Balance Calculation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N031081-002C			7/18/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031081-002D			7/18/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			7/18/2018		EPA 200.7	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			7/18/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			7/18/2018		EPA 200.8	DISSOLVED METALS BY ICPMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			7/18/2018		EPA 200.8	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031081-003A	FOLDER	7/18/2018	7/18/2018		EDD	Client specific project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			7/18/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			7/18/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

# ***ARCADIS***

Project: PG&E Topock - PMP

Project No.: RC000699.801D

ASSET Laboratories Work Order:  
N031081

## ***ANALYTICAL and QC RESULTS SAMPLE RECEIVING ITEMS***

***PRIVILEGED AND CONFIDENTIAL***



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691



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July 18, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N031081

RE: PG&E Topock - PMP

Attention: Dan Bush

Enclosed are the results for sample(s) received on July 03, 2018 by ASSET Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,



Quennie Manimtim  
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories - Las Vegas.



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - PMP  
**Lab Order:** N031081

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**CASE NARRATIVE****SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time except for pH. pH testing is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

**Analytical Comments for EPA 200.7\_Dissolved:**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Calcium in QC samples N031080-001E-MS1 and N031080-001E-MSD1 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Sodium in QC samples N031081-001D-MS2 and N031081-001D-MSD2 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

**Analytical Comments for EPA 200.8\_Dissolved:**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Chromium in QC samples N031080-001E-MS and N031080-001E-MSD since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.



**CLIENT:** ARCADIS U.S., Inc. - California

**Project:** PG&E Topock - PMP

**Lab Order:** N031081

**Work Order Sample Summary**

**Contract No:**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N031081-001A	PE-01-0718	Groundwater	7/3/2018 8:00:00 AM	7/3/2018	7/18/2018
N031081-001B	PE-01-0718	Groundwater	7/3/2018 8:00:00 AM	7/3/2018	7/18/2018
N031081-001C	PE-01-0718	Groundwater	7/3/2018 8:00:00 AM	7/3/2018	7/18/2018
N031081-001D	PE-01-0718	Groundwater	7/3/2018 8:00:00 AM	7/3/2018	7/18/2018
N031081-002A	TW-03D-0718	Groundwater	7/3/2018 7:50:00 AM	7/3/2018	7/18/2018
N031081-002B	TW-03D-0718	Groundwater	7/3/2018 7:50:00 AM	7/3/2018	7/18/2018
N031081-002C	TW-03D-0718	Groundwater	7/3/2018 7:50:00 AM	7/3/2018	7/18/2018
N031081-002D	TW-03D-0718	Groundwater	7/3/2018 7:50:00 AM	7/3/2018	7/18/2018



**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180705A</b>	QC Batch: <b>R126032</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	2400	0.10	0.10		umhos/cm	1	7/5/2018 11:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180705A</b>	QC Batch: <b>R126032</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	7200	0.10	0.10		umhos/cm	1	7/5/2018 11:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID <b>N031080-003ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>120.1_WPGE</b>	Units: <b>umhos/cm</b>	Prep Date:	RunNo: <b>126032</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126032</b>	TestNo: <b>EPA 120.1</b>	Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3071935</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	52600.000	0.10						52500	0.190	2	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180705B</b>	QC Batch: <b>R126033</b>				PrepDate		Analyst: <b>LR</b>
pH	7.4	0.10	0.10	H	pH Units	1	7/5/2018 09:45 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	7/5/2018 09:45 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180705B</b>	QC Batch: <b>R126033</b>				PrepDate		Analyst: <b>LR</b>
pH	7.2	0.10	0.10	H	pH Units	1	7/5/2018 09:45 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	7/5/2018 09:45 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 150.1\_4500H+B\_W**

Sample ID	<b>N031081-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>150.1_4500H</b>	Units:	<b>pH Units</b>	Prep Date:		RunNo:	<b>126033</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R126033</b>	TestNo:	<b>SM4500-H+B</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3071940</b>			
Analyte		Result		PQL		SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH		7.480		0.10							7.450	0.402	10	H
Temp. at time of pH Analysis		25.000		0.10							25.00	0	10	H

**Qualifiers:**

- B Analyte detected in the associated Method Blank
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- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_180705G</b>	QC Batch: <b>68710</b>				PrepDate	<b>7/5/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	1500	17	17		mg/L	1	7/5/2018 01:15 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
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 DO Surrogate Diluted Out  
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 ND Not Detected at the Reporting Limit  
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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_180705G</b>	QC Batch: <b>68710</b>				PrepDate	<b>7/5/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	4300	50	50		mg/L	1	7/5/2018 01:15 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 160.1\_2540C\_W**

Sample ID	<b>LCS-68710</b>	SampType:	<b>LCS</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>7/5/2018</b>	RunNo:	<b>126038</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>68710</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072690</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		961.000		10	1000	0		96.1	80	120				

Sample ID	<b>MB-68710</b>	SampType:	<b>MBLK</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>7/5/2018</b>	RunNo:	<b>126038</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>68710</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072691</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		ND		10										

Sample ID	<b>N031080-003ADUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>7/5/2018</b>	RunNo:	<b>126038</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>68710</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072697</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		45750.000		500						43900		4.13	5	

**Qualifiers:**

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- ND Not Detected at the Reporting Limit
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- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 200.7**

RunID: NV00922-ICP2_180716D	QC Batch: 68721	PrepDate	7/6/2018	Analyst: CEI		
Calcium	130000	85	500	µg/L	1	7/16/2018 05:34 PM
Iron	1200	18	20	µg/L	1	7/16/2018 05:34 PM
Magnesium	34000	48	100	µg/L	1	7/16/2018 05:34 PM
Sodium	510000	2400	12000	µg/L	25	7/17/2018 01:05 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 200.7**

RunID: NV00922-ICP2_180716D	QC Batch: 68721			PrepDate	7/6/2018	Analyst: CEI
Calcium	200000	85	500	µg/L	1	7/16/2018 05:44 PM
Iron	48	18	20	µg/L	1	7/16/2018 05:44 PM
Magnesium	26000	48	100	µg/L	1	7/16/2018 05:44 PM
Sodium	1400000	4800	25000	µg/L	50	7/17/2018 01:24 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>MB-68721</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126268</b>						
Client ID: <b>PBW</b>	Batch ID: <b>68721</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080643</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	500									
Iron	ND	20									
Magnesium	ND	100									

Sample ID <b>LCS1-68721</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126268</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>68721</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080644</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9909.496	500	10000	0	99.1	85	115				
Iron	108.225	20	100.0	0	108	85	115				
Magnesium	10338.383	100	10000	0	103	85	115				

Sample ID <b>N031080-001E-MS1</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126268</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>68721</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080648</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	212105.159	500	10000	198200	139	75	125				S
Iron	103.423	20	100.0	0	103	75	125				
Magnesium	35247.994	100	10000	25770	94.8	75	125				

Sample ID <b>N031080-001E-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126268</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>68721</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080649</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	212619.549	500	10000	198200	144	75	125	212100	0.242	20	S
Iron	108.761	20	100.0	0	109	75	125	103.4	5.03	20	
Magnesium	35301.681	100	10000	25770	95.3	75	125	35250	0.152	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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EPA ID CA01638

**NEVADA** | P: 702.307.2659 | F: 702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118  
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"Serving Clients with Passion and Professionalism"



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGPPB**

Sample ID <b>MB-68721</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126272</b>						
Client ID: <b>PBW</b>	Batch ID: <b>68721</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081436</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium ND 500

Sample ID <b>LCS2-68721</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126272</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>68721</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081437</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium 18759.544 500 20000 0 93.8 85 115

Sample ID <b>N031081-001D-MS2</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126272</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>68721</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081441</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium 549115.667 12000 20000 507100 210 75 125 S

Sample ID <b>N031081-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126272</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>68721</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081442</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium 545442.207 12000 20000 507100 192 75 125 549100 0.671 20 S

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**NEVADA** | P:702.307.2659 F:702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICPMS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180712D</b>	QC Batch: <b>68723</b>				PrepDate	<b>7/6/2018</b>	Analyst: <b>CEI</b>
Manganese	500	1.3	2.5		µg/L	5	7/12/2018 03:12 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 EPA ID CA01638

**NEVADA** | P:702.307.2659 F:702.307.2691  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICPMS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180712D</b>	QC Batch: <b>68723</b>			PrepDate	<b>7/6/2018</b>	Analyst: <b>CEI</b>
Manganese	17	0.26	0.50	µg/L	1	7/12/2018 03:17 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>MB-68723</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126187</b>
Client ID: <b>PBW</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077237</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			

Sample ID <b>LCS-68723</b>	SampType: <b>LCS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126187</b>
Client ID: <b>LCSW</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077238</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	104.811	0.50	100.0	0	105 85 115

Sample ID <b>N031080-001E-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126187</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077247</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	105.329	0.50	100.0	6.871	98.5 75 125

Sample ID <b>N031080-001E-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126187</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077249</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	105.608	0.50	100.0	6.871	98.7 75 125 105.3 0.265 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**NEVADA** | P:702.307.2659 F:702.307.2691  
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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180705A</b>	QC Batch: <b>R126039</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	7/5/2018 12:18 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180712D</b>	QC Batch: <b>68723</b>				PrepDate	<b>7/6/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	7/12/2018 03:06 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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**NEVADA** | P:702.307.2659 F:702.307.2691  
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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180705A</b>	QC Batch: <b>R126039</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	480	3.3	20		µg/L	100	7/5/2018 12:37 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180712D</b>	QC Batch: <b>68723</b>				PrepDate	<b>7/6/2018</b>	Analyst: <b>CEI</b>
Chromium	500	0.65	5.0		µg/L	5	7/12/2018 03:34 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>MB-68723</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126187</b>
Client ID: <b>PBW</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077923</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	ND	1.0			
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Sample ID <b>LCS-68723</b>	SampType: <b>LCS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126187</b>
Client ID: <b>LCSW</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077923</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	10.817	1.0	10.00	0	108 85 115
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Sample ID <b>N031080-001E-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126187</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077933</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	464.643	5.0	10.00	475.5	-108 75 125 S
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Sample ID <b>N031080-001E-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>7/6/2018</b>	RunNo: <b>126187</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077935</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	470.367	5.0	10.00	475.5	-51.2 75 125 464.6 1.22 20 S
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**NEVADA** | P:702.307.2659 F:702.307.2691  
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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID: <b>MB-R126039</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072020</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      ND                      0.20

Sample ID: <b>LCS-R126039</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072021</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      4.963                      0.20                      5.000                      0                      99.3                      90                      110

Sample ID: <b>N031080-001CMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072024</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      981.140                      20                      500.0                      488.3                      98.6                      90                      110

Sample ID: <b>N031080-001CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072025</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      981.600                      20                      500.0                      488.3                      98.7                      90                      110                      981.1                      0.0469                      20

Sample ID: <b>N031081-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072029</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      0.910                      0.20                      1.000                      0                      91.0                      90                      110

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N031081-002ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072031</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	485.110	20						484.3	0.175	20	

Sample ID <b>N031081-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072032</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	971.200	20	500.0	484.3	97.4	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_180705D</b>	QC Batch: <b>R126035</b>				PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	210	1.2	5.0		mg/L	1	7/5/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_180705D</b>	QC Batch: <b>R126035</b>				PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	150	1.2	5.0		mg/L	1	7/5/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 2320\_W\_SP**

Sample ID	<b>LCS-R126035</b>	SampType:	<b>LCS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126035</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R126035</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3071946</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		93.617		5.0	100.0	0		93.6	85	115				

Sample ID	<b>MB-R126035</b>	SampType:	<b>MBLK</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126035</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R126035</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3071947</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		ND		5.0										

Sample ID	<b>N031081-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126035</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126035</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3071950</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		151.064		5.0							153.2	1.40	30	

Sample ID	<b>N031081-002BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126035</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126035</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3071951</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		246.809		5.0	100.0	153.2		93.6	75	125				

Sample ID	<b>N031081-002BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126035</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126035</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3071952</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		246.809		5.0	100.0	153.2		93.6	75	125	246.8	0	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180705A	QC Batch: R126053				PrepDate		Analyst: RAB
Chloride	550	0.91	50		mg/L	100	7/5/2018 02:23 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180705A	QC Batch: R126053				PrepDate		Analyst: RAB
Sulfate	290	1.1	25		mg/L	50	7/5/2018 01:37 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180705A	QC Batch: R126053				PrepDate		Analyst: RAB
Chloride	2200	4.6	250		mg/L	500	7/5/2018 01:53 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180705A	QC Batch: R126053				PrepDate		Analyst: RAB
Sulfate	500	1.1	25		mg/L	50	7/5/2018 02:08 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_CLPGE**

Sample ID	<b>MB-R126053_CL</b>	SampType:	<b>MBLK</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072485</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		ND		0.50										

Sample ID	<b>LCS-R126053_CL</b>	SampType:	<b>LCS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072486</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		2.130		0.50	2.000	0		106	90	110				

Sample ID	<b>N031081-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072491</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		550.110		50							552.5	0.441	20	

Sample ID	<b>N031081-001BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072492</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		754.300		50	200.0	552.5		101	80	120				

Sample ID	<b>N031081-001BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072493</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		761.910		50	200.0	552.5		105	80	120	754.3	1.00	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID	<b>MB-R126053_SO4</b>	SampType:	<b>MBLK</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072500</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate		ND		0.50										
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Sample ID	<b>LCS-R126053_SO4</b>	SampType:	<b>LCS</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072501</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate		3.961		0.50	4.000	0		99.0	90	110				
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Sample ID	<b>N031081-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072508</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate		293.070		25							289.3	1.28	20	
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Sample ID	<b>N031081-001BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072509</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate		490.120		25	200.0	289.3		100	80	120				
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Sample ID	<b>N031081-001BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126053</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R126053</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>7/5/2018</b>	SeqNo:	<b>3072510</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate		486.265		25	200.0	289.3		98.5	80	120	490.1	0.790	20	
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-001

**Client Sample ID:** PE-01-0718  
**Collection Date:** 7/3/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180711B</b>	QC Batch: <b>R126141</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	ND	0.032	0.050		mg/L	1	7/11/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 18-Jul-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031081  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031081-002

**Client Sample ID:** TW-03D-0718  
**Collection Date:** 7/3/2018 7:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
----------	--------	-----	-----	------	-------	----	---------------

**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180711B</b>	QC Batch: <b>R126141</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	2.7	0.16	0.25		mg/L	5	7/11/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R126141</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126141</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R126141</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>7/11/2018</b>	SeqNo: <b>3074978</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>LCS-R126141</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126141</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R126141</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>7/11/2018</b>	SeqNo: <b>3074979</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.473	0.050	0.5000	0	94.7	85	115				

Sample ID <b>N031081-001CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126141</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126141</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>7/11/2018</b>	SeqNo: <b>3074981</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050						0	0	20	

Sample ID <b>N031081-002CMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126141</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126141</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>7/11/2018</b>	SeqNo: <b>3074983</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	5.329	0.25	2.500	2.706	105	75	125				

Sample ID <b>N031081-002CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126141</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126141</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>7/11/2018</b>	SeqNo: <b>3074984</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	4.999	0.25	2.500	2.706	91.7	75	125	5.328	6.39	20	

**Qualifiers:**

- |    |   |   |                                      |   |  |
|----|---|---|--------------------------------------|---|--|
| B  | Analyte detected in the associated Method Blank | E | Value above quantitation range       | H | Holding times for preparation or analysis exceeded           |
| ND | Not Detected at the Reporting Limit             | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SAMPLE RECEIVING ITEMS



**ASSET LABORATORIES**  
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## CHAIN OF CUSTODY RECORD

Page 1 of 1

Contact us:  
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 P: 562.219.7435 F: 562.219.7436  
[www.assetlaboratories.com](http://www.assetlaboratories.com)

<b>Client:</b> Arcadis		<b>Report to:</b> Dan Bush		<b>Bill to:</b> Lisa Kellog		<b>EDD Requirement</b>		<b>QA/QC</b>		<b>Sampe Receipt Condition</b>											
<b>Address:</b> 1410 Rocky Ridge Dr. #330		<b>Company:</b> Arcadis		<b>Address:</b> 2999 Oak Road, Suite 300		Excel EDD <input type="checkbox"/>		RTNE <input type="checkbox"/>		1. Chilled <input checked="" type="checkbox"/> Y <input type="checkbox"/> N											
<b>Address:</b> Roseville, CA 95661		<b>Email:</b> dan.bush@arcadis.com daniel.moore@critigen.com		<b>Address:</b> Walnut Creek, CA 94597		Geotracker <input type="checkbox"/>		RWQCB <input type="checkbox"/>		2. Headspace <input type="checkbox"/> <input type="checkbox"/>											
<b>Phone:</b> 916.786.3302		<b>Fax:</b>		<b>Email to:</b> lisa.kellog@arcadis.com		Labspec <input type="checkbox"/>		CalTrans <input type="checkbox"/>		3. Container Intact <input checked="" type="checkbox"/> <input type="checkbox"/>											
<b>Submitted By:</b>		<b>Address:</b> 1410 Rocky Ridge Dr. #330		<b>Phone:</b> 951.677.0577		Others <input type="checkbox"/>		Level III <input type="checkbox"/>		4. Seal Present <input type="checkbox"/> <input type="checkbox"/>											
<b>Title:</b>		<b>Phone:</b> 916.786.3302		<b>Fax:</b>		Specify:		LEVEL IV <input checked="" type="checkbox"/>		5. IR number <input type="checkbox"/> <input type="checkbox"/>											
<b>Signature:</b>		<b>Date:</b>		<b>Sampled By:</b>		<b>PO#</b>		Regulatory <input type="checkbox"/>		6. Method of Cooling <input type="checkbox"/> <input checked="" type="checkbox"/>											
<i>I hereby authorize ASSET Labs to perform the tests indicated below:</i>		<i>I attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action.</i>		<b>Signature:</b> Spencer D...		<b>Date:</b> 7/3/18		Global ID:		Specify State:											
<b>Project Name:</b> PG&E Topock - PMP		<b>Signature:</b>		<b>Date:</b>		<b>Matrix</b>		<b>Analyses Requested</b>		Sample Temp: 1.8°C											
<b>Project Number:</b>		<b>Signature:</b>		<b>Date:</b>		Ground <input checked="" type="checkbox"/>		Sediment <input type="checkbox"/>		Turn Around Time											
						Potable <input type="checkbox"/>		Soil <input type="checkbox"/>		No. of container											
						NPDES <input type="checkbox"/>		Other Solid <input type="checkbox"/>		Container Type											
						Surface <input type="checkbox"/>				PRESERVATION											
										Tracking No. ASSET											
										Remarks											
<b>Item No.</b>	<b>Laboratory Work Order No.</b>	<b>Sample ID/Location</b>	<b>Date</b>	<b>Time</b>	<b>Water</b>	<b>Solid</b>	<b>Others</b>	<b>Cr+6 by SM3500</b>	<b>Alkalinity</b>	<b>pH</b>	<b>Chloride</b>	<b>Specific Conductance</b>	<b>Sulfate</b>	<b>TDS</b>	<b>NO2/NO3 by SM 4500</b>	<b>Ca, Fe, Mg, Na by EPA 200.7</b>	<b>Cr, Mn by 200.8</b>	<b>Turn Around Time</b>	<b>No. of container</b>	<b>Container Type</b>	<b>PRESERVATION</b>
1	N031081-01	PE-01-0218	7/3/18	0900	X			X	X	X	X	X	X	X	X	X	X	4	P	N/S	
2	-02	TW-03D-0218	7/3/18	0750	X			X	X	X	X	X	X	X	X	X	X	4	P	N/S	
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					
<b>Relinquished by (Signature and Printed Name):</b>		<b>Date / Time:</b> 1550 7/3/18		<b>Received by (Signature and Printed Name):</b>		<b>Date / Time:</b> 7/3/18 @ 1550		<b>Turn Around Time (TAT)</b>		<b>Special Instruction:</b>											
<b>Relinquished by (Signature and Printed Name):</b>		<b>Date / Time:</b> 7/3/18 @ 1845		<b>Received by (Signature and Printed Name):</b>		<b>Date / Time:</b> 7/3/18 @ 1845		<input type="checkbox"/> A < 24 Hrs or Same Day TAT													
<b>Relinquished by (Signature and Printed Name):</b>		<b>Date / Time:</b>		<b>Received by (Signature and Printed Name):</b>		<b>Date / Time:</b>		<input type="checkbox"/> B = Next Workday													
								<input type="checkbox"/> C = 2 Workdays													
								<input type="checkbox"/> D = 3 Workdays													
								<input checked="" type="checkbox"/> E = Routine 5-7 Workdays													
								TAT Starts at 8 AM the following day if samples received after 3:00 PM.													
<b>Terms</b>								<b>Preservatives:</b>		<b>Container Type:</b>											
1. All samples will be disposed in 45 days upon receipt and records will be destroyed in 5 years upon submission of final report.								H = HCl		T = Tube											
2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis.								N = HNO3		V = VOA											
Less than 24 Hrs = 200% Next Day = 100% 2 Workdays = 50% 3 Workdays = 35% 4 Workdays = 20%								S = H2SO4		P = Pint											
3. Custom EDD formats will be an additional 3% of the total project price.								C = 4°C		B = Tedlar											
4. Add 10% surcharge for Level III Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.								Z = Zn(AC)2		G = Glass											
								O = NaOH		M = Metal											
								T = Na2S2O3		P = Plastic											
								Others/Specify:		C = Can											

White = Laboratory Copy

Yellow = Customer's Copy

**Subject:** RE: PG&E Topock - PMP (Asset Labs No. N031081)  
**From:** "Madsen, Laura" <Laura.Madsen@arcadis.com>  
**Date:** 7/5/2018 1:11 PM  
**To:** Yoandra Rodriguez <yoandra@assetlaboratories.com>  
**CC:** Lucille Golosinda <lucille.golosinda@assetlaboratories.com>, "Maryann.Balilu@assetlaboratoriesph.com" <maryann.balilu@assetlaboratoriesph.com>, "Sonny.Lorenzo" <sonny.lorenzo@assetlaboratories.com>, "Andreafe. Gallardo" <andrea.gallardo@assetlaboratories.com>

Hi Yoandra,  
Please use "0718" per the labels.

Thanks!  
Laura

-----Original Message-----

From: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
Sent: Thursday, July 5, 2018 2:35 PM  
To: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
Cc: Lucille Golosinda <[lucille.golosinda@assetlaboratories.com](mailto:lucille.golosinda@assetlaboratories.com)>; [maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com); 'Sonny. Lorenzo' <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>; 'Andreafe. Gallardo' <[andrea.gallardo@assetlaboratories.com](mailto:andrea.gallardo@assetlaboratories.com)>  
Subject: PG&E Topock - PMP (Asset Labs No. N031081)

Hi Laura,

Please kindly advise which sample ID to use: ..-0218 as per COC or ..-0718 as per labels.

Thanks,

--  
Yoandra Rodriguez  
Sample Control Officer  
Asset Laboratories

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# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.


If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 7/3/2018 Workorder: N031081  
 Rep sample Temp (Deg C): 1.8 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |  |  |  |
|---|--|--|--|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>                       |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>            |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>            |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 7. Chain of custody agrees with sample labels?  | Yes <input type="checkbox"/>   | No <input checked="" type="checkbox"/>                     |  |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 11. All samples received within holding time?   | Yes <input type="checkbox"/>   | No <input checked="" type="checkbox"/>                     |  |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>                     |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input checked="" type="checkbox"/><br>Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input type="checkbox"/><br>NA <input type="checkbox"/> |

Comments: See Correspondence.  
 Samples for pH were past holding time upon receipt.  
 Samples for Metals are field filtered as per labels.

For:  7/5/2018  
 Checklist Completed By: MBC

Reviewed By:  LG 7/5/18

# ASSET Laboratories

## WORK ORDER Summary

05-Jul-18

WorkOrder: N031081

Client ID: ARCUS02

Project: PG&E Topock - PMP

QC Level: Level IV

Date Received: 7/3/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N031081-001A	PE-01-0718	7/3/2018 8:00:00 AM	7/18/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031081-001B			7/18/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		SM 1030F1	Cation-Anion Balance Calculation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N031081-001C			7/18/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031081-001D			7/18/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			7/18/2018		EPA 200.7	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			7/18/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			7/18/2018		EPA 200.8	DISSOLVED METALS BY ICPMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			7/18/2018		EPA 200.8	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031081-002A	TW-03D-0718	7/3/2018 7:50:00 AM	7/18/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031081-002B			7/18/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR



# ASSET Laboratories

## WORK ORDER Summary

05-Jul-18

**WorkOrder:** N031081

**Client ID:** ARCUS02

**Project:** PG&E Topock - PMP

**QC Level:** Level IV

**Date Received:** 7/3/2018

**Comments:**

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N031081-002B	TW-03D-0718	7/3/2018 7:50:00 AM	7/18/2018	Groundwater	EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			7/18/2018		SM 1030F1	Cation-Anion Balance Calculation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N031081-002C			7/18/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031081-002D			7/18/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			7/18/2018		EPA 200.7	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			7/18/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			7/18/2018		EPA 200.8	DISSOLVED METALS BY ICPMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			7/18/2018		EPA 200.8	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031081-003A	FOLDER	7/18/2018	7/18/2018		EDD	Client specific project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			7/18/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			7/18/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

## List of Analysts

### ASSET Laboratories Work Order: N031081

NAME	TEST METHOD
Quennie Manimtim	SM 4500-NO3F
Claire Ignacio	EPA 200.7_Dissolved, EPA 200.8_Dissolved
Ria Abes	EPA 218.6, EPA 300.0
Lilia Ramit	EPA 120.1, SM 4500-H+B, SM 2540C, SM 2320 B



# EPA 120.1



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R126032 Analyst: LSR  
 ASSET #: N031081 Date Analyzed: 7/5/2018

Method: EPA 120.1

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)			X			
<b>Sample Information</b>						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below the PQL .			X			
11. LCS compounds within control limits.			X			
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Julia Ramit

Date: 7/6/2018

2nd Level Reviewer Murphy 7/9/2018

Date: \_\_\_\_\_

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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**Conductivity Logbook**

Date: 6/14/18 1330

Analyst: LRU Contd

Standard	Std ID	Reading	Comments
1412 <sup>us/cm</sup>	CIN-180417A	9.81 @ 25.8°C	% Rec: (90-110%)
1412	180131A	1424 @ 25.8°C	
10020	180417C	9940 @ 25.8°C	
99601	180201A	99200 @ 25.9°C	

Sample ID	Matrix	Reading	Comments
1 N030781-012D	112D	890 @ 25.4°C	
2   13D		900 @ 25.3°C	
3   14D		915 @ 25.4°C	
4   14DUP		918 @ 25.1°C	
5			
6			
7			
8 1413 <sup>us/cm</sup>	CIN-180417B	1422 @ 25.2°C	
9 10000	180108C	10220 @ 25.5°C	
10 99672	171215A	99600 @ 25.6°C	2% 6/14/18 LRU
Dup			Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Date: 7/5/18 1100

Analyst: LRU

Standard	Std ID	Reading	Comments
9.70	CIN-180417A	9.96 @ 25.2°C	% Rec: (90-110%)
1412	180131A	1436 @ 24.9°C	
10020	180417C	9940 @ 25.0°C	
99931	180515D	99100 @ 25.1°C	

Sample ID	Matrix	Reading	Comments
1 N031080-001B	112D	6970 @ 25.5°C	
2   2B		6990 @ 22.8°C	
3   3A		52500 @ 24.1°C	
4   3ADUP		52600 @ 23.1°C	
5 N031081-001B		2430 @ 25.2°C	
6   2B		7230 @ 25.1°C	
7			
8			Julia Ramit 7/6/2018
9			
10 1413 <sup>us/cm</sup>	CIN-180417B	1426 @ 25.2°C	2% 7/5/18 LRU
Dup 10000	180108C	10060 @ 25.4°C	Accept: 10% water, 20% soil
Std Chk: 99601	180521B	99300 @ 25.3°C	% Rec: (90-110%)

Logbook # 6



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# SM 4500-H+B



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**pH Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

pH ARCUS  
 REV 0  
 101215

**FIRST LEVEL REVIEW:**

QC Batch Number: R126033

Instrument ID: pH meter

ASSET #: N031081

Analyst: LSR

Date Analyzed: 5-Jul

Method: EPA 150.1

pH Meter Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Was the meter calibrated using 3 buffers (4,7 and 10)?	X					
2. Was a closing buffer used at the end of analysis?	X					
3. Was the meter checked every 10 samples?			X			
<b>Sample Information</b>						
4. Are all samples analyzed within hold time.		X				
<b>QC Items</b>						
5. Was a duplicate sample analyzed?	X					
<b>Raw Data and Miscellaneous Information</b>						
6. Are Non-Conformances documented			X			
7. Runlog complete and included in package.	X					
<b>Preliminary Report</b>						
8. Does the raw data match the preliminary report?	X					
9. Are analytical results correct?	X					
10. Is the QC summary report present and complete?	X					

Comments:

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer *Silvia Ramit*  
 2nd Level Reviewer *Danny* 7/10/2018

Date: 7/9/2018  
 Date: \_\_\_\_\_



# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



pH Logbook

Date: 7/5/18 945

Analyst: WR

Standard	Std ID	pH	Comments
Buffer 7	CNV-180575B	7.00 @25.0C	
Buffer 4	180575A	7.01 @25.0C	
Buffer 10	180119A	9.98 @25.0C	
Slope		98.07	Acceptance Criteria: 95%-105%

Sample ID	Matrix	pH	Comments
1 NO21081-001B	H <sub>2</sub> O	7.45 @25.0C	
2   1B DUP		7.48 @25.0C	
3   2B		7.23 @25.0C	
4			
5			
6			
7			
8			Julia Ramit 7/9/2018
9			
10			
Dup			Accept: 10% water, 20% soil
Buffer (7, 4, 10) (Circle one)	CNV-180320C	6.98 @25.0C	Accept: <sup>0.05</sup> +/- 0.4 pH units from expected value

WR 7/5/18

Date: 7/9/18 1315

Analyst: WR

Standard	Std ID	pH	Comments
Buffer 7	CNV-180575B	7.01 @25.0C	
Buffer 4	180575A	4.02 @25.0C	
Buffer 10	180119A	10.02 @25.0C	
Slope		98.5%	Acceptance Criteria: 95%-105%

Sample ID	Matrix	pH	Comments
1 NO21133-001A	H <sub>2</sub> O	7.68 @25.0C	
2   1A DUP		7.70 @25.0C	
3   2A		7.69 @25.0C	
4			
5			
6			
7			
8			
9			
10			
Dup			Accept: 10% water, 20% soil
Buffer (7, 4, 10) (Circle one)	CNV-180320C	7.00 @25.0C	Accept: <sup>0.05</sup> +/- 0.4 pH units from expected value

WR 7/5/18

# SM 2540C



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: 68710

Analyst: LSR

ASSET #: N031081

Date Analyzed: 7/5/2018

Method: EPA 160.1

Initial Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
Continuing Calibration						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)			X			
Sample Information						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
QC Items						
10. Method blank values are below the PQL .	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
Preliminary Report						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Julia Ramit

Date: 7/9/2018

2nd Level Reviewer Murphy 7/11/2018

Date:

# SAMPLE CALCULATION



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## SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: ~~Water~~ Groundwater

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B)*1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For N031081-001B, TDS concentration in mg/L is calculated as follows:

$$\begin{aligned}\text{TDS, mg/L} &= \frac{(61.1598 - 61.0690)*1000000}{60} \\ &= 1513.3333 \text{ mg/L}\end{aligned}$$

Reporting result in two significant figures,

$$\text{TDS} = 1500 \text{ mg/L}$$

*Silia Ramit* 7/9/2018

# SAMPLE PREPARATION LOG



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PREP BATCH REPORT

Prep Start Date: **7/5/2018 1:15:45 P**  
 Prep End Date: **7/6/2018 10:45:00 A**

Reviewed/ Date: *Nancy* 7/11/2018

Page: 1 of 1

Initials/ Date: *Lilia Ramit* 7/9/2018 Prep Factor Units Temp. (°C):  
 Technician: **Lilia Ramit** mL / mL **180**

Prep Batch **68710** Prep Code: **160.1\_W\_PRE**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-68710	Water		100	<input type="checkbox"/>	0	0	100	1.000		
MB-68710	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N031066-001A	Wastewater		40	<input type="checkbox"/>	0	0	100	2.500		
N031066-003A	Wastewater		100	<input type="checkbox"/>	0	0	100	1.000		
N031080-001B	Water		20	<input type="checkbox"/>	0	0	100	5.000		
N031080-002B	Water		20	<input type="checkbox"/>	0	0	100	5.000		
N031080-003A	Water		2	<input type="checkbox"/>	0	0	100	50.000		
N031080-003A-DU	Water		2	<input type="checkbox"/>	0	0	100	50.000		
N031081-001B	Groundwater		60	<input type="checkbox"/>	0	0	100	1.667		
N031081-002B	Groundwater		20	<input type="checkbox"/>	0	0	100	5.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name	Spk ID	Spike Name	SampType	AmtAdd
10077	Glass Fiber Filter, 47mm	IWST180705A	1000 ppm NaCl	LCS	100



Prep Start Date: 7/5/2018 1:15:45 P

Reviewed/ Date:

Prep End Date:

Initials/ Date: Lilia Ramit 7/9/2018 Prep Factor Units

Prep Batch 68710

Prep Code: 160.1\_W\_PRE

Technician: Lilia Ramit

mL / mL

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-68710	Water	103180705A	100	<input type="checkbox"/>	0	0	100	1.000		
MB-68710	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N031066-001A	Wastewater	3240	100	140 <input type="checkbox"/>	0	0	100	1.000		
N031066-003A	Wastewater	626	100	<input type="checkbox"/>	0	0	100	1.000		
N031080-001B	Water	6970	100	120 <input type="checkbox"/>	0	0	100	1.000		
N031080-002B	Water	6990	100	120 <input type="checkbox"/>	0	0	100	1.000		
N031080-003A	Water	52500	100	12 <input type="checkbox"/>	0	0	100	1.000		
N031080-003A-DU	Water	1	100	12 <input type="checkbox"/>	0	0	100	1.000		
N031081-001B	Groundwater	2430	100	160 <input type="checkbox"/>	0	0	100	1.000		
N031081-002B	Groundwater	7230	100	120 <input type="checkbox"/>	0	0	100	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

10077

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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SOLIDS RAW DATA

TEST: TSS/ TDS/ TS

Date	Sample ID	Sample Vol. (ml)	Crucible + Filter (TSS) Crucible (TDS, TS) Tare Wt.(g)	Crucible + Filter+Sample (TSS) Crucible + Sample (TDS, TS) Tare Wt.(g)	Comments
7/15/18 1315 LL	MB 68710	100	68.9773 68.9772	68.9774 68.9774	
AA	LCS 68710	100	68.3524 68.3526	68.4484 68.4487	
B	NO31066-001A	40	54.3549 54.3546	54.4632 54.4633	
GG	3A	100	67.8027 67.8028	67.8993 67.8395	
IE	NO31080-001B	20	59.8347 59.8350	59.9178 59.9181	
IB	2B	20	59.5752 59.5756	59.6583 59.6587	
IG	3A	2	60.9627 60.9623	61.0497 61.0501	
IS	3A DUP	2	61.5114 61.5118	61.6031 61.6033	
9	NO31081-001B	60	61.0694 61.0690	61.1595 61.1598	
10	2B	20	60.7162 60.7165	60.8024 60.8026	

using wt 49.998 @ 1045  
7/11/18 WJL

ASSET Laboratories

Julia Ramit

7/9/2018

Logbook#11



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# TOTAL DISSOLVED SOLIDS, TDS

TDS, mg/L =

$$(A-B) \times 10000 \times PF$$

where:

- A = weight in grams of dish + residue after drying
- B = weight of dish in grams
- PF = 100/volume of sample used in mL

	vol of sample (mL)	weight of dish in grams (B)	weight in grams of dish + residue after drying (A)	(A-B)*10000	prep fact (PF)	TDS, mg/L	CONDUCTIVITY	RATIO	Sample Type
Date Finished:									
7/6/2018									
MB-68710	100	68.9772	68.9774	2	1	2			MBLK
LCS-68710	100	68.3526	68.4487	961	1	961			LCS
N031066-001A	40	54.3546	54.4633	1087	2.5	2717.5	3240	0.839	SAMP
N031066-003A	100	67.8028	67.8395	367	1	367	626	0.586	SAMP
N031080-001B	20	59.835	59.9181	831	5	4155	6970	0.596	SAMP
N031080-002B	20	59.5756	59.6587	831	5	4155	6990	0.594	SAMP
N031080-003A	2	60.9623	61.0501	878	50	43900	52500	0.836	SAMP
N031080-003ADUP	2	61.5118	61.6033	915	50	45750	52500	0.871	DUP
N031081-001B	60	61.069	61.1598	908	1.66666667	1513.33333	2430	0.623	SAMP
N031081-002B	20	60.7165	60.8026	861	5	4305	7230	0.595	SAMP

*Lilia Ramit*

7/9/2018

# EPA 200.7 Dissolved



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**Metals Technical Batch Review Checklist (CH2MHILL)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS CH2M  
 REV 8.0  
 071118

**FIRST LEVEL REVIEW:**

QC Batch Number: 68721

Instrument ID: ICP-02

ASSET #: N031081

Analyst: CEI

Method:

Date Analyzed: 7/16/2018

- EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ?( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MS meet tune criteria? (ICP/MS Only)			X			X
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)	X			X		
Is low level check twice during 8 hr period or at end within ± 30% of expected value?						
12. (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.		X			X	
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits		X			X	
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X			X	
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

%Rec Of Ca in N031081-001D PS/MS/MSD failed. However, LCS passed criteria.

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI

Date: 7/18/18

2nd Level Reviewer Theresa 7/18/2018

Date: \_\_\_\_\_



**Metals Technical Batch Review Checklist (CH2MHILL)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS CH2M  
 REV 8.0  
 071118

**FIRST LEVEL REVIEW:**

QC Batch Number: 68721

Instrument ID: ICP-02

ASSET #: N031081

Analyst: CEI

**Method:**

Date Analyzed: 7/17/2018

- EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ?( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MS meet tune criteria? (ICP/MS Only)			X			X
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)	X			X		
Is low level check twice during 8 hr period or at end within ± 30% of expected value?						
12. (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.		X			X	
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits		X			X	
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X				X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

%Rec of Na in N031081-001D PS/MS.MSD failed. However, LCS passed criteria.

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	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer Thurkey 7/18/2018

Date: 7/18/18  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



## SAMPLE CALCULATION

**METHOD:** EPA 6010B  
**TEST NAME:** Heavy Metals by ICP  
**MATRIX:** Water

### FORMULA:

Calculate the Iron concentration, in ug/L, in the original sample as follows:

$$\text{Iron, ug/L} = A * DF * PF * CF$$

where:

A = mg/L, calculated concentration

DF = Dilution Factor

PF = Final Volume of Digestate, mL / Amount of Sample, mL

CF= Conversion Factor from mg/L to ug/L, 1000

For Sample **N031081-001D**, the concentration in ug/L is calculated as follows:

$$\text{Iron, ug/L} = 1.17817 * 1 * (25/25) * 1000$$

$$\text{Iron, ug/L} = 1178.17$$

Reporting results in two significant figures,

$$\text{Iron, ug/L} = 1200$$

# % RSD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**RSD SUMMARY: 180716B**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Ca	0	8.48	15	PASS
Standard1	ICAL	1	Ca	0.2	13.44	15	PASS
Standard2	ICAL	1	Ca	1	2.37	15	PASS
Standard3	ICAL	1	Ca	2	1.021	15	PASS
Standard4	ICAL	1	Ca	5	0.55	15	PASS
Standard5	ICAL	1	Ca	7.5	0.54	15	PASS
Standard6	ICAL	1	Ca	10	0.13	15	PASS
Standard7	ICAL	1	Ca	20	0.57	15	PASS
ICV	ICV	1	Ca	9.92	0.63	15	PASS
ICB	ICB	1	Ca	-0.022	27.19	15	<PQL
LLICV	CCV1	1	Ca	0.2	3.61	20	PASS
ICSA1	ICSA	1	Ca	483.56	0.2	15	PASS
ICSAB1	ICSAB	1	Ca	548.11	0.34	15	PASS
MB-68721	MBLK	1	Ca	-0.0052	641.41	15	<PQL
LCS1-68721	LCS	1	Ca	9.91	0.66	15	PASS
N031080-001E	SAMP	1	Ca	198.19	0.42	15	PASS
N031080-001E	SAMP	5	Ca	42.12	0.3	15	PASS
N031080-001E-PS	PS	1	Ca	203.31	0.67	15	PASS
N031080-001E-MS1	MS	1	Ca	212.11	0.65	15	PASS
N031080-001E-MSD1	MSD	1	Ca	212.62	0.52	15	PASS
N031080-002E	SAMP	1	Ca	124.79	0.5	15	PASS
N031081-001D	SAMP	1	Ca	134.54	0.44	15	PASS
N031081-002D	SAMP	1	Ca	202.65	0.15	15	PASS
CCV1	CCV	1	Ca	10.025	0.47	15	PASS
CCB1	CCB	1	Ca	0.0046	351.78	15	<PQL
CCV2	CCV	1	Ca	9.92	0.52	15	PASS
CCB2	CCB	1	Ca	0.0027	1058.12	15	<PQL
ICSA2	ICSA	1	Ca	484.73	0.074	15	PASS
ICSAB2	ICSAB	1	Ca	546.6	0.1	15	PASS
CCV3	CCV	1	Ca	9.97	0.51	15	PASS
CCB3	CCB	1	Ca	-0.0081	69.92	15	<PQL
CCV4	CCV	1	Ca	9.97	0.58	15	PASS
CCB4	CCB	1	Ca	0.0058	139.99	15	<PQL
CCV5	CCV	1	Ca	10.018	0.7	15	PASS
CCB5	CCB	1	Ca	-0.0079	245.64	15	<PQL
ICSA3	ICSA	1	Ca	485.9	0.44	15	PASS
ICSAB3	ICSAB	1	Ca	541.59	0.16	15	PASS
CCV6	CCV	1	Ca	9.97	0.62	15	PASS
CCB6	CCB	1	Ca	0.0036	810.71	15	<PQL
CCV7	CCV	1	Ca	9.99	0.27	15	PASS
CCB7	CCB	1	Ca	-0.026	72.41	15	<PQL
CCV8	CCV	1	Ca	10.17	0.7	15	PASS

**RSD SUMMARY: 180716B**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CCB8	CCB	1	Ca	-0.0017	1230.27	15	<PQL
ICSA4	ICSA	1	Ca	504.52	0.4	15	PASS
ICSAB4	ICSAB	1	Ca	546.95	0.073	15	PASS
CCV9	CCV	1	Ca	10.035	0.37	15	PASS
CCB9	CCB	1	Ca	-0.0002	4046.68	15	<PQL
CCV10	CCV	1	Ca	10.05	0.98	15	PASS
CCB10	CCB	1	Ca	-0.018	84.03	15	<PQL
CCV11	CCV	1	Ca	10	0.73	15	PASS
CCB11	CCB	1	Ca	0.011	172.11	15	<PQL
ICSA5	ICSA	1	Ca	485.78	0.29	15	PASS
ICSAB5	ICSAB	1	Ca	542.39	0.26	15	PASS
CaIBlk	IBLK	1	Fe	0	56.35	15	<PQL
Standard1	ICAL	1	Fe	0.02	1.49	15	PASS
Standard2	ICAL	1	Fe	0.05	0.32	15	PASS
Standard3	ICAL	1	Fe	2	0.28	15	PASS
Standard4	ICAL	1	Fe	5	0.32	15	PASS
Standard5	ICAL	1	Fe	7.5	0.057	15	PASS
Standard6	ICAL	1	Fe	10	0.12	15	PASS
Standard7	ICAL	1	Fe	20	0.16	15	PASS
ICV	ICV	1	Fe	10.089	0.08	15	PASS
ICB	ICB	1	Fe	-0.00037	113.56	15	<PQL
LLICV	CCV1	1	Fe	0.019	0.82	20	PASS
ICSA1	ICSA	1	Fe	190.13	0.26	15	PASS
ICSAB1	ICSAB	1	Fe	188.03	0.14	15	PASS
MB-68721	MBLK	1	Fe	0.0035	27.028	15	<PQL
LCS1-68721	LCS	1	Fe	0.11	0.66	15	PASS
N031080-001E	SAMP	1	Fe	0.0068	5.69	15	PASS
N031080-001E	SAMP	5	Fe	0.00049	136.87	15	<PQL
N031080-001E-PS	PS	1	Fe	0.12	1.13	15	PASS
N031080-001E-MS1	MS	1	Fe	0.1	0.34	15	PASS
N031080-001E-MSD1	MSD	1	Fe	0.11	0.72	15	PASS
N031080-002E	SAMP	1	Fe	0.02	3.5	15	PASS
N031081-001D	SAMP	1	Fe	1.18	0.18	15	PASS
N031081-002D	SAMP	1	Fe	0.048	1.74	15	PASS
CCV1	CCV	1	Fe	10.16	0.037	15	PASS
CCB1	CCB	1	Fe	-0.00079	146.41	15	<PQL
CCV2	CCV	1	Fe	9.95	0.28	15	PASS
CCB2	CCB	1	Fe	-0.00053	28.77	15	<PQL
ICSA2	ICSA	1	Fe	191.12	0.27	15	PASS
ICSAB2	ICSAB	1	Fe	185.72	0.13	15	PASS
CCV3	CCV	1	Fe	9.96	0.093	15	PASS
CCB3	CCB	1	Fe	-0.00048	179.93	15	<PQL

**RSD SUMMARY: 180716B**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CCV4	CCV	1	Fe	10	0.13	15	PASS
CCB4	CCB	1	Fe	-0.00075	81.046	15	<PQL
CCV5	CCV	1	Fe	9.94	0.098	15	PASS
CCB5	CCB	1	Fe	-0.0011	14.22	15	PASS
ICSA3	ICSA	1	Fe	189.27	0.55	15	PASS
ICSAB3	ICSAB	1	Fe	179.35	0.62	15	PASS
CCV6	CCV	1	Fe	9.85	0.025	15	PASS
CCB6	CCB	1	Fe	-0.00011	587.28	15	<PQL
CCV7	CCV	1	Fe	9.85	0.032	15	PASS
CCB7	CCB	1	Fe	-0.0007	94.33	15	<PQL
CCV8	CCV	1	Fe	10.01	0.032	15	PASS
CCB8	CCB	1	Fe	-0.00044	73.69	15	<PQL
ICSA4	ICSA	1	Fe	196.16	0.081	15	PASS
ICSAB4	ICSAB	1	Fe	179.47	0.14	15	PASS
CCV9	CCV	1	Fe	9.99	0.087	15	PASS
CCB9	CCB	1	Fe	-0.00027	137.16	15	<PQL
CCV10	CCV	1	Fe	10.071	0.048	15	PASS
CCB10	CCB	1	Fe	-0.00009	597.39	15	<PQL
CCV11	CCV	1	Fe	10.018	0.078	15	PASS
CCB11	CCB	1	Fe	-0.00062	70.83	15	<PQL
ICSA5	ICSA	1	Fe	191.15	0.34	15	PASS
ICSAB5	ICSAB	1	Fe	181.41	0.29	15	PASS
CaIBlk	IBLK	1	Mg	0	17.63	15	<PQL
Standard1	ICAL	1	Mg	0.1	1.24	15	PASS
Standard2	ICAL	1	Mg	1	0.43	15	PASS
Standard3	ICAL	1	Mg	2	0.39	15	PASS
Standard4	ICAL	1	Mg	5	0.32	15	PASS
Standard5	ICAL	1	Mg	7.5	0.14	15	PASS
Standard6	ICAL	1	Mg	10	0.01	15	PASS
Standard7	ICAL	1	Mg	20	0.34	15	PASS
ICV	ICV	1	Mg	10.01	0.17	15	PASS
ICB	ICB	1	Mg	-0.00052	166.42	15	<PQL
LLICV	CCV1	1	Mg	0.095	1.41	20	PASS
ICSA1	ICSA	1	Mg	465.97	0.27	15	PASS
ICSAB1	ICSAB	1	Mg	542.51	0.083	15	PASS
MB-68721	MBLK	1	Mg	0.0012	82.92	15	<PQL
LCS1-68721	LCS	1	Mg	10.34	0.7	15	PASS
N031080-001E	SAMP	1	Mg	25.77	0.38	15	PASS
N031080-001E	SAMP	5	Mg	5.92	0.42	15	PASS
N031080-001E-PS	PS	1	Mg	34.24	0.31	15	PASS
N031080-001E-MS1	MS	1	Mg	35.25	0.24	15	PASS
N031080-001E-MSD1	MSD	1	Mg	35.3	0.11	15	PASS

**RSD SUMMARY: 180716B**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
N031080-002E	SAMP	1	Mg	24.58	0.92	15	PASS
N031081-001D	SAMP	1	Mg	33.68	0.14	15	PASS
N031081-002D	SAMP	1	Mg	26.087	0.12	15	PASS
CCV1	CCV	1	Mg	10.23	0.18	15	PASS
CCB1	CCB	1	Mg	0.00004	567.92	15	<PQL
CCV2	CCV	1	Mg	10.018	0.12	15	PASS
CCB2	CCB	1	Mg	-0.00073	10.54	15	PASS
ICSA2	ICSA	1	Mg	471.24	0.22	15	PASS
ICSAB2	ICSAB	1	Mg	541.03	0.21	15	PASS
CCV3	CCV	1	Mg	10.041	0.036	15	PASS
CCB3	CCB	1	Mg	-0.00025	364.9	15	<PQL
CCV4	CCV	1	Mg	10.065	0.15	15	PASS
CCB4	CCB	1	Mg	-0.001	66.098	15	<PQL
CCV5	CCV	1	Mg	10.1	0.31	15	PASS
CCB5	CCB	1	Mg	-0.0012	27.34	15	<PQL
ICSA3	ICSA	1	Mg	469.88	0.53	15	PASS
ICSAB3	ICSAB	1	Mg	522.12	0.6	15	PASS
CCV6	CCV	1	Mg	10.2	0.15	15	PASS
CCB6	CCB	1	Mg	-0.0011	32.73	15	<PQL
CCV7	CCV	1	Mg	10.29	0.28	15	PASS
CCB7	CCB	1	Mg	-0.00072	84.59	15	<PQL
CCV8	CCV	1	Mg	10.52	0.19	15	PASS
CCB8	CCB	1	Mg	-0.00011	359.26	15	<PQL
ICSA4	ICSA	1	Mg	501.89	0.24	15	PASS
ICSAB4	ICSAB	1	Mg	529.3	0.27	15	PASS
CCV9	CCV	1	Mg	10.24	0.066	15	PASS
CCB9	CCB	1	Mg	-0.00059	66.98	15	<PQL
CCV10	CCV	1	Mg	10.21	0.073	15	PASS
CCB10	CCB	1	Mg	-0.0012	21.29	15	<PQL
CCV11	CCV	1	Mg	10.074	0.2	15	PASS
CCB11	CCB	1	Mg	-0.001	39.021	15	<PQL
ICSA5	ICSA	1	Mg	470.38	0.29	15	PASS
ICSAB5	ICSAB	1	Mg	522.83	0.29	15	PASS

**RSD SUMMARY: 180717A**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Na	0	103.37	15	<PQL
Standard1	ICAL	1	Na	0.1	6.055	15	PASS
Standard2	ICAL	1	Na	1	0.42	15	PASS
Standard3	ICAL	1	Na	5	0.31	15	PASS
Standard4	ICAL	1	Na	10	0.26	15	PASS
Standard5	ICAL	1	Na	20	0.22	15	PASS
Standard6	ICAL	1	Na	40	0.092	15	PASS
ICV	ICV	1	Na	9.97	0.35	15	PASS
ICB	ICB	1	Na	0.011	39.015	15	<PQL
ICSA1	ICSA	1	Na	0.01	36.3	15	<PQL
ICSAB1	ICSAB	1	Na	9.96	0.15	15	PASS
MB-68721	MBLK	1	Na	0.003	113.53	15	<PQL
LCS2-68721	LCS	1	Na	18.76	0.18	15	PASS
N031081-001D	SAMP	25	Na	20.28	0.16	15	PASS
N031081-001D	SAMP	125	Na	4.12	0.048	15	PASS
N031081-001D-PS	PS	25	Na	21.88	0.14	15	PASS
N031081-001D-MS2	MS	25	Na	21.96	0.044	15	PASS
N031081-001D-MSD2	MSD	25	Na	21.82	0.12	15	PASS
N031081-002D	SAMP	50	Na	28.49	0.12	15	PASS
CCV1	CCV	1	Na	9.86	0.18	15	PASS
CCB1	CCB	1	Na	0.011	41.37	15	<PQL
CCV2	CCV	1	Na	11.69	25.78	15	NR!
CCV2	CCV	1	Na	9.77	0.062	15	PASS
CCB2	CCB	1	Na	0.019	18.5	15	<PQL
CCV3	CCV	1	Na	9.71	0.17	15	PASS
CCB3	CCB	1	Na	0.0057	83.95	15	<PQL
CCV4	CCV	1	Na	10.29	0.12	15	PASS
CCB4	CCB	1	Na	0.0065	17.14	15	<PQL
ICSA2	ICSA	1	Na	0.0047	40.15	15	<PQL
ICSAB2	ICSAB	1	Na	10.44	0.074	15	PASS

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INJECTION LOG: 180716B**

**Instrument ID: ICP-02**

STANDARD CODE	
Standard1	MWST-180420A,0.5<50mL
Standard2	MWST-180420C
Standard3	MWST-180420E,5<50mL
Standard4	MWST-180420E,12.5<50mL
Standard5	MWST-180420E,15<40mL
Standard6	MWST-180420E,25<50mL
Standard7	MWST-180420E
ICV	MWST-180430E
CCV	MWST-180420E,25<50mL
ICSA/ICSAB	MWST-180430F/G
Int. Std. (Y)	MSST-180420B/A
PS Spike	MWST-180108A/ -180430G/ -180601A/ 180517A

MWST-180517E/-180430F/-180601B

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	07/16/2018	02:44:06 PM
2	Standard1	ICAL	1	07/16/2018	02:50:27 PM
3	Standard2	ICAL	1	07/16/2018	02:56:46 PM
11	Standard3	ICAL	1	07/16/2018	03:03:05 PM
12	Standard4	ICAL	1	07/16/2018	03:09:27 PM
6	Standard5	ICAL	1	07/16/2018	03:18:50 PM
7	Standard6	ICAL	1	07/16/2018	03:27:44 PM
8	Standard7	ICAL	1	07/16/2018	03:36:37 PM
9	ICV	ICV	1	07/16/2018	03:45:33 PM
1	ICB	ICB	1	07/16/2018	03:54:46 PM
2	LLICV	CCV1	1	07/16/2018	04:01:04 PM
4	ICSA1	ICSA	1	07/16/2018	04:07:24 PM
5	ICSAB1	ICSAB	1	07/16/2018	04:16:57 PM
98	MB-68721	MBLK	1	07/16/2018	04:25:32 PM
99	LCS1-68721	LCS	1	07/16/2018	04:31:55 PM
100	N031080-001E	SAMP	1	07/16/2018	04:41:18 PM
101	N031080-001E	SAMP	5	07/16/2018	04:50:43 PM
102	N031080-001E-PS	PS	1	07/16/2018	04:57:05 PM
103	N031080-001E-MS1	MS	1	07/16/2018	05:06:30 PM
104	N031080-001E-MSD1	MSD	1	07/16/2018	05:15:55 PM
105	N031080-002E	SAMP	1	07/16/2018	05:25:19 PM
106	N031081-001D	SAMP	1	07/16/2018	05:34:43 PM
107	N031081-002D	SAMP	1	07/16/2018	05:44:06 PM
7	CCV1	CCV	1	07/16/2018	05:53:30 PM
1	CCB1	CCB	1	07/16/2018	06:02:25 PM
38	MB-68796	MBLK	1	07/16/2018	06:08:45 PM
39	LCS-68796	LCS	1	07/16/2018	06:15:06 PM

*Nancy* 7/18/2018  
for

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
40	N031141-001B	SAMP	1	07/16/2018	06:24:28 PM
41	N031141-001B	SAMP	5	07/16/2018	06:33:16 PM
42	N031141-001B-PS	PS	1	07/16/2018	06:39:37 PM
43	N031141-001B-MS	MS	1	07/16/2018	06:45:28 PM
44	N031141-001B-MSD	MSD	1	07/16/2018	06:51:18 PM
7	CCV2	CCV	1	07/16/2018	09:08:05 PM
1	CCB2	CCB	1	07/16/2018	09:17:00 PM
4	ICSA2	ICSA	1	07/16/2018	09:23:18 PM
5	ICSAB2	ICSAB	1	07/16/2018	09:32:51 PM
61	MB-68834	MBLK	1	07/16/2018	09:51:36 PM
62	LCS-68834	LCS	1	07/16/2018	09:57:58 PM
63	N031185-001B	SAMP	1	07/16/2018	10:07:20 PM
64	N031185-001B	SAMP	5	07/16/2018	10:13:42 PM
65	N031185-001B-PS	PS	1	07/16/2018	10:20:03 PM
66	N031185-001B-MS	MS	1	07/16/2018	10:29:27 PM
67	N031185-001B-MSD	MSD	1	07/16/2018	10:38:49 PM
7	CCV3	CCV	1	07/16/2018	10:48:13 PM
1	CCB3	CCB	1	07/16/2018	10:57:09 PM
68	N031185-003B	SAMP	1	07/16/2018	11:03:33 PM
69	N031185-004B	SAMP	1	07/16/2018	11:12:55 PM
70	N031185-005B	SAMP	1	07/16/2018	11:22:18 PM
71	N031185-006B	SAMP	1	07/16/2018	11:31:41 PM
72	N031205-001B	SAMP	1	07/16/2018	11:41:04 PM
73	N031205-002B	SAMP	1	07/16/2018	11:50:26 PM
74	N031205-003B	SAMP	1	07/16/2018	11:56:50 PM
75	N031205-004B	SAMP	1	07/17/2018	12:06:12 AM
76	N031205-005B	SAMP	1	07/17/2018	12:15:35 AM
77	N031205-006B	SAMP	1	07/17/2018	12:24:57 AM
7	CCV4	CCV	1	07/17/2018	12:31:19 AM
1	CCB4	CCB	1	07/17/2018	12:40:13 AM
78	N031205-007B	SAMP	1	07/17/2018	12:46:32 AM
79	N031205-008B	SAMP	1	07/17/2018	12:52:53 AM
80	N031205-009B	SAMP	1	07/17/2018	12:59:15 AM
81	N031205-010B	SAMP	1	07/17/2018	01:08:38 AM
82	N031206-001B	SAMP	1	07/17/2018	01:18:00 AM
83	N031206-002B	SAMP	1	07/17/2018	01:27:24 AM
84	N031206-010B	SAMP	1	07/17/2018	01:36:46 AM
85	N031206-011B	SAMP	1	07/17/2018	01:43:07 AM
86	N031206-012B	SAMP	1	07/17/2018	01:49:29 AM
87	MB-68835	MBLK	1	07/17/2018	01:55:51 AM
7	CCV5	CCV	1	07/17/2018	02:02:12 AM
1	CCB5	CCB	1	07/17/2018	02:11:25 AM
4	ICSA3	ICSA	1	07/17/2018	02:17:43 AM
5	ICSAB3	ICSAB	1	07/17/2018	02:27:17 AM
88	LCS-68835	LCS	1	07/17/2018	02:36:22 AM
89	N031206-013B	SAMP	1	07/17/2018	02:45:45 AM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
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91	N031206-013B-PS	PS	1	07/17/2018	02:58:28 AM
92	N031206-013B-MS	MS	1	07/17/2018	03:07:51 AM
93	N031206-013B-MSD	MSD	1	07/17/2018	03:17:14 AM
94	N031206-014B	SAMP	1	07/17/2018	03:26:38 AM
95	N031206-015B	SAMP	1	07/17/2018	03:33:01 AM
96	N031206-016B	SAMP	1	07/17/2018	03:42:24 AM
97	N031206-017B	SAMP	1	07/17/2018	03:51:46 AM
7	CCV6	CCV	1	07/17/2018	04:01:10 AM
1	CCB6	CCB	1	07/17/2018	04:10:05 AM
109	N031206-019B	SAMP	1	07/17/2018	04:16:23 AM
110	MB-68854	MBLK	1	07/17/2018	04:22:45 AM
111	LCS-68854	LCS	1	07/17/2018	04:29:09 AM
112	N031217-001B	SAMP	1	07/17/2018	04:38:32 AM
113	N031217-001B	SAMP	5	07/17/2018	04:47:55 AM
114	N031217-001B-PS	PS	1	07/17/2018	04:54:18 AM
115	N031217-001B-MS	MS	1	07/17/2018	05:03:42 AM
116	N031217-001B-MSD	MSD	1	07/17/2018	05:13:05 AM
117	N031217-002B	SAMP	1	07/17/2018	05:22:30 AM
118	N031217-004B	SAMP	1	07/17/2018	05:31:56 AM
7	CCV7	CCV	1	07/17/2018	05:41:19 AM
1	CCB7	CCB	1	07/17/2018	05:50:14 AM
119	N031217-005B	SAMP	1	07/17/2018	05:56:32 AM
120	N031217-006B	SAMP	1	07/17/2018	06:05:57 AM
121	N031217-007B	SAMP	1	07/17/2018	06:15:21 AM
122	N031217-008B	SAMP	1	07/17/2018	06:24:44 AM
123	N031217-010B	SAMP	1	07/17/2018	06:34:08 AM
124	N031217-011B	SAMP	1	07/17/2018	06:43:32 AM
125	N031217-013B	SAMP	1	07/17/2018	06:52:56 AM
126	N031217-014B	SAMP	1	07/17/2018	07:02:19 AM
127	N031217-015B	SAMP	1	07/17/2018	07:11:42 AM
128	N031217-016B	SAMP	1	07/17/2018	07:21:05 AM
7	CCV8	CCV	1	07/17/2018	07:30:30 AM
1	CCB8	CCB	1	07/17/2018	07:39:24 AM
4	ICSA4	ICSA	1	07/17/2018	07:45:42 AM
5	ICSAB4	ICSAB	1	07/17/2018	07:55:09 AM
38	MB-68796	MBLK	1	07/17/2018	08:04:13 AM
39	LCS-68796	LCS	1	07/17/2018	08:10:31 AM
40	N031141-001B	SAMP	1	07/17/2018	08:19:51 AM
41	N031141-001B	SAMP	5	07/17/2018	08:26:11 AM
42	N031141-001B-PS	PS	1	07/17/2018	08:32:31 AM
43	N031141-001B-MS	MS	1	07/17/2018	08:41:52 AM
44	N031141-001B-MSD	MSD	1	07/17/2018	08:51:14 AM
45	N031155-001B	SAMP	1	07/17/2018	09:00:34 AM
46	N031155-012B	SAMP	1	07/17/2018	09:06:55 AM
47	N031155-013B	SAMP	1	07/17/2018	09:16:17 AM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
7	CCV9	CCV	1	07/17/2018	09:25:41 AM
1	CCB9	CCB	1	07/17/2018	09:34:36 AM
48	N031155-014B	SAMP	1	07/17/2018	09:40:54 AM
49	N031155-015B	SAMP	1	07/17/2018	09:50:16 AM
50	N031155-016B	SAMP	1	07/17/2018	09:59:39 AM
51	N031155-017B	SAMP	1	07/17/2018	10:06:02 AM
52	N031155-018B	SAMP	1	07/17/2018	10:15:22 AM
53	N031155-019B	SAMP	1	07/17/2018	10:21:44 AM
54	N031155-020B	SAMP	1	07/17/2018	10:31:06 AM
55	N031156-009B	SAMP	1	07/17/2018	10:37:27 AM
56	N031156-010B	SAMP	1	07/17/2018	10:43:49 AM
57	N031156-011B	SAMP	1	07/17/2018	10:50:08 AM
7	CCV10	CCV	1	07/17/2018	10:56:29 AM
1	CCB10	CCB	1	07/17/2018	11:05:25 AM
58	N031157-001B	SAMP	1	07/17/2018	11:11:43 AM
59	N031157-002B	SAMP	1	07/17/2018	11:18:02 AM
60	N031157-003B	SAMP	1	07/17/2018	11:24:23 AM
88	LCS-68835	LCS	1	07/17/2018	11:30:45 AM
7	CCV11	CCV	1	07/17/2018	11:40:08 AM
1	CCB11	CCB	1	07/17/2018	11:49:03 AM
4	ICSA5	ICSA	1	07/17/2018	11:55:22 AM
5	ICSAB5	ICSAB	1	07/17/2018	12:04:55 PM

**INJECTION LOG: 180717A**

**Instrument ID: ICP-02**

STANDARD CODE	
Standard1	MWST-180601K0.025<50mL
Standard2	MWST-180601K,0.25<50mL
Standard3	MWST-180601K,1.25<50mL
Standard4	MWST-180601K,2.5<50mL
Standard5	MWST-180601K,5<50mL
Standard6	MWST-180601K,10<50mL
ICV	MWST-180430H
CCV	MWST-180601K,2.5<50mL
ICSA/ICSAB	MWST-180430F/ MWST-180601L
Int. Std. (Sc):	MSST-180420B/A
PS Spike	MSST-140120B/ -130329E/ -170116A

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	07/17/2018	12:17:44 PM
26	Standard1	ICAL	1	07/17/2018	12:21:01 PM
27	Standard2	ICAL	1	07/17/2018	12:24:18 PM
28	Standard3	ICAL	1	07/17/2018	12:28:06 PM
29	Standard4	ICAL	1	07/17/2018	12:31:57 PM
30	Standard5	ICAL	1	07/17/2018	12:35:52 PM
31	Standard6	ICAL	1	07/17/2018	12:39:56 PM
32	ICV	ICV	1	07/17/2018	12:44:02 PM
1	ICB	ICB	1	07/17/2018	12:47:57 PM
33	ICSA1	ICSA	1	07/17/2018	12:51:15 PM
34	ICSAB1	ICSAB	1	07/17/2018	12:54:33 PM
98	MB-68721	MBLK	1	07/17/2018	12:58:28 PM
99	LCS2-68721	LCS	1	07/17/2018	01:01:48 PM
100	N031081-001D	SAMP	25	07/17/2018	01:05:54 PM
101	N031081-001D	SAMP	125	07/17/2018	01:09:16 PM
102	N031081-001D-PS	PS	25	07/17/2018	01:12:36 PM
103	N031081-001D-MS2	MS	25	07/17/2018	01:16:27 PM
104	N031081-001D-MSD2	MSD	25	07/17/2018	01:20:20 PM
105	N031081-002D	SAMP	50	07/17/2018	01:24:13 PM
38	MB-68757	MBLK	1	07/17/2018	01:27:34 PM
39	LCS2-68757	LCS	1	07/17/2018	01:30:53 PM
29	CCV1	CCV	1	07/17/2018	01:34:48 PM
1	CCB1	CCB	1	07/17/2018	01:38:43 PM
40	N031137-001A	SAMP	10	07/17/2018	01:42:01 PM
45	N031137-002A	SAMP	10	07/17/2018	01:45:50 PM
41	N031137-003A	SAMP	1	07/17/2018	01:49:40 PM
42	N031137-004A	SAMP	1	07/17/2018	01:53:30 PM
43	N031137-005A	SAMP	1	07/17/2018	01:57:22 PM
44	N031137-006A	SAMP	1	07/17/2018	02:01:11 PM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
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47	N031137-008A	SAMP	1	07/17/2018	02:08:55 PM
48	N031137-009A	SAMP	1	07/17/2018	02:12:47 PM
49	N031137-010A	SAMP	1	07/17/2018	02:16:39 PM
29	CCV2	CCV	1	07/17/2018	02:20:33 PM
29	CCV2	CCV	1	07/17/2018	02:23:32 PM
1	CCB2	CCB	1	07/17/2018	02:27:26 PM
50	N031137-011A	SAMP	1	07/17/2018	02:30:43 PM
51	N031137-012A	SAMP	1	07/17/2018	02:34:35 PM
52	N031137-013A	SAMP	1	07/17/2018	02:38:27 PM
53	N031137-014A	SAMP	1	07/17/2018	02:42:18 PM
54	N031137-015A	SAMP	1	07/17/2018	02:46:08 PM
55	N031137-016A	SAMP	1	07/17/2018	02:49:59 PM
56	N031137-017A	SAMP	1	07/17/2018	02:53:48 PM
57	N031137-018A	SAMP	1	07/17/2018	02:57:38 PM
58	N031137-019A	SAMP	1	07/17/2018	03:01:28 PM
59	N031137-020A	SAMP	1	07/17/2018	03:05:18 PM
2	CCV3	CCV	1	07/17/2018	03:09:07 PM
1	CCB3	CCB	1	07/17/2018	03:13:01 PM
60	N031137-001A	SAMP	1	07/17/2018	03:16:17 PM
61	N031137-002A	SAMP	5	07/17/2018	03:20:10 PM
62	N031137-002A	SAMP	25	07/17/2018	03:24:01 PM
63	N031137-002A-PS	PS	5	07/17/2018	03:27:21 PM
64	N031137-002A-MS2	MS	5	07/17/2018	03:31:11 PM
65	N031137-002A-MSD2	MSD	5	07/17/2018	03:35:02 PM
66	MB-68758	MBLK	1	07/17/2018	03:38:53 PM
67	LCS2-68758	LCS	1	07/17/2018	03:42:12 PM
68	N031137-021A	SAMP	1	07/17/2018	03:46:08 PM
69	N031137-022A	SAMP	1	07/17/2018	03:49:59 PM
2	CCV4	CCV	1	07/17/2018	04:03:12 PM
1	CCB4	CCB	1	07/17/2018	04:07:06 PM
3	ICSA2	ICSA	1	07/17/2018	04:10:23 PM
4	ICSAB2	ICSAB	1	07/17/2018	04:13:41 PM
70	N031137-023A	SAMP	1	07/17/2018	04:17:38 PM
71	N031137-024A	SAMP	1	07/17/2018	04:21:28 PM
72	N031137-025A	SAMP	1	07/17/2018	04:25:19 PM
73	N031137-026A	SAMP	1	07/17/2018	04:29:20 PM
74	N031137-027A	SAMP	1	07/17/2018	04:33:12 PM
75	N031137-028A	SAMP	1	07/17/2018	04:37:04 PM
76	N031137-029A	SAMP	1	07/17/2018	04:40:54 PM
77	N031137-030A	SAMP	1	07/17/2018	04:44:48 PM
78	N031137-031A	SAMP	1	07/17/2018	04:48:39 PM
79	N031137-032A	SAMP	1	07/17/2018	04:52:30 PM
2	CCV5	CCV	1	07/17/2018	04:56:20 PM
1	CCB5	CCB	1	07/17/2018	05:00:29 PM
80	N031137-033A	SAMP	1	07/17/2018	05:03:47 PM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
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82	N031137-035A	SAMP	1	07/17/2018	05:11:31 PM
83	N031137-036A	SAMP	1	07/17/2018	05:15:22 PM
84	N031137-037A	SAMP	1	07/17/2018	05:19:13 PM
85	N031137-038A	SAMP	1	07/17/2018	05:23:04 PM
86	N031137-039A	SAMP	1	07/17/2018	05:26:56 PM
87	N031137-040A	SAMP	1	07/17/2018	05:30:47 PM
88	N031137-022A	SAMP	5	07/17/2018	05:34:38 PM
89	N031137-022A-PS	PS	1	07/17/2018	05:38:29 PM
2	CCV6	CCV	1	07/17/2018	05:42:25 PM
1	CCB6	CCB	1	07/17/2018	05:46:19 PM
90	N031137-022A-MS2	MS	1	07/17/2018	05:49:36 PM
91	N031137-022A-MSD2	MSD	1	07/17/2018	05:53:33 PM
92	MB-68759	MBLK	1	07/17/2018	05:57:30 PM
93	LCS2-68759	LCS	1	07/17/2018	06:00:50 PM
94	N031137-041A	SAMP	1	07/17/2018	06:04:47 PM
95	N031137-042A	SAMP	1	07/17/2018	06:08:38 PM
96	N031137-043A	SAMP	1	07/17/2018	06:12:29 PM
97	N031137-044A	SAMP	1	07/17/2018	06:16:20 PM
98	N031137-045A	SAMP	1	07/17/2018	06:20:11 PM
99	N031137-046A	SAMP	1	07/17/2018	06:24:03 PM
2	CCV7	CCV	1	07/17/2018	06:27:55 PM
1	CCB7	CCB	1	07/17/2018	06:31:50 PM
100	N031137-047A	SAMP	1	07/17/2018	06:35:07 PM
101	N031137-048A	SAMP	1	07/17/2018	06:38:58 PM
102	N031137-049A	SAMP	1	07/17/2018	06:42:50 PM
103	N031137-050A	SAMP	1	07/17/2018	06:46:43 PM
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106	N031137-053A	SAMP	1	07/17/2018	06:58:19 PM
107	N031137-054A	SAMP	1	07/17/2018	07:02:14 PM
108	N031137-055A	SAMP	1	07/17/2018	07:06:06 PM
109	N031137-056A	SAMP	1	07/17/2018	07:09:59 PM
2	CCV8	CCV	1	07/17/2018	07:13:52 PM
1	CCB8	CCB	1	07/17/2018	07:17:47 PM
3	ICSA3	ICSA	1	07/17/2018	07:21:04 PM
4	ICSAB3	ICSAB	1	07/17/2018	07:24:22 PM
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111	N031138-002A	SAMP	1	07/17/2018	07:32:11 PM
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113	N031138-004A	SAMP	1	07/17/2018	07:39:58 PM
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115	N031137-042A-PS	PS	1	07/17/2018	07:47:42 PM
116	N031137-042A-MS2	MS	1	07/17/2018	07:51:40 PM
117	N031137-042A-MSD2	MSD	1	07/17/2018	07:55:36 PM
118	MB-68760	MBLK	1	07/17/2018	07:59:34 PM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
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2	CCV19	CCV	1	07/17/2018	08:06:52 PM
1	CCB9	CCB	1	07/17/2018	08:10:46 PM
120	N031138-005A	SAMP	1	07/17/2018	08:14:04 PM
121	N031138-006A	SAMP	1	07/17/2018	08:17:56 PM
122	N031138-007A	SAMP	1	07/17/2018	08:21:51 PM
123	N031138-008A	SAMP	1	07/17/2018	08:25:48 PM
124	N031138-009A	SAMP	1	07/17/2018	08:29:42 PM
125	N031138-010A	SAMP	1	07/17/2018	09:11:30 PM
126	N031138-011A	SAMP	1	07/17/2018	09:15:23 PM
127	N031138-012A	SAMP	1	07/17/2018	09:19:16 PM
128	N031138-013A	SAMP	1	07/17/2018	09:23:10 PM
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2	CCV10	CCV	1	07/17/2018	09:30:58 PM
1	CCB10	CCB	1	07/17/2018	09:34:52 PM
130	N031138-015A	SAMP	1	07/17/2018	09:38:39 PM
131	N031138-016A	SAMP	1	07/17/2018	09:42:33 PM
132	N031138-017A	SAMP	1	07/17/2018	09:46:25 PM
133	N031138-018A	SAMP	1	07/17/2018	09:50:19 PM
134	N031138-019A	SAMP	1	07/17/2018	09:54:13 PM
135	N031138-020A	SAMP	1	07/17/2018	09:58:07 PM
136	N031138-021A	SAMP	1	07/17/2018	10:02:01 PM
137	N031138-022A	SAMP	1	07/17/2018	10:05:56 PM
138	N031138-023A	SAMP	1	07/17/2018	10:09:50 PM
139	N031138-024A	SAMP	1	07/17/2018	10:30:48 PM
2	CCV11	CCV	1	07/17/2018	10:34:41 PM
1	CCB11	CCB	1	07/17/2018	10:38:35 PM
140	N031138-006A	SAMP	5	07/17/2018	10:42:22 PM
141	N031138-006A-PS	PS	1	07/17/2018	10:46:17 PM
142	N031138-006A-MS2	MS	1	07/17/2018	10:50:09 PM
143	N031138-006A-MSD2	MSD	1	07/17/2018	10:54:03 PM
144	MB-68761	MBLK	1	07/17/2018	10:58:01 PM
145	LCS2-68761	LCS	1	07/17/2018	11:01:52 PM
146	N031138-025A	SAMP	1	07/17/2018	11:05:43 PM
147	N031138-026A	SAMP	1	07/17/2018	11:09:42 PM
148	N031138-027A	SAMP	1	07/17/2018	11:13:36 PM
149	N031138-028A	SAMP	1	07/17/2018	11:17:30 PM
2	CCV12	CCV	1	07/17/2018	11:21:25 PM
1	CCB12	CCB	1	07/17/2018	11:25:45 PM
3	ICSA4	ICSA	1	07/17/2018	11:29:33 PM
4	ICSAB4	ICSAB	1	07/17/2018	11:33:22 PM
150	N031138-029A	SAMP	1	07/17/2018	11:37:18 PM
151	N031138-030A	SAMP	1	07/17/2018	11:41:12 PM
152	N031138-031A	SAMP	1	07/17/2018	11:45:07 PM
153	N031138-032A	SAMP	1	07/17/2018	11:49:02 PM
154	N031138-033A	SAMP	1	07/17/2018	11:52:57 PM



A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
155	N031138-034A	SAMP	1	07/17/2018	11:56:55 PM

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **7/6/2018 7:27:22 A**  
 Prep End Date: **7/6/2018 12:00:00 P**

Reviewed/ Date: *Handwritten* **7/18/2018**

Page 1 of 1

Prep Batch **68721** Prep Code: **200.7\_PR**

Initials/ Date: *Handwritten* **7/18/2018**  
 Technician: **Claire Ignacio**

Prep Factor Units Temp. (°C): Location:  
 mL / mL **94.8** **02-11**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS1-68721	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
LCS2-68721	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-68721	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N031080-001E	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031080-001E-MS	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031080-001E-MS	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031080-002E	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031081-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031081-001D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031081-001D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031081-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
10013	HYDROCHLORIC ACID
10023	NITRIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MSST-130329D	Sodium	LCS,MS,MSD	0.05
MSST-130329E	Potassium	LCS,MS,MSD	0.05
MWST-180430F	ICP Solution B	LCS,MS,MSD	0.5
MWST-180517E	ICP Solution A	LCS,MS,MSD	0.5
MWST-180601B	ICP Solution C	LCS,MS,MSD	0.5

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**INITIAL CALIBRATION SUMMARY: 180716B**

**Instrument ID: ICP-02**

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
<b>Magnesium</b>								
CalBlk	07/16/2018	02:44:06 PM	Mg	279.079	98	0.00	mg/L	
Standard1	07/16/2018	02:50:27 PM	Mg	279.079	1217	0.1000	mg/L	
Standard2	07/16/2018	02:56:46 PM	Mg	279.079	12509	1.000	mg/L	
Standard3	07/16/2018	03:03:05 PM	Mg	279.079	26489	2.000	mg/L	
Standard4	07/16/2018	03:09:27 PM	Mg	279.079	66034	5.000	mg/L	
Standard5	07/16/2018	03:18:50 PM	Mg	279.079	96346	7.500	mg/L	
Standard6	07/16/2018	03:27:44 PM	Mg	279.079	127833	10.000	mg/L	
Standard7	07/16/2018	03:36:37 PM	Mg	279.079	252555	20.000	mg/L	0.9999
<b>Calcium</b>								
CalBlk	07/16/2018	02:44:06 PM	Ca	227.546	-100	0.00	mg/L	
Standard1	07/16/2018	02:50:27 PM	Ca	227.546	61	0.2000	mg/L	
Standard2	07/16/2018	02:56:46 PM	Ca	227.546	332	1.000	mg/L	
Standard3	07/16/2018	03:03:05 PM	Ca	227.546	685	2.000	mg/L	
Standard4	07/16/2018	03:09:27 PM	Ca	227.546	1730	5.000	mg/L	
Standard5	07/16/2018	03:18:50 PM	Ca	227.546	2529	7.500	mg/L	
Standard6	07/16/2018	03:27:44 PM	Ca	227.546	3374	10.000	mg/L	
Standard7	07/16/2018	03:36:37 PM	Ca	227.546	6796	20.000	mg/L	1.0000
<b>Iron</b>								
CalBlk	07/16/2018	02:44:06 PM	Fe	273.953	-24	0.00	mg/L	
Standard1	07/16/2018	02:50:27 PM	Fe	273.953	558	0.0200	mg/L	
Standard2	07/16/2018	02:56:46 PM	Fe	273.953	1817	0.050	mg/L	
Standard3	07/16/2018	03:03:05 PM	Fe	273.953	58730	2.000	mg/L	
Standard4	07/16/2018	03:09:27 PM	Fe	273.953	146940	5.000	mg/L	
Standard5	07/16/2018	03:18:50 PM	Fe	273.953	215326	7.500	mg/L	
Standard6	07/16/2018	03:27:44 PM	Fe	273.953	286180	10.000	mg/L	
Standard7	07/16/2018	03:36:37 PM	Fe	273.953	561624	20.000	mg/L	0.9999

INITIAL CALIBRATION SUMMARY: 180717A

Instrument ID: ICP-02

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
<b>Sodium</b>								
CalBlk	07/17/2018	12:17:44 PM	Na	589.594	7	0.00	mg/L	
Standard1	07/17/2018	12:21:01 PM	Na	589.594	453	0.1000	mg/L	
Standard2	07/17/2018	12:24:18 PM	Na	589.594	3659	1.000	mg/L	
Standard3	07/17/2018	12:28:06 PM	Na	589.594	18321	5.000	mg/L	
Standard4	07/17/2018	12:31:57 PM	Na	589.594	36074	10.000	mg/L	
Standard5	07/17/2018	12:35:52 PM	Na	589.594	72067	20.000	mg/L	
Standard6	07/17/2018	12:39:56 PM	Na	589.594	145733	40.000	mg/L	1.0000

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126268</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R126268</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080638</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9919.395	500	10000	0	99.2	90	110				
Iron	10089.306	20	10000	0	101	90	110				
Magnesium	10009.659	100	10000	0	100	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126268</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126268</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080640</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	204.790	500	200.0	0	102	80	120				
Iron	19.416	20	20.00	0	97.1	80	120				
Magnesium	95.392	100	100.0	0	95.4	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126268</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126268</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080653</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	10025.319	500	10000	0	100	90	110				
Iron	10156.581	20	10000	0	102	90	110				
Magnesium	10235.270	100	10000	0	102	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126268</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126268</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080662</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9915.846	500	10000	0	99.2	90	110				
Iron	9947.312	20	10000	0	99.5	90	110				
Magnesium	10018.105	100	10000	0	100	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126272</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R126272</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081432</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9968.262	500	10000	0	99.7	90	110				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126272</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126272</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081446</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9854.986	500	10000	0	98.5	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126272</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126272</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081459</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9773.137	500	10000	0	97.7	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126272</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126272</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081471</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9713.268	500	10000	0	97.1	90	110				

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126272</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126272</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081483</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	10289.932	500	10000	0	103	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126268</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R126268</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080639</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Calcium	-21.778152	500									
Iron	-0.366097	20									
Magnesium	-0.522284	100									

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126268</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126268</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080654</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Calcium	4.649	500									
Iron	-0.791998	20									
Magnesium	0.044	100									

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126268</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126268</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080663</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Calcium	2.704	500									
Iron	-0.533885	20									
Magnesium	-0.730198	100									

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126272</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R126272</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081433</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium	11.323	500
--------	--------	-----

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126272</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126272</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081447</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium	11.225	500
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Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126272</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126272</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081460</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium	19.225	500
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Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126272</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126272</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081472</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium	5.733	500
--------	-------	-----

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126272</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126272</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081484</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium	6.481	500
--------	-------	-----

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126268</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126268</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080641</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	492044.190	50	500000	0	98.4	80	120				
Calcium	483559.531	500	500000	0	96.7	80	120				
Iron	190126.925	20	200000	0	95.1	80	120				
Magnesium	465971.974	100	500000	0	93.2	80	120				

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126268</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R126268</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080642</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	545064.363	50	500000	0	109	80	120				
Calcium	548113.842	500	500000	0	110	80	120				
Iron	188029.762	20	200000	0	94.0	80	120				
Magnesium	542513.746	100	500000	0	109	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126268</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126268</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080664</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	495268.126	50	500000	0	99.1	80	120				
Calcium	484730.705	500	500000	0	96.9	80	120				
Iron	191120.413	20	200000	0	95.6	80	120				
Magnesium	471237.633	100	500000	0	94.2	80	120				

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126268</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R126268</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>7/16/2018</b>	SeqNo: <b>3080665</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	544688.456	50	500000	0	109	80	120				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID	ICSAB2	SampType:	ICSAB	TestCode:	200.7_WDPG			Units:	µg/L		Prep Date:	RunNo: 126268	
Client ID:	ICSAB	Batch ID:	R126268	TestNo:	EPA 200.7			Analysis Date:	7/16/2018		SeqNo:	3080665	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Calcium	546600.423	500	500000	0	109	80	120						
Iron	185719.999	20	200000	0	92.9	80	120						
Magnesium	541034.409	100	500000	0	108	80	120						

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126272</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126272</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081434</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium	10.469	500									
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126272</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126272</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081434</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium	9956.911	500	10000	0	99.6	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126272</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126272</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081485</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium	4.701	500									
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126272</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126272</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>7/17/2018</b>	SeqNo: <b>3081486</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium	10444.181	500	10000	0	104	80	120				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |



# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INTERNAL STANDARD: 180716B**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
CalBlk	IBLK	1	1	100	65-125	PASS
Standard1	ICAL	1	1.0011	100.11	65-125	PASS
Standard2	ICAL	1	1.13	113.13	65-125	PASS
Standard3	ICAL	1	1.0038	100.38	65-125	PASS
Standard4	ICAL	1	1	99.69	65-125	PASS
Standard5	ICAL	1	0.99	99.4	65-125	PASS
Standard6	ICAL	1	0.99	99.16	65-125	PASS
Standard7	ICAL	1	0.99	98.56	65-125	PASS
ICV	ICV	1	1	99.62	65-125	PASS
ICB	ICB	1	1	99.57	65-125	PASS
LLICV	CCV1	1	1	99.74	65-125	PASS
ICSA1	ICSA	1	1.05	104.95	65-125	PASS
ICSAB1	ICSAB	1	0.86	85.63	65-125	PASS
MB-68721	MBLK	1	1	99.59	65-125	PASS
LCS1-68721	LCS	1	0.92	92.42	65-125	PASS
N031080-001E	SAMP	1	0.91	90.78	65-125	PASS
N031080-001E	SAMP	5	0.94	94.081	65-125	PASS
N031080-001E-PS	PS	1	0.9	90.17	65-125	PASS
N031080-001E-MS1	MS	1	0.89	89.27	65-125	PASS
N031080-001E-MSD1	MSD	1	0.9	89.71	65-125	PASS
N031080-002E	SAMP	1	0.96	96.15	65-125	PASS
N031081-001D	SAMP	1	1.0082	100.82	65-125	PASS
N031081-002D	SAMP	1	0.92	92.41	65-125	PASS
CCV1	CCV	1	1.0091	100.91	65-125	PASS
CCB1	CCB	1	1.0045	100.45	65-125	PASS
CCV2	CCV	1	1.036	103.55	65-125	PASS
CCB2	CCB	1	1.013	101.27	65-125	PASS
ICSA2	ICSA	1	1.0049	100.49	65-125	PASS
ICSAB2	ICSAB	1	0.88	88.094	65-125	PASS
CCV3	CCV	1	1.037	103.71	65-125	PASS
CCB3	CCB	1	1.023	102.28	65-125	PASS
CCV4	CCV	1	1.035	103.52	65-125	PASS
CCB4	CCB	1	1.023	102.26	65-125	PASS
CCV5	CCV	1	1.029	102.87	65-125	PASS
CCB5	CCB	1	1.022	102.2	65-125	PASS
ICSA3	ICSA	1	1.01	101	65-125	PASS
ICSAB3	ICSAB	1	0.89	89.4	65-125	PASS
CCV6	CCV	1	1.057	105.69	65-125	PASS
CCB6	CCB	1	1.042	104.21	65-125	PASS
CCV7	CCV	1	1.061	106.07	65-125	PASS
CCB7	CCB	1	1.06	105.95	65-125	PASS

**INTERNAL STANDARD: 180716B**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
CCV8	CCV	1	1.044	104.39	65-125	PASS
CCB8	CCB	1	1.042	104.25	65-125	PASS
ICSA4	ICSA	1	0.99	99.24	65-125	PASS
ICSAB4	ICSAB	1	0.9	89.75	65-125	PASS
CCV9	CCV	1	1.044	104.37	65-125	PASS
CCB9	CCB	1	1.063	106.34	65-125	PASS
CCV10	CCV	1	1.036	103.61	65-125	PASS
CCB10	CCB	1	1.055	105.46	65-125	PASS
CCV11	CCV	1	1.045	104.52	65-125	PASS
CCB11	CCB	1	1.034	103.44	65-125	PASS
ICSA5	ICSA	1	1.018	101.77	65-125	PASS
ICSAB5	ICSAB	1	0.9	90.06	65-125	PASS

INTERNAL STANDARD: 180717A

Instrument ID: ICP-02

Sample Name	Type	DF	Sc, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
CalBlk	IBLK	1	1	100	65-125	PASS
Standard1	ICAL	1	0.97	96.64	65-125	PASS
Standard2	ICAL	1	0.98	97.81	65-125	PASS
Standard3	ICAL	1	0.96	96.33	65-125	PASS
Standard4	ICAL	1	0.94	94.41	65-125	PASS
Standard5	ICAL	1	0.93	93.4	65-125	PASS
Standard6	ICAL	1	0.92	91.93	65-125	PASS
ICV	ICV	1	0.94	94.23	65-125	PASS
ICB	ICB	1	0.98	97.71	65-125	PASS
ICSA1	ICSA	1	0.96	95.58	65-125	PASS
ICSAB1	ICSAB	1	0.94	94.3	65-125	PASS
MB-68721	MBLK	1	0.96	95.81	65-125	PASS
LCS2-68721	LCS	1	1.048	104.75	65-125	PASS
N031081-001D	SAMP	25	0.95	95.031	65-125	PASS
N031081-001D	SAMP	125	0.95	95.42	65-125	PASS
N031081-001D-PS	PS	25	0.95	94.87	65-125	PASS
N031081-001D-MS2	MS	25	0.96	95.77	65-125	PASS
N031081-001D-MSD2	MSD	25	0.95	94.89	65-125	PASS
N031081-002D	SAMP	50	0.95	94.59	65-125	PASS
CCV1	CCV	1	0.94	93.89	65-125	PASS
CCB1	CCB	1	0.98	97.76	65-125	PASS
CCV2	CCV	1	0.35	34.95	65-125	NR!
CCV2	CCV	1	0.97	96.63	65-125	PASS
CCB2	CCB	1	1	99.9	65-125	PASS
CCV3	CCV	1	0.97	96.51	65-125	PASS
CCB3	CCB	1	0.98	97.78	65-125	PASS
CCV4	CCV	1	0.95	95.46	65-125	PASS
CCB4	CCB	1	0.99	98.71	65-125	PASS
ICSA2	ICSA	1	0.98	98.043	65-125	PASS
ICSAB2	ICSAB	1	0.95	94.86	65-125	PASS

# SERIAL DILUTION/ POST DIGESTION SPIKE



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

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3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-Metals in Water**

Work Order No.: N031081  
Test Method: EPA 200.7  
Analysis Date: 7/16/2018

**Dilution Test Summary**

Matrix: Water  
Batch No.: 68721

Instrument ID: ICP-02  
Instrument Description: Perkin Elmer Optima DV Series

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Fe. The calculated concentration is <25RL.

Dilution test failed for Mg. However, PS passed criteria.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N031080-001E DT 5X	Calcium	ug/L	210618.9	PASS	198185.7	6.27%	10
N031080-001E DT 5X	Iron	ug/L	0	NA	0		10
N031080-001E DT 5X	Magnesium	ug/L	29603.25	FAIL	25770.44	14.87%	10

Note: NA - Not applicable

**ASSET Laboratories**

**ICP-Metals in Water**

Work Order No.: N031081  
Test Method: EPA 200.7  
Analysis Date: 7/17/2018

**Dilution Test Summary**

Matrix: Water  
Batch No.: 68721

Instrument ID: ICP-02  
Instrument Description: Perkin Elmer Optima DV Series

Comments:

Analyzed By: Mary Claire Ignacio

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Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N031081-001D DT 125X	Sodium	ug/L	514489.1	PASS	507058.1	1.47%	10

Note: NA - Not applicable

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPPB**

Sample ID	<b>N031080-001E-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>200.7_WDPG</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>126268</b>		
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>68721</b>	TestNo:	<b>EPA 200.7</b>			Analysis Date:	<b>7/16/2018</b>	SeqNo:	<b>3080647</b>		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium		203307.460		500	10000	198200	51.2	80	120				S
Iron		124.418		20	100.0	0	124	80	120				S
Magnesium		34242.778		100	10000	25770	84.7	80	120				

Sample ID	<b>N031081-001D-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>200.7_WDPG</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>126272</b>		
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>68721</b>	TestNo:	<b>EPA 200.7</b>			Analysis Date:	<b>7/17/2018</b>	SeqNo:	<b>3081440</b>		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium		547096.321		12000	20000	507100	200	80	120				S

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference



# MDL STUDY



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Metals by ICP**  
 Method Number: EPA 200.7/ 6010  
 Analysis Date(s): 10/6, 10/7,11/10/17  
 Analyst: Mary Claire Ignacio

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **ICP-02**

Acceptance Criteria: MDL < spike < 10XMDL

Analyte	Wavelength	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	MDL	PQL
Ag	328.069	0.0033	0.0031	0.0033	0.0033	0.0031	0.0030	0.0047	0.003	0.00061604	<b>0.001936</b>	0.003
Al	237.312	0.0664	0.0603	0.0656	0.0650	0.0658	0.0660	0.0946	0.050	0.01254823	<b>0.039439</b>	0.050
As	188.983	0.0131	0.0089	0.0120	0.0089	0.0060	0.0102	0.0080	0.010	0.00223806	<b>0.007034</b>	0.010
B	249.679	0.1491	0.1267	0.1281	0.1467	0.1261	0.1195	0.1015	0.100	0.01801843	<b>0.056632</b>	0.100
Ba	233.529	0.0033	0.0031	0.0033	0.0031	0.0032	0.0030	0.0024	0.003	0.00033070	<b>0.001039</b>	0.003
Be	313.104	0.0012	0.0011	0.0012	0.0012	0.0011	0.0011	0.0011	0.001	0.00006873	<b>0.000216</b>	0.001
Ca	227.546	0.2381	0.2231	0.2559	0.2299	0.2194	0.2473	0.2691	0.200	0.02202408	<b>0.069222</b>	0.200
Cd	214.437	0.0031	0.0029	0.0031	0.0032	0.0031	0.0031	0.0025	0.003	0.00027049	<b>0.000850</b>	0.003
Co	228.614	0.0030	0.0028	0.0030	0.0031	0.0031	0.0031	0.0027	0.003	0.00014491	<b>0.000455</b>	0.003
Cr	267.719	0.0009	0.0008	0.0009	0.0012	0.0012	0.0013	0.0009	0.001	0.00017120	<b>0.000538</b>	0.001
Fe	273.953	0.0255	0.0226	0.0242	0.0255	0.0252	0.0248	0.0387	0.020	0.00552308	<b>0.017359</b>	0.020
Mg	279.079	0.1124	0.1052	0.1129	0.1315	0.1305	0.1314	0.1435	0.100	0.01532024	<b>0.048152</b>	0.100
Mn	257.607	0.0119	0.0111	0.0120	0.0122	0.0121	0.0122	0.0099	0.010	0.00098403	<b>0.003093</b>	0.010
Mo	202.03	0.0079	0.0068	0.0067	0.0065	0.0065	0.0062	0.0057	0.005	0.00083918	<b>0.002638</b>	0.005
Ni	231.604	0.0061	0.0056	0.0062	0.0060	0.0060	0.0062	0.0045	0.005	0.00062690	<b>0.001970</b>	0.005
Pb	220.351	0.0124	0.0117	0.0127	0.0115	0.0120	0.0118	0.0090	0.010	0.00126325	<b>0.003970</b>	0.010
Sb	206.836	0.0102	0.0095	0.0104	0.0112	0.0117	0.0111	0.0080	0.010	0.00117407	<b>0.003690</b>	0.010
Se	196.025	0.0102	0.0087	0.0114	0.0136	0.0144	0.0136	0.0075	0.010	0.00251341	<b>0.007900</b>	0.010
Sn	189.927	0.0095	0.0084	0.0090	0.0124	0.0126	0.0129	0.0099	0.010	0.00175765	<b>0.005524</b>	0.010
Ti	334.943	0.0114	0.0106	0.0115	0.0115	0.0115	0.0115	0.0098	0.010	0.00074093	<b>0.002329</b>	0.010
Tl	190.794	0.0170	0.0150	0.0165	0.0171	0.0180	0.0168	0.0151	0.015	0.00116288	<b>0.003655</b>	0.015
V	292.404	0.0025	0.0024	0.0025	0.0032	0.0032	0.0032	0.0027	0.003	0.00038496	<b>0.001210</b>	0.003
Zn	206.201	0.0109	0.0100	0.0107	0.0125	0.0124	0.0124	0.0095	0.010	0.00123731	<b>0.003889</b>	0.010



**ASSET LABORATORIES**  
ANALYTICAL SERVICES

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

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ELAP Cert 2676 | NV Cert NV00922 | ORELAP/NELAP 4046

# METHOD DETECTION LIMIT 2017

Method Name: **Metals by ICP**  
 Method Number: EPA 200.7/ 6010  
 Analysis Date(s): 10/6, 10/7, 11/10/17  
 Analyst: Mary Claire Ignacio

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **ICP-02**

Analyte	ICP-02 MDL	MDL Blank	Higher MDL	LOD	PQL
Ag	0.001936	0.002362	0.002362	0.002	0.003
Al	0.039439	0.039859	0.039859	0.04	0.5
As	0.007034	0.007672	0.007672	0.0075	0.01
B	0.056632	0.074419	0.074419	0.075	0.1
Ba	0.001039	0.000433	0.001039	0.001	0.003
Be	0.000216	0.000311	0.000311	0.0005	0.003
Ca	0.069222	0.084832	0.084832	0.1	0.5
Cd	0.000850	0.000592	0.000850	0.001	0.003
Co	0.000455	0.001902	0.001902	0.001	0.003
Cr	0.000538	0.000527	0.000538	0.001	0.003
Fe	0.017359	0.017751	0.017751	0.018	0.1
Mg	0.048152	0.043017	0.048152	0.05	0.1
Mn	0.003093	0.000782	0.003093	0.005	0.5
Mo	0.002638	0.002482	0.002638	0.0025	0.005
Ni	0.001970	0.000822	0.001970	0.0025	0.005
Pb	0.003970	0.002762	0.003970	0.005	0.005
Sb	0.003690	0.004504	0.004504	0.005	0.01
Se	0.007900	0.008549	0.008549	0.008	0.01
Sn	0.005524	0.003415	0.005524	0.0075	0.05
Ti	0.002329	0.001493	0.002329	0.005	0.05
Tl	0.003655	0.005987	0.005987	0.005	0.015
V	0.001210	0.000749	0.001210	0.002	0.003
Zn	0.003889	0.007683	0.007683	0.008	0.01



**Method Detection Limit**

**Analytical Method:** EPA 6010B / 200.7  
**Digestion Method:** EPA 200.7  
**Date of Analysis:** 4/26/2018,4/27/18, 4/28/18  
**Instrument Name:** ICP2  
**Analysts:** MEI

**Matrix:** Water  
**Amount of Sample:** 25 mL  
**Units:** mg/L

Analyte	1	2	3	4	5	6	7	SD	Ave	AMT SPIKED	MDL	PQL
Potassium	0.52047	0.51468	0.50982	0.46507	0.46016	0.45873	0.49093	0.02710	0.48855	0.5000	0.08509	0.5
Sodium	0.55314	0.5464	0.5354	0.4861	0.49466	0.48423	0.49053	0.03061	0.51292	0.5000	0.09611	0.5
Strontium	0.0543	0.05418	0.05429	0.05295	0.05353	0.05251	0.05341	0.00070	0.05360	0.0250	0.00220	0.05

MBLK

Analyte	1	2	3	4	5	6	7	SD	Ave	MDL
Potassium	0.046	0.02365	0.01213	-0.00541	-0.0022	-0.00535	0.03047	0.02002	0.01418	0.0771
Sodium	0.04731	0.03661	0.02294	-0.0006	-0.00135	-0.00646	-0.00911	0.02270	0.01276	0.0841
Strontium	0.00006	-0.0006	-0.0002	0.00003	-0.00002	0.00001	0.00035	0.00029	-0.00005	0.0009

Note: MDL spike is used since its value is greater than the MDL blank.

### LOD & PQL VERIFICATION

Analytical Method: EPA 6010B / 200.7  
Date of Analysis: 4/30/2018  
Instrument Name: ICP2  
Analyst: MI

Matrix: Water  
Units: mg/L

Compound	MDL	LOD		PQL		
		Spike	Recovered	Spike	Recovered	% Recovery
Potassium	0.08509	0.250	0.304	0.500	0.544	108.9
Sodium	0.09611	0.250	0.274	0.500	0.521	104.1
Strontium	0.00220	0.025	0.027	0.050	0.054	108.0



# EPA 200.8 Dissolved



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

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3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.0  
 071118

**FIRST LEVEL REVIEW:**

QC Batch Number: 68723  
 ASSET #: N031081

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 7/12/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits		X			X	
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X				X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

%Rec of Cr in N031080-001E PS/MS/MSD failed. However, LCS passed criteria.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer *Henry* 7/19/2018

Date: 7/19/18  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
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## SAMPLE CALCULATION

**METHOD:** EPA 6020  
**TEST NAME:** Heavy Metals by ICP-MS  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Chromium concentration, in ug/L in the original sample as follows:

$$\text{Chromium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration  
DF = Dilution Factor  
PF = Final Volume of Digestate, mL / Amount of Sample, mL

For Sample **N031081-002D**, the concentration in ug/L is calculated as follows:

$$\text{Chromium, ug/L} = 100.369 * 5 * (25/25)$$

$$\text{Chromium, ug/L} = 501.845$$

Reporting results in two significant figures,

$$\text{Chromium, ug/L} = \mathbf{500}$$

# % RSD SUMMARY



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PERCENT RSD SUMMARY: 180712A

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.1	14.019	15	PASS	0.16	5.17	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.49	10.75	15	PASS	0.53	2.9	15	PASS
Std3-5/50 ppb	ICAL	1	5.19	1.018	15	PASS	5.13	3.2	15	PASS
Std4-10/100 ppb	ICAL	1	10.3	1.4	15	PASS	10.23	0.81	15	PASS
Std5-20/200 ppb	ICAL	1	20.25	0.65	15	PASS	20.19	0.23	15	PASS
Std6-40/400 ppb	ICAL	1	40.77	0.47	15	PASS	41.039	0.69	15	PASS
Std7-100/1000 ppb	ICAL	1	100.16	1.2	15	PASS	100	0.41	15	PASS
Std8-200/2000 ppb	ICAL	1	199.72	0.89	15	PASS	199.76	0.6	15	PASS
ICV	ICV	1	10.77	1.61	15	PASS	107.081	1.12	15	PASS
ICB	ICB	1	0.0032	214.4	15	<PQL	<0.000	N/A	15	<PQL
LLICV	CCV1	1	1.028	3.14	20	PASS	0.55	6.95	20	PASS
ICSA1	ICSA	1	0.037	21.75	15	<PQL	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	20.34	0.35	15	PASS	17.0025	0.35	15	PASS
LLICV	CCV1	1	1.018	2.43	20	PASS	0.55	4.45	20	PASS
CCV1	CCV	1	20.49	0.4	15	PASS	20.48	0.36	15	PASS
CCB1	CCB	1	<0.000	N/A	15	<PQL	0.013	19.17	15	<PQL
MB-68723	MBLK	1	<0.000	N/A	15	<PQL	0.04	31.67	15	<PQL
LCS-68723	LCS	1	10.82	1.87	15	PASS	104.81	0.57	15	PASS
N031072-001C	SAMP	25	6.89	3.05	15	PASS	7.43	1.83	15	PASS
N031080-001E	SAMP	1	466.31	1.33	15	PASS	6.87	2.11	15	PASS
N031080-001E	SAMP	5	95.097	0.75	15	PASS	1.46	8.94	15	PASS
N031080-001E	SAMP	25	19.46	0.53	15	PASS	0.29	1.55	15	PASS
CCV2	CCV	1	20.3	0.72	15	PASS	20.48	1.43	15	PASS
CCB2	CCB	1	0.007	173.05	15	<PQL	0.02	37.34	15	<PQL
N031080-001E-PS	PS	1	474.33	1.062	15	PASS	106.75	1.33	15	PASS
N031080-001E-PS	PS	5	96.53	0.5	15	PASS	22.28	0.26	15	PASS
N031080-001E-MS	MS	1	452.69	0.64	15	PASS	105.33	1.076	15	PASS
N031080-001E-MS	MS	5	92.93	0.45	15	PASS	22.52	1.7	15	PASS
N031080-001E-MSD	MSD	1	455.31	1.1	15	PASS	105.61	1.17	15	PASS
N031080-001E-MSD	MSD	5	94.073	0.95	15	PASS	22.59	0.69	15	PASS
N031080-001E	SAMP	125	4.08	1.088	15	PASS	0.18	6.74	15	PASS
N031080-001E-PS	PS	25	20.38	1.56	15	PASS	4.65	2.38	15	PASS
N031080-001E-MS	MS	25	19.36	1.87	15	PASS	4.62	1.36	15	PASS
N031080-001E-MSD	MSD	25	19.29	2.56	15	PASS	4.7	1.18	15	PASS
CCV3	CCV	1	20.38	1.73	15	PASS	20.61	2.098	15	PASS
CCB3	CCB	1	0.0043	109.11	15	<PQL	0.036	37.56	15	<PQL
N031080-001E	SAMP	125	4.096	2.88	15	PASS	0.086	9.25	15	PASS
N031080-002E	SAMP	1	0.057	84.65	15	<PQL	5.77	1.18	15	PASS
N031080-002E	SAMP	5	0.031	44.39	15	<PQL	1.35	1.2	15	PASS
N031080-003C	SAMP	5	1.78	0.74	15	PASS	25.3	2.19	15	PASS

PERCENT RSD SUMMARY: 180712A

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N031080-003C	SAMP	25	0.44	3.42	15	PASS	5.61	3.078	15	PASS
N031080-003C	SAMP	1	10.17	1.17	15	PASS	96.4	1.045	15	PASS
N031072-001C	SAMP	5	33.17	1.056	15	PASS	37.4	1.073	15	PASS
N031081-001D	SAMP	1	0.24	8.65	15	PASS	480.47	1.18	15	PASS
N031081-001D	SAMP	5	0.061	15.43	15	<PQL	99.96	1.73	15	PASS
N031081-002D	SAMP	1	500.73	0.17	15	PASS	16.68	2.064	15	PASS
CCV4	CCV	1	20.088	1.6	15	PASS	20.31	0.18	15	PASS
CCB4	CCB	1	0.11	18.6	15	<PQL	0.29	22.69	15	<PQL
N031081-002D	SAMP	5	100.37	1.55	15	PASS	3.44	2.4	15	PASS
CCV5	CCV	1	20.15	1.2	15	PASS	20.083	1.76	15	PASS
CCB5	CCB	1	0.019	31.44	15	<PQL	0.18	18.35	15	<PQL
ICSA1 <sup>2</sup>	ICSA	1	0.055	58.5	15	<PQL	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	20.41	1.019	15	PASS	17.072	0.8	15	PASS

*Nancy* 7/19/2018  
for

# ANALYSIS RUN LOG



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ANALYTICAL SERVICES FOR THE ENVIRONMENTAL PROFESSIONALS

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INJECTION LOG: 180712A**

**Instrument ID: ICPMS-02**

Data File	Sample Name	Type	DF	Acq. Date-Time
A0712001.D	RINSE	RINSE	1	07/12/18 9:33 AM
A0712002.D	Cal Blank	IBLK	1	07/12/18 9:39 AM
A0712003.D	Std1-0.1/1 ppb	ICAL	1	07/12/18 9:44 AM
A0712004.D	Std2-0.5/5 ppb	ICAL	1	07/12/18 9:50 AM
A0712005.D	Std3-5/50 ppb	ICAL	1	07/12/18 9:55 AM
A0712006.D	Std4-10/100 ppb	ICAL	1	07/12/18 10:01 AM
A0712007.D	Std5-20/200 ppb	ICAL	1	07/12/18 10:07 AM
A0712008.D	Std6-40/400 ppb	ICAL	1	07/12/18 10:12 AM
A0712009.D	Std7-100/1000 ppb	ICAL	1	07/12/18 10:18 AM
A0712010.D	Std8-200/2000 ppb	ICAL	1	07/12/18 10:23 AM
A0712011.D	ICV	ICV	1	07/12/18 10:29 AM
A0712012.D	ICB	ICB	1	07/12/18 10:35 AM
A0712013.D	LLICV	CCV1	1	07/12/18 10:40 AM
A0712014.D	ICSA1	ICSA	1	07/12/18 10:46 AM
A0712015.D	ICSAB1	ICSAB	1	07/12/18 10:51 AM
A0712016.D	LLICV	CCV1	1	07/12/18 10:57 AM
A0712017.D	MB-68779	MBLK	1	07/12/18 11:02 AM
A0712018.D	LCS-68779	LCS	1	07/12/18 11:08 AM
A0712019.D	N031158-005A	SAMP	1	07/12/18 11:14 AM
A0712020.D	N031158-005A	SAMP	5	07/12/18 11:19 AM
A0712021.D	N031158-005A-PS	PS	1	07/12/18 11:25 AM
A0712022.D	N031158-005A-MS	MS	1	07/12/18 11:30 AM
A0712023.D	N031158-005A-MSD	MSD	1	07/12/18 11:36 AM
A0712024.D	N031158-010A	SAMP	1	07/12/18 11:42 AM
A0712025.D	N031158-015A	SAMP	1	07/12/18 11:47 AM
A0712026.D	N031158-020A	SAMP	1	07/12/18 11:53 AM
A0712027.D	CCV1	CCV	1	07/12/18 11:59 AM
A0712028.D	CCB1	CCB	1	07/12/18 12:04 PM
A0712029.D	N031159-005A	SAMP	1	07/12/18 12:10 PM
A0712030.D	N031159-010A	SAMP	1	07/12/18 12:15 PM
A0712031.D	N031159-015A	SAMP	1	07/12/18 12:21 PM
A0712032.D	N031160-005A	SAMP	1	07/12/18 12:27 PM
A0712033.D	MB-68723	MBLK	1	07/12/18 12:32 PM
A0712034.D	LCS-68723	LCS	1	07/12/18 12:38 PM
A0712035.D	N031072-001C	SAMP	25	07/12/18 12:44 PM
A0712036.D	N031080-001E	SAMP	1	07/12/18 12:50 PM
A0712037.D	N031080-001E	SAMP	5	07/12/18 12:56 PM
A0712038.D	N031080-001E	SAMP	25	07/12/18 1:01 PM
A0712039.D	CCV2	CCV	1	07/12/18 1:07 PM
A0712040.D	CCB2	CCB	1	07/12/18 1:12 PM
A0712041.D	N031080-001E-PS	PS	1	07/12/18 1:18 PM
A0712042.D	N031080-001E-PS	PS	5	07/12/18 1:24 PM

**INJECTION LOG: 180712A**

**Instrument ID: ICPMS-02**

Data File	Sample Name	Type	DF	Acq. Date-Time
A0712043.D	N031080-001E-MS	MS	1	07/12/18 1:29 PM
A0712044.D	N031080-001E-MS	MS	5	07/12/18 1:35 PM
A0712045.D	N031080-001E-MSD	MSD	1	07/12/18 1:40 PM
A0712046.D	N031080-001E-MSD	MSD	5	07/12/18 1:47 PM
A0712047.D	N031080-001E	SAMP	125	07/12/18 1:53 PM
A0712048.D	N031080-001E-PS	PS	25	07/12/18 1:59 PM
A0712049.D	N031080-001E-MS	MS	25	07/12/18 2:04 PM
A0712050.D	N031080-001E-MSD	MSD	25	07/12/18 2:10 PM
A0712051.D	CCV3	CCV	1	07/12/18 2:16 PM
A0712052.D	CCB3	CCB	1	07/12/18 2:21 PM
A0712053.D	N031080-001E	SAMP	125	07/12/18 2:27 PM
A0712054.D	N031080-002E	SAMP	1	07/12/18 2:32 PM
A0712055.D	N031080-002E	SAMP	5	07/12/18 2:38 PM
A0712056.D	N031080-003C	SAMP	5	07/12/18 2:44 PM
A0712057.D	N031080-003C	SAMP	25	07/12/18 2:49 PM
A0712058.D	N031080-003C	SAMP	1	07/12/18 2:55 PM
A0712059.D	N031072-001C	SAMP	5	07/12/18 3:00 PM
A0712060.D	N031081-001D	SAMP	1	07/12/18 3:06 PM
A0712061.D	N031081-001D	SAMP	5	07/12/18 3:12 PM
A0712062.D	N031081-002D	SAMP	1	07/12/18 3:17 PM
A0712063.D	CCV4	CCV	1	07/12/18 3:23 PM
A0712064.D	CCB4	CCB	1	07/12/18 3:29 PM
A0712065.D	N031081-002D	SAMP	5	07/12/18 3:34 PM
A0712066.D	MB-68806	MBLK	1	07/12/18 3:40 PM
A0712067.D	LCS-68806	LCS	1	07/12/18 3:45 PM
A0712068.D	N031169-001A	SAMP	1	07/12/18 3:51 PM
A0712069.D	N031169-002A	SAMP	1	07/12/18 3:57 PM
A0712070.D	N031169-002A	SAMP	5	07/12/18 4:02 PM
A0712071.D	N031169-002A-PS	PS	1	07/12/18 4:08 PM
A0712072.D	N031169-002A-MS	MS	1	07/12/18 4:13 PM
A0712073.D	N031169-002A-MSD	MSD	1	07/12/18 4:19 PM
A0712074.D	CCV5	CCV	1	07/12/18 4:25 PM
A0712075.D	CCB5	CCB	1	07/12/18 4:30 PM
A0712076.D	ICSA1 <sup>2</sup>	ICSA	1	07/12/18 4:37 PM
A0712077.D	ICSAB2	ICSAB	1	07/12/18 4:43 PM

*Nancy* 7/19/2018  
for

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 7/6/2018 7:29:22 A

Prep End Date: 7/6/2018 12:00:00

Prep Batch 68723 Prep Code: 200.8\_PR

Reviewed/ Date: *Yummy* 7/19/2018

Initials/ Date: *CI* 7/19/2018

Technician Claire Ignacio

Prep Factor Units  
mL / mL

Temp. (°C):  
94.5

Page: 1 of 1

Location:  
02-1

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-68723	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-68723	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N031072-001C	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031080-001E	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031080-001E-MS	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031080-001E-MS	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031080-002E	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031080-003C	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031081-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031081-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180301	ICV/MS/MSD/LCS/LCSD Solution C		0.25
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180517	ICV/MS/MSD/LCS/LCSD Solution B		0.25

# INSTRUMENT TUNING CHECK



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 12 Jul 2018 08:58:34 am  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	126005.00	0.00	
24 Mg	462355.00	0.00	
25 Mg	62052.10	0.00	
26 Mg	70462.90	0.00	
59 Co	456223.00	0.00	
115 In	674929.00	0.00	
206 Pb	198924.00	0.00	
207 Pb	173157.00	0.00	
208 Pb	429167.00	0.00	

## RSD (%)

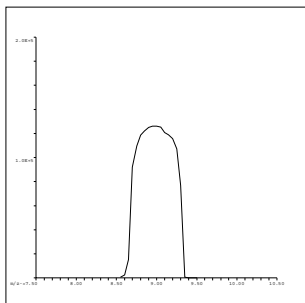
Element	Actual	Required	Flag
9 Be	1.32	5.00	
24 Mg	0.35	5.00	
25 Mg	0.34	5.00	
26 Mg	0.70	5.00	
59 Co	0.68	5.00	
115 In	0.52	5.00	
206 Pb	0.92	5.00	
207 Pb	0.63	5.00	
208 Pb	0.67	5.00	

## Ion Ratio

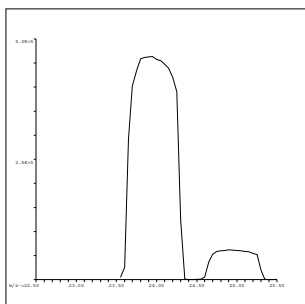
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

## Maximum Bkg. Count (CPS)

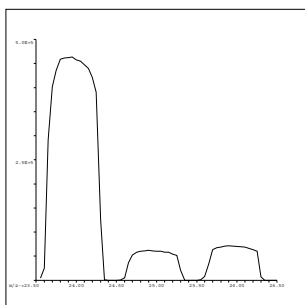
Element	Actual	Required	Flag
---------	--------	----------	------



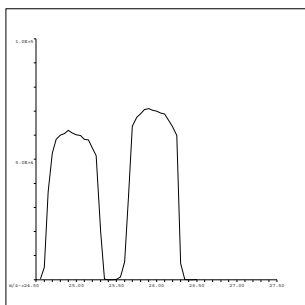
9 Be  
Mass Calib.  
Actual: 8.95  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



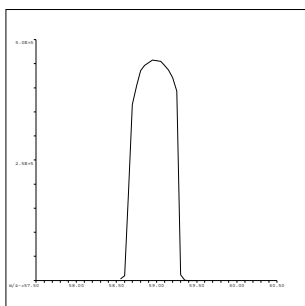
24 Mg  
Mass Calib.  
Actual: 23.90  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



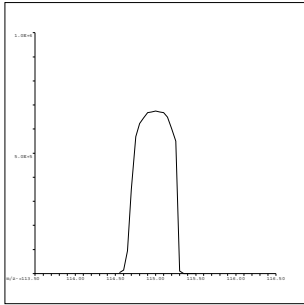
25 Mg  
Mass Calib.  
Actual: 24.90  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.70  
Required: 0.75  
Flag:



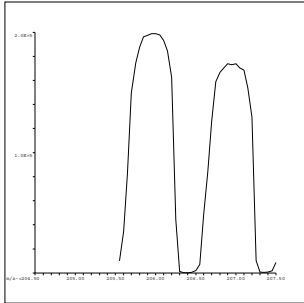
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.70  
Required: 0.75  
Flag:



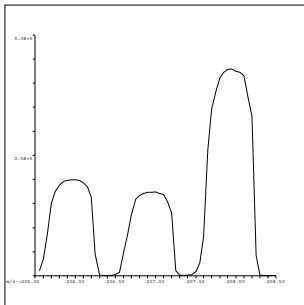
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



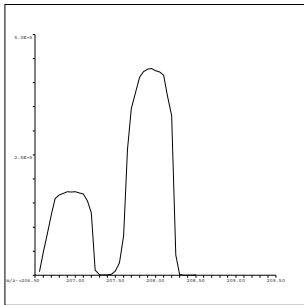
115 In  
Mass Calib.  
Actual: 115.00  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 205.95  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 206.95  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 207.95  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

QC Tune Result:Pass

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

INITIAL CALIBRATION SUMMARY: 180712A

Instrument ID: ICPMS-02

Analyte	Data File	A0712002.D	A0712004.D	A0712005.D	A0712006.D	A0712007.D	A0712008.D	A0712009.D	A0712010.D	R
	Acq. Date-Time	07/12/2018 09:39 AM	07/12/2018 09:50 AM	07/12/2018 09:55 AM	07/12/2018 10:01 AM	07/12/2018 10:07 AM	07/12/2018 10:12 AM	07/12/2018 10:18 AM	07/12/2018 10:23 AM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L		
45 Sc ( ISTD ) [ 2 ]	CPS	71137.9	69656.4	69509.1	68462.5	67377.8	66118.7	66088.6	64877.2	
55 Mn [ 2 ]	CPS	66.8	1425.6	13084.7	25667.2	49764.3	99213.4	241551.6	473627.1	1.0000
52 Cr [ 2 ]	CPS	337.7	2792.5	26464.9	51421.2	99146.5	195570.4	479802.5	938819.9	1.0000

Standard Code
ICAL: 2MSST-170620B
ICAL: 2MSST-170620C
ICAL: 2MWST-180409H
IS Mix: 2MSST-180409F

Calibration Acceptance Criteria: > 0.995 Correlation

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
METROLOGICAL SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077215</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	107.081	0.50	100.0	0	107	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077217</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.547	0.50	0.5000	0	109	80	120				

not used

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077220</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.551	0.50	0.5000	0	110	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077231</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.483	0.50	20.00	0	102	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077243</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.483	0.50	20.00	0	102	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

*Handwritten signature* 7/19/2018 **130**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8\_WDISS**

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077255</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.607	0.50	20.00	0	103	90	110				

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077267</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.312	0.50	20.00	0	102	90	110				

Sample ID <b>CCV5</b>	SampType: <b>CCV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077278</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.083	0.50	20.00	0	100	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>ICV</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077900</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	10.775	1.0	10.00	0	108 90 110

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077902</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	1.028	1.0	1.000	0	103 80 120

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>CCV</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077916</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	20.494	1.0	20.00	0	102 90 110

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>CCV</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077928</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	20.297	1.0	20.00	0	101 90 110

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>CCV</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077940</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	20.383	1.0	20.00	0	102 90 110

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077952</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.088	1.0	20.00	0	100	90	110				

Sample ID <b>CCV5</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077963</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.148	1.0	20.00	0	101	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>ICB</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077216</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077232</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077244</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077256</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077268</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese 0.292 0.50

Mn on CCB4 has detect > 1/2 RL however, samples for this analyte are >5x the CCB4 detection.

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

*Nancy* 7/19/2018

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8\_WDISS**

Sample ID <b>CCB5</b>	SampType: <b>CCB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077279</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
DO Surrogate Diluted Out

E Value above quantitation range  
R RPD outside accepted recovery limits  
Calculations are based on raw values

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>ICB</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077901</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077917</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077929</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077941</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077953</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID	CCB5	SampType:	CCB	TestCode:	200.8DIS_Cr	Units:	µg/L	Prep Date:		RunNo:	126187												
Client ID:	CCB	Batch ID:	R126187	TestNo:	EPA 200.8	Analysis Date:	7/12/2018	SeqNo:	3077964														
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual	
Chromium		ND		1.0																			

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077218</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>ICSA B</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077219</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese 17.003 0.50 20.00 0 85.0 80 120

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077280</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>
Client ID: <b>ICSA B</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077281</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese 17.072 0.50 20.00 0 85.4 80 120

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077903</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077904</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	20.337	1.0	20.00	0	102	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077965</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126187</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077966</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	20.405	1.0	20.00	0	102	80	120				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |

# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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INTERNAL STANDARD: 180712A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	71137.9	71137.9	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	71246	71137.9	100.15	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	69656.4	71137.9	97.92	PASS	70-125
Std3-5/50 ppb	ICAL	1	69509.1	71137.9	97.71	PASS	70-125
Std4-10/100 ppb	ICAL	1	68462.5	71137.9	96.24	PASS	70-125
Std5-20/200 ppb	ICAL	1	67377.8	71137.9	94.71	PASS	70-125
Std6-40/400 ppb	ICAL	1	66118.7	71137.9	92.94	PASS	70-125
Std7-100/1000 ppb	ICAL	1	66088.6	71137.9	92.9	PASS	70-125
Std8-200/2000 ppb	ICAL	1	64877.2	71137.9	91.2	PASS	70-125
ICV	ICV	1	64533.7	71137.9	90.72	PASS	70-125
ICB	ICB	1	66179	71137.9	93.029	PASS	70-125
LLICV	CCV1	1	64925.2	71137.9	91.27	PASS	70-125
ICSA1	ICSA	1	65943.5	71137.9	92.7	PASS	70-125
ICSAB1	ICSAB	1	72284	71137.9	101.61	PASS	70-125
LLICV	CCV1	1	71369.1	71137.9	100.33	PASS	70-125
CCV1	CCV	1	64742.3	71137.9	91.01	PASS	70-125
CCB1	CCB	1	63257.6	71137.9	88.92	PASS	70-125
MB-68723	MBLK	1	64795.5	71137.9	91.084	PASS	70-125
LCS-68723	LCS	1	62493.8	71137.9	87.85	PASS	70-125
N031072-001C	SAMP	25	63143.6	71137.9	88.76	PASS	70-125
N031080-001E	SAMP	1	58563.5	71137.9	82.32	PASS	70-125
N031080-001E	SAMP	5	63670.1	71137.9	89.5	PASS	70-125
N031080-001E	SAMP	25	65578.4	71137.9	92.18	PASS	70-125
CCV2	CCV	1	63382	71137.9	89.097	PASS	70-125
CCB2	CCB	1	61826.7	71137.9	86.91	PASS	70-125
N031080-001E-PS	PS	1	61300.1	71137.9	86.17	PASS	70-125
N031080-001E-PS	PS	5	65207.1	71137.9	91.66	PASS	70-125
N031080-001E-MS	MS	1	62335.2	71137.9	87.63	PASS	70-125
N031080-001E-MS	MS	5	64433.2	71137.9	90.58	PASS	70-125
N031080-001E-MSD	MSD	1	62686.3	71137.9	88.12	PASS	70-125
N031080-001E-MSD	MSD	5	62632.7	71137.9	88.044	PASS	70-125
N031080-001E	SAMP	125	61964.9	71137.9	87.11	PASS	70-125
N031080-001E-PS	PS	25	61603.2	71137.9	86.6	PASS	70-125
N031080-001E-MS	MS	25	62388.6	71137.9	87.7	PASS	70-125
N031080-001E-MSD	MSD	25	61150.7	71137.9	85.96	PASS	70-125
CCV3	CCV	1	59995.3	71137.9	84.34	PASS	70-125
CCB3	CCB	1	58174.4	71137.9	81.78	PASS	70-125
N031080-001E	SAMP	125	59296.2	71137.9	83.35	PASS	70-125
N031080-002E	SAMP	1	57933.9	71137.9	81.44	PASS	70-125
N031080-002E	SAMP	5	62055.4	71137.9	87.23	PASS	70-125
N031080-003C	SAMP	5	55200.3	71137.9	77.6	PASS	70-125

INTERNAL STANDARD: 180712A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria
N031080-003C	SAMP	25	58949.4	71137.9	82.87	PASS	70-125
N031080-003C	SAMP	1	38527.8	71137.9	54.16	NR!	70-125
N031072-001C	SAMP	5	52219.5	71137.9	73.41	PASS	70-125
N031081-001D	SAMP	1	54154.3	71137.9	76.13	PASS	70-125
N031081-001D	SAMP	5	56482	71137.9	79.4	PASS	70-125
N031081-002D	SAMP	1	50493.8	71137.9	70.98	PASS	70-125
CCV4	CCV	1	56044.1	71137.9	78.78	PASS	70-125
CCB4	CCB	1	53066.4	71137.9	74.6	PASS	70-125
N031081-002D	SAMP	5	52416.7	71137.9	73.68	PASS	70-125
CCV5	CCV	1	53708.4	71137.9	75.5	PASS	70-125
CCB5	CCB	1	53188	71137.9	74.77	PASS	70-125
ICSA1	ICSA	1	52503.5	71137.9	73.81	PASS	70-125
ICSAB2	ICSAB	1	54430.7	71137.9	76.51	PASS	70-125

# SERIAL DILUTION/ POST DIGESTION SPIKE



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N031081  
Test Method: EPA 200.8  
Analysis Date: 7/12/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 68723

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Mn. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N031080-001E DT 25X	Chromium	ug/L	486.5263	PASS	475.4832	2.32%	10
N031080-001E DT 5X	Manganese	ug/L	7.299764	NA	6.87086	6.24%	10

Note: NA - Not applicable

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>N031080-001E-PS</b>	SampType: <b>PS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077245</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	106.746	0.50	100.0	6.871	99.9	80	120				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits  
Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>N031080-001E-PS</b>	SampType: <b>PS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126187</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>68723</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>7/12/2018</b>	SeqNo: <b>3077931</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	482.670	5.0	10.00	475.5	71.9	80	120				S

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
DO Surrogate Diluted Out

E Value above quantitation range  
R RPD outside accepted recovery limits  
Calculations are based on raw values

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Amount of Sample:** 25 mL  
**Units:** ug/L

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	LOD	PQL
ANTIMONY	0.50	0.525	0.514	0.473	0.500	0.492	0.486	0.530	0.0210	0.0660	0.100	0.50
ARSENIC	0.10	0.099	0.104	0.087	0.048	0.060	0.069	0.120	0.0259	0.0813	0.080	0.10
BARIUM	1.00	1.041	1.059	1.052	1.011	0.967	0.957	1.023	0.0403	0.1264	0.250	1.00
BERYLLIUM	0.50	0.469	0.476	0.473	0.495	0.480	0.488	0.507	0.0135	0.0424	0.100	0.50
CADMIUM	0.50	0.515	0.513	0.492	0.534	0.499	0.483	0.508	0.0168	0.0527	0.100	0.50
CHROMIUM	1.00	0.979	0.986	0.940	0.990	0.946	0.978	0.977	0.0197	0.0618	0.250	1.00
COBALT	0.50	0.499	0.489	0.486	0.488	0.465	0.502	0.505	0.0135	0.0424	0.100	0.50
COPPER	1.00	1.110	0.667	1.039	1.060	1.006	1.099	1.075	0.1544	0.4850	0.500	1.00
IRON	10.00	10.873	10.802	10.142	9.991	9.846	9.852	10.596	0.4463	1.4014	2.500	10.00
LEAD	1.00	0.928	0.931	0.899	0.996	0.990	0.987	0.997	0.0406	0.1274	0.250	1.00
MANGANESE	0.50	0.577	0.588	0.561	0.566	0.517	0.541	0.520	0.0276	0.0866	0.100	0.50
MOLYBDENUM	0.50	0.514	0.504	0.467	0.478	0.456	0.433	0.527	0.0338	0.1061	0.250	0.50
NICKEL	1.00	0.961	0.965	0.977	0.907	0.914	0.962	1.075	0.0551	0.1731	0.250	1.00
SELENIUM	0.50	0.450	0.478	0.419	0.693	0.707	0.495	0.555	0.1155	0.3628	0.400	0.50
SILVER	0.50	0.558	0.511	0.490	0.542	0.458	0.490	0.684	0.0745	0.2340	0.250	0.50
THALLIUM	0.50	0.437	0.428	0.408	0.538	0.446	0.438	0.525	0.0504	0.1583	0.250	0.50
URANIUM	0.50	0.478	0.467	0.461	0.517	0.510	0.521	0.521	0.0267	0.0838	0.100	0.50
VANADIUM	1.00	0.950	0.969	0.900	0.844	0.829	0.848	1.053	0.0820	0.2574	0.500	1.00
ZINC	10.00	11.259	11.279	10.915	9.620	9.849	9.745	10.241	0.7235	2.2717	2.500	10.00



**ASSET LABORATORIES**

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 ELAP Cert 2921

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
 ELAP Cert 2676 | NV Cert NV00922 | ORELAP/NELAP 4046

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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Units:** ug/L

Analyte	MDLs	MDLb	MDL	LOD	PQL
ANTIMONY	0.0660	0.1564	0.1564	0.300	0.50
ARSENIC	0.0813	0.0387	0.0813	0.080	0.10
BARIUM	0.1264	0.1497	0.1497	0.300	1.00
BERYLLIUM	0.0424	0.0153	0.0424	0.100	0.50
CADMIUM	0.0527	0.0060	0.0527	0.100	0.50
CHROMIUM	0.0618	0.1298	0.1298	0.300	1.00
COBALT	0.0424	0.0339	0.0424	0.100	0.50
COPPER	0.4850	0.5459	0.5459	0.600	1.00
IRON	1.4014	4.3484	4.3484	5.000	10.00
LEAD	0.1274	0.1008	0.1274	0.300	1.00
MANGANESE	0.0866	0.2552	0.2552	0.300	0.50
MOLYBDENUM	0.1061	0.2149	0.2149	0.300	0.50
NICKEL	0.1731	0.2606	0.2606	0.300	1.00
SELENIUM	0.3628	0.0953	0.3628	0.400	0.50
SILVER	0.2340	0.2023	0.2340	0.250	0.50
THALLIUM	0.1583	0.1924	0.1924	0.300	0.50
URANIUM	0.0838	0.0020	0.0838	0.100	0.50
VANADIUM	0.2574	0.2768	0.2768	0.600	1.00
ZINC	2.2717	0.4511	2.2717	3.000	10.00



# EPA 218.6



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**IC Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

IC ARCUS  
 REV 2.0  
 011416

QC Batch Number:           R126039            
 ASSET #:                   N031081          

Instrument ID:           IC-07            
 Analyst:                   RBA            
 Date Analyzed:           7/5/2018          

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ?( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)	X					
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?	X					
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?	X					
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)	X					
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X					
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?	X					
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)	X					
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X					
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments:

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer           RBA          

Date:           7/6/2018          

2nd Level Reviewer           Nancy 7/9/2018          

Date:           \_\_\_\_\_



# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 218.6  
**TEST NAME:** HEXAVALENT CHROMIUM BY IC  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Hexavalent Chromium concentration, in  $\mu\text{g/L}$ , in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

A =  $\mu\text{g/L}$ , IC Cr+6 calculated concentration

DF = dilution factor

002A

For Sample ~~N031081-001A~~, the concentration in  $\mu\text{g/L}$  is calculated as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = 4.8426 * 100$$

$$\text{Cr}^{+6}, \mu\text{g/L} = 484.2600$$

Reporting results in two significant figures,

$$\text{Cr}^{+6}, \mu\text{g/L} = 480$$

*rba* 7/6/2018

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENTAL INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**INJECTION LOG: 180622A**

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	06/22/18 8:53 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	06/22/18 9:03 AM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:13 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:25 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:34 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:44 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:53 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 10:03 AM	Reported
9	ICV	ICV	1	Hexavalent Chromium	06/22/18 10:40 AM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	06/22/18 10:49 AM	Reported
11	ICB	ICB	1	Hexavalent Chromium	06/22/18 10:59 AM	Reported
12	MB-R125792	MBLK	1	Hexavalent Chromium	06/22/18 11:08 AM	Reported
13	LCS-R125792	LCS	1	Hexavalent Chromium	06/22/18 11:18 AM	Reported
14	N030910-001A	SAMP	1	Hexavalent Chromium	06/22/18 11:27 AM	Reported
15	N030910-001ADUP	DUP	1	Hexavalent Chromium	06/22/18 11:37 AM	Reported
16	N030910-001AMS	MS	1	Hexavalent Chromium	06/22/18 11:46 AM	Reported
17	N030910-001AMSD	MSD	1	Hexavalent Chromium	06/22/18 11:56 AM	Reported
18	CCV-1	CCV1	1	Hexavalent Chromium	06/22/18 12:05 PM	Reported
19	CCB-1	CCB	1	Hexavalent Chromium	06/22/18 12:15 PM	Reported

jba 6/25/2018

## Injection Log Summary

## Sequence Details

Name:	IC-07_180622A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	22/Jun/18 13:53:24
No. of Injections:	22	Updated By:	ics 5000

## Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		06/22/2018 08:53	Finished	BLANK
2	iBLANK	2	1000	Unknown		06/22/2018 09:03	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	4	1000	Calibration Standard	01	06/22/2018 09:13	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	5	1000	Calibration Standard	02	06/22/2018 09:25	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	6	1000	Calibration Standard	03	06/22/2018 09:34	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	7	1000	Calibration Standard	04	06/22/2018 09:44	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	8	1000	Calibration Standard	05	06/22/2018 09:53	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	9	1000	Calibration Standard	06	06/22/2018 10:03	Finished	20 ppb, IWST-180622A
9	ICV.ICV.1.	11	1000	Unknown		06/22/2018 10:40	Finished	ICV @5ppb, IWST-180622B
10	PQL@0.2ppb.CCV2.	12	1000	Unknown		06/22/2018 10:49	Finished	PQL @ 0.2ppb
11	ICB.ICB.1.	13	1000	Unknown		06/22/2018 10:59	Finished	CCB R180531A
12	MB-H2O.MBLK.1.	14	1000	Unknown		06/22/2018 11:08	Finished	MB R180531A
13	LCS-H2O.LCS.1.	15	1000	Unknown		06/22/2018 11:18	Finished	LCS, IWST-180622B
14	N030910-001A,SAMP	16	1000	Unknown		06/22/2018 11:27	Finished	SAMP,10mL
15	N030910-001ADUP,I	17	1000	Unknown		06/22/2018 11:37	Finished	DUP,10mL
16	N030910-001AMS,MS	18	1000	Unknown		06/22/2018 11:46	Finished	MS (1ppb), IWST-180622B,10
17	N030910-001AMSD,I	19	1000	Unknown		06/22/2018 11:56	Finished	MSD (1ppb), IWST-180622B,10
18	CCV-1.CCV1.1.	20	1000	Unknown		06/22/2018 12:05	Finished	CCV @10ppb, IWST-180622A
19	CCB-1.CCB.1.	21	1000	Unknown		06/22/2018 12:15	Finished	CCB R180531A
20	SHUTDOWN	23	1000	Unknown		06/22/2018 13:05	Finished	
21	Eluent: R180618A	23	1000	Unknown		n.a.	Finished	Eluent
22	PCR: R180618B	24	1000	Unknown		n.a.	Finished	Post-Column Reagent

*nba* 6/25/2018

**INJECTION LOG: 180705A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	06/22/18 8:53 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	06/22/18 9:03 AM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:13 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:25 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:34 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:44 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:53 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 10:03 AM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	07/05/18 9:10 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	07/05/18 9:20 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	07/05/18 9:30 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/05/18 9:39 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	07/05/18 9:49 AM	Reported
14	MB-R126039	MBLK	1	Hexavalent Chromium	07/05/18 10:09 AM	Reported
15	LCS-R126039	LCS	1	Hexavalent Chromium	07/05/18 10:20 AM	Reported
16	N031044-001E	SAMP	1	Hexavalent Chromium	07/05/18 10:30 AM	Reported
17	N031080-001C	SAMP	100	Hexavalent Chromium	07/05/18 10:51 AM	Reported
18	N031080-001CMS	MS	100	Hexavalent Chromium	07/05/18 11:02 AM	Reported
19	N031080-001CMSD	MSD	100	Hexavalent Chromium	07/05/18 11:12 AM	Reported
20	N031080-002C	SAMP	1	Hexavalent Chromium	07/05/18 11:21 AM	Not Reported
21	N031080-002CMS	MS	1	Hexavalent Chromium	07/05/18 11:31 AM	Not Reported
22	N031080-003B	SAMP	5	Hexavalent Chromium	07/05/18 11:40 AM	Not Reported
23	N031080-003BMS	MS	5	Hexavalent Chromium	07/05/18 11:50 AM	Not Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	07/05/18 11:59 AM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	07/05/18 12:09 PM	Reported
26	N031081-001A	SAMP	1	Hexavalent Chromium	07/05/18 12:18 PM	Reported
27	N031081-001AMS	MS	1	Hexavalent Chromium	07/05/18 12:28 PM	Reported
28	N031081-002A	SAMP	100	Hexavalent Chromium	07/05/18 12:37 PM	Reported
29	N031081-002ADUP	DUP	100	Hexavalent Chromium	07/05/18 12:47 PM	Reported
30	N031081-002AMS	MS	100	Hexavalent Chromium	07/05/18 12:56 PM	Reported
31	N031080-002C	SAMP	5	Hexavalent Chromium	07/05/18 1:05 PM	Reported
32	N031080-002CMS	MS	5	Hexavalent Chromium	07/05/18 1:15 PM	Reported
33	N031080-003B	SAMP	25	Hexavalent Chromium	07/05/18 1:24 PM	Reported
34	N031080-003BMS	MS	25	Hexavalent Chromium	07/05/18 1:34 PM	Reported
35	N031080-002CMS	MS	1	Hexavalent Chromium	07/05/18 1:44 PM	Not Reported
36	CCV-3	CCV	1	Hexavalent Chromium	07/05/18 1:56 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	07/05/18 2:05 PM	Reported

## Injection Log Summary

## Sequence Details

Name:	IC-07_180705A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	05/Jul/18 16:02:48
No. of Injections:	40	Updated By:	ics 5000

## Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		06/22/2018 08:53	Finished	BLANK
2	iBLANK	2	1000	Unknown		06/22/2018 09:03	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	4	1000	Calibration Standard	01	06/22/2018 09:13	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	5	1000	Calibration Standard	02	06/22/2018 09:25	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	6	1000	Calibration Standard	03	06/22/2018 09:34	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	7	1000	Calibration Standard	04	06/22/2018 09:44	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	8	1000	Calibration Standard	05	06/22/2018 09:53	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	9	1000	Calibration Standard	06	06/22/2018 10:03	Finished	20 ppb, IWST-180622A
9	BLANK	1	1000	Unknown		07/05/2018 09:10	Finished	BLANK
10	BLANK	2	1000	Unknown		07/05/2018 09:20	Finished	BLANK
11	CCV-1,CCV,1,	3	1000	Unknown		07/05/2018 09:30	Finished	CCV @5ppb, IWST-180622A
12	PQL@0.2ppb.CCV2,	4	1000	Unknown		07/05/2018 09:39	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		07/05/2018 09:49	Finished	CCB R180702A
14	MB-H2O,MBLK,1,	6	1000	Unknown		07/05/2018 10:09	Finished	MB R180702A
15	LCS-H2O,LCS,1,	7	1000	Unknown		07/05/2018 10:20	Finished	LCS, IWST-180622B
16	N031044-001E,SAMP	8	1000	Unknown		07/05/2018 10:30	Finished	SAMP,10mL
17	N031080-001C,SAMP	10	1000	Unknown		07/05/2018 10:51	Finished	SAMP,0.1>10mL
18	N031080-001CMS,MS	11	1000	Unknown		07/05/2018 11:02	Finished	MS (5pb), IWST-180622B,0.1>
19	N031080-001CMSD,MS	12	1000	Unknown		07/05/2018 11:12	Finished	MSD (5pb), IWST-180622B,0.1>
20	N031080-002C,SAMP	13	1000	Unknown		07/05/2018 11:21	Finished	SAMP,10mL
21	N031080-002CMS,MS	14	1000	Unknown		07/05/2018 11:31	Finished	MS (1ppb), IWST-180622B,10
22	N031080-003B,SAMP	15	1000	Unknown		07/05/2018 11:40	Finished	SAMP,2>10mL
23	N031080-003BMS,MS	16	1000	Unknown		07/05/2018 11:50	Finished	MS (1ppb), IWST-180622B,2>1
24	CCV-2,CCV1,1,	17	1000	Unknown		07/05/2018 11:59	Finished	CCV @10ppb, IWST-180622A
25	CCB-2,CCB,1,	18	1000	Unknown		07/05/2018 12:09	Finished	CCB R180531A
26	N031081-001A,SAMP	19	1000	Unknown		07/05/2018 12:18	Finished	SAMP,10mL
27	N031081-001AMS,MS	20	1000	Unknown		07/05/2018 12:28	Finished	MS (1ppb), IWST-180622B,10
28	N031081-002A,SAMP	21	1000	Unknown		07/05/2018 12:37	Finished	SAMP,0.1>10mL
29	N031081-002ADUP,MS	22	1000	Unknown		07/05/2018 12:47	Finished	DUP,0.1>10mL
30	N031081-002AMS,MS	23	1000	Unknown		07/05/2018 12:56	Finished	MS (5pb), IWST-180622B,0.1>
31	N031080-002C,SAMP	24	1000	Unknown		07/05/2018 13:05	Finished	SAMP,2>10mL
32	N031080-002CMS,MS	25	1000	Unknown		07/05/2018 13:15	Finished	MS (1ppb), IWST-180622B,2>1
33	N031080-003B,SAMP	26	1000	Unknown		07/05/2018 13:24	Finished	SAMP,0.4>10mL
34	N031080-003BMS,MS	27	1000	Unknown		07/05/2018 13:34	Finished	MS (1ppb), IWST-180622B,0.4
35	N031080-002CMS,MS	29	1000	Unknown		07/05/2018 13:44	Finished	MS (1ppb), IWST-180622B,10
36	CCV-3,CCV,1,	30	1000	Unknown		07/05/2018 13:56	Finished	CCV @5ppb, IWST-180622A
37	CCB-3,CCB,1,	31	1000	Unknown		07/05/2018 14:05	Finished	CCB R180702A
38	SHUTDOWN	32	1000	Unknown		07/05/2018 14:14	Finished	
39	Eluent: R180629C	33	1000	Unknown		n.a.	Finished	Eluent
40	PCR: R180702B	34	1000	Unknown		n.a.	Finished	Post-Column Reagent

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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### Hexavalent Chromium Preparation and Runlog

#### Sample Preparation

Date Prepared: 6/22/18  
 Time Prepared: 0910A  
 Prepared By: MSA

Slope: 98.02  
 pH 4: 4.01 @ 25.0°C  
 7: 7.00 @ 25.0°C  
 10: 9.98 @ 25.0°C

Reagent ID:  
 Sulfuric Acid: 10017  
 Diphenylcarbazide: CINV-171116A  
 NH4OH + NH4SO4 eluent: M80618A  
 NH4OH + NH4SO4 buffer: M80531A

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N030910-001A	9.31	-	~250µl	~250µl		
2)							
3)							
4)							
5)							
6)							
7)							
8)							
9)							
10)							
11)							
12)							
13)							
14)							
15)							

#### Sample Preparation

Date Prepared: 6/25/18  
 Time Prepared: 0912H  
 Prepared By: MSA

Slope: 97.32  
 pH 4: 4.03 @ 25.0°C  
 7: 7.00 @ 25.0°C  
 10: 9.96 @ 25.0°C

Reagent ID:  
 Sulfuric Acid: 10017  
 Diphenylcarbazide: CINV-180514B  
 NH4OH + NH4SO4 eluent: M80629C  
 NH4OH + NH4SO4 buffer: M80531A / M80702A  
 6N NaOH: R17229A

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments		
1)	N031044-001E	8.70	-	~250µl	~250µl				
2)	N031080-001C	9.37	-	↓	↓	+ 9 dips NaOH			
3)	2C	9.54							
4)	3B	8.46	9.35						
5)	N031081-001A	9.47	-	↓	↓				
6)	2A	9.44	-						
7)									
8)									
9)									
10)									
11)									
12)									
13)									
14)									
15)									

Logbook No. 14

*rba* 7/6/2018



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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CALIFORNIA | P: 562.219.7435 F: 562.219.7436  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 ELAP Cert 2921

81 of 100 ID CA01638

NEVADA | P: 702.307.2659 F: 702.307.2691  
 3151 W. Post Rd., Las Vegas, NV 89118  
 ELAP Cert 2676 | NV Cert 1620922  
 ORELAP/NELAP Cert 4046

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07  
Date Calibrated: 6/22/2018

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R <sup>2</sup>
Area,mAU*min	0.0496	0.2448	1.2433	2.5163	3.7833	5.0335	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST-170814H	IWST-180129A

Calibration Acceptance Criteria: > 0.999 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>6/22/2018</b>	SeqNo: <b>3072014</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.902	0.20	5.000	0	98.0	90	110				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>6/22/2018</b>	SeqNo: <b>3072015</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.231	0.20	0.2000	0	115	80	120				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072017</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.059	0.20	5.000	0	101	95	105				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072018</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.223	0.20	0.2000	0	111	80	120				

Sample ID <b>CCV-2</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072026</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	9.932	0.20	10.00	0	99.3	95	105				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072037</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.990	0.20	5.000	0	99.8	95	105				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>6/22/2018</b>	SeqNo: <b>3072016</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072019</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072027</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126039</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126039</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072038</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference



# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
MULTI-PHASE CHEMISTRY FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 7/5/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.173	
CCV-1	4.140	
CCV-2	4.131	
CCV-3	4.131	

**Average** 4.134

**Actual RT Window** 4.054 - 4.214

**Applied RT Window** 3.934 - 4.334

MB-R126039	N.A.	N.A.
LCS-R126039	4.140	PASS
N031044-001E	4.123	PASS
N031080-001C	4.131	PASS
N031080-001CMS	4.131	PASS
N031080-001CMSD	4.131	PASS
N031080-002C	N.A.	N.A.
N031080-002CMS	3.990	PASS
N031080-003B	N.A.	N.A.
N031080-003BMS	3.756	FAIL
N031081-001A	N.A.	N.A.
N031081-001AMS	4.098	PASS
N031081-002A	4.131	PASS
N031081-002ADUP	4.131	PASS
N031081-002AMS	4.131	PASS
N031080-002C	N.A.	N.A.
N031080-002CMS	4.106	PASS
N031080-003B	4.073	PASS
N031080-003BMS	4.081	PASS
N031080-002CMS	3.998	PASS

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**  
 Method Number: EPA 218.6  
 Analysis Date(s): 5/5/2017, 5/8/2017, 5/9/2017, 5/10/2017, 5/11/2017, 5/12/2017, 5/15/2017  
 Analyst: Ria Abes

Matrix: **WATER**  
 Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

	Datafile	170505	170508	170509	170510	170511	170512	170515						
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	t <sub>(n-1)</sub> value	MDL	PQL	Remarks	
Hexavalent Chromium	0.1949	0.2135	0.1840	0.1828	0.2011	0.1936	0.1911	0.20	0.0105	3.143	<b>0.0331</b>	<b>0.20</b>	OK,meets criteria	

Students' t Values at 99% CL

#	t <sub>(n-1)</sub>
10	2.821
9	2.896
8	2.998
7	3.143



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL MONITORING

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

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## LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Hexavalent Chromium by IC**                      Matrix: **WATER**  
 Method Number: EPA Method 218.6/7199                      Unit: µg/L  
 Analysis Date(s): 3/21/2018  
 Analyst: Ria Abes  
  
 Instrument Name: **IC-07**

Compound	MDL	LOD Spike Conc., µg/L	LOD actual Conc., µg/L
Hexavalent Chromium	0.0331	0.100	0.116

Compound	PQL	PQL Spike Conc., µg/L	PQL actual Conc., µg/L	% Recovery
Hexavalent Chromium	0.200	0.200	0.201	<u>100</u>



# RAW DATA



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691



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# INITIAL CALIBRATION



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INJECTION LOG: 180622A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	06/22/18 8:53 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	06/22/18 9:03 AM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:13 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:25 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:34 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:44 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:53 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 10:03 AM	Reported
9	ICV	ICV	1	Hexavalent Chromium	06/22/18 10:40 AM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	06/22/18 10:49 AM	Reported
11	ICB	ICB	1	Hexavalent Chromium	06/22/18 10:59 AM	Reported
12	MB-R125792	MBLK	1	Hexavalent Chromium	06/22/18 11:08 AM	Reported
13	LCS-R125792	LCS	1	Hexavalent Chromium	06/22/18 11:18 AM	Reported
14	N030910-001A	SAMP	1	Hexavalent Chromium	06/22/18 11:27 AM	Reported
15	N030910-001ADUP	DUP	1	Hexavalent Chromium	06/22/18 11:37 AM	Reported
16	N030910-001AMS	MS	1	Hexavalent Chromium	06/22/18 11:46 AM	Reported
17	N030910-001AMSD	MSD	1	Hexavalent Chromium	06/22/18 11:56 AM	Reported
18	CCV-1	CCV1	1	Hexavalent Chromium	06/22/18 12:05 PM	Reported
19	CCB-1	CCB	1	Hexavalent Chromium	06/22/18 12:15 PM	Reported

*nba* 6/25/2018

*Nancy* 6/27/2018



## Injection Log Summary

## Sequence Details

Name:	IC-07_180622A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	22/Jun/18 13:53:24
No. of Injections:	22	Updated By:	ics 5000

## Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		06/22/2018 08:53	Finished	BLANK
2	iBLANK	2	1000	Unknown		06/22/2018 09:03	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	4	1000	Calibration Standard	01	06/22/2018 09:13	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	5	1000	Calibration Standard	02	06/22/2018 09:25	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	6	1000	Calibration Standard	03	06/22/2018 09:34	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	7	1000	Calibration Standard	04	06/22/2018 09:44	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	8	1000	Calibration Standard	05	06/22/2018 09:53	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	9	1000	Calibration Standard	06	06/22/2018 10:03	Finished	20 ppb, IWST-180622A
9	ICV.ICV,1,	11	1000	Unknown		06/22/2018 10:40	Finished	ICV @5ppb, IWST-180622B
10	PQL@0.2ppb,CCV2,	12	1000	Unknown		06/22/2018 10:49	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	13	1000	Unknown		06/22/2018 10:59	Finished	CCB R180531A
12	MB-H2O,MBLK,1,	14	1000	Unknown		06/22/2018 11:08	Finished	MB R180531A
13	LCS-H2O,LCS,1,	15	1000	Unknown		06/22/2018 11:18	Finished	LCS, IWST-180622B
14	N030910-001A,SAMP	16	1000	Unknown		06/22/2018 11:27	Finished	SAMP,10mL
15	N030910-001ADUP,I	17	1000	Unknown		06/22/2018 11:37	Finished	DUP,10mL
16	N030910-001AMS,MS	18	1000	Unknown		06/22/2018 11:46	Finished	MS (1ppb), IWST-180622B,10
17	N030910-001AMSD,N	19	1000	Unknown		06/22/2018 11:56	Finished	MSD (1ppb), IWST-180622B,10
18	CCV-1,CCV1,1,	20	1000	Unknown		06/22/2018 12:05	Finished	CCV @10ppb, IWST-180622A
19	CCB-1,CCB,1,	21	1000	Unknown		06/22/2018 12:15	Finished	CCB R180531A
20	SHUTDOWN	23	1000	Unknown		06/22/2018 13:05	Finished	
21	Eluent: R180618A	23	1000	Unknown		n.a.	Finished	Eluent
22	PCR: R180618B	24	1000	Unknown		n.a.	Finished	Post-Column Reagent

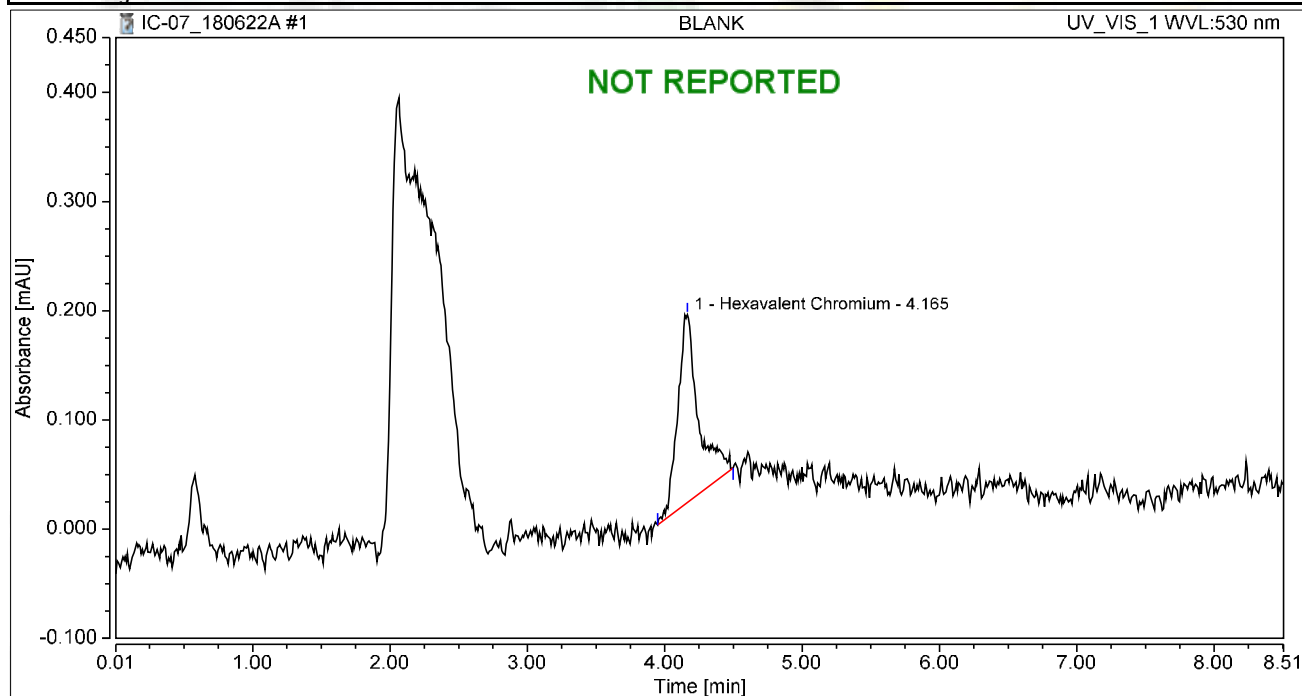
rba 6/25/2018

### Chromatogram and Results

#### Injection Details

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	22/Jun/18 08:53	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

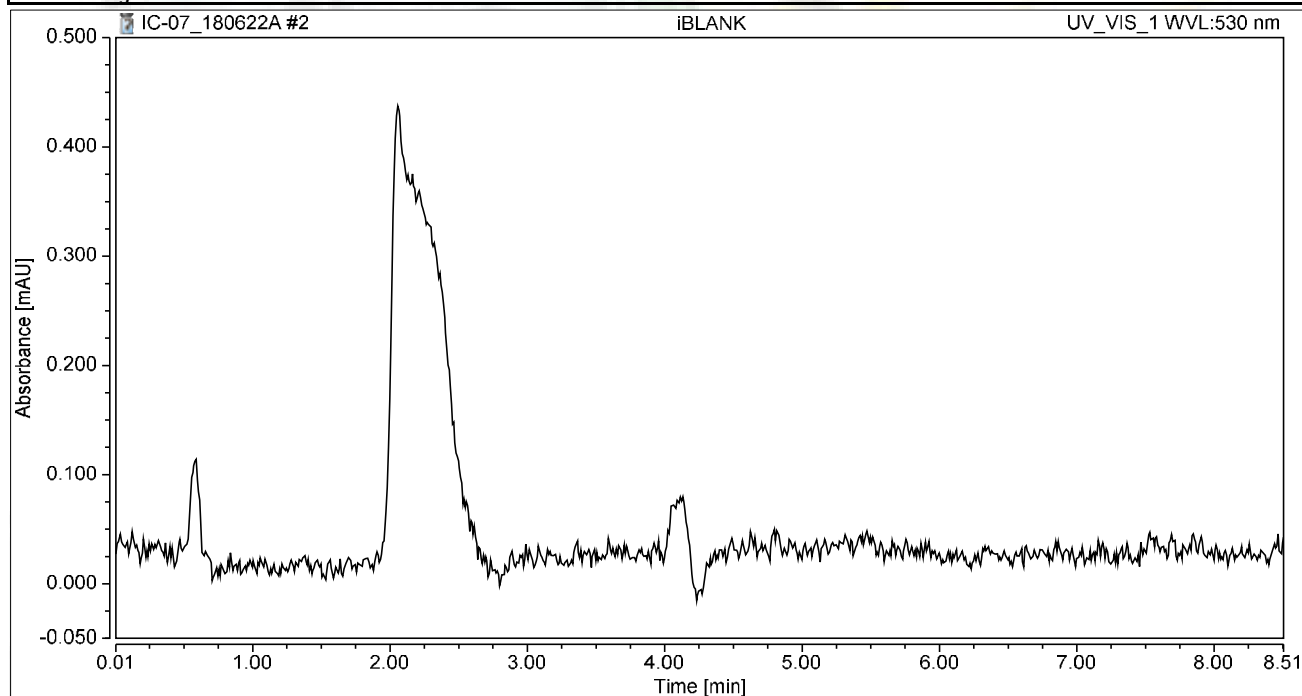
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.165	0.030	0.172	100.00	100.00	0.1201
<b>Total:</b>			<b>0.030</b>	<b>0.172</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	iBLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	22/Jun/18 09:03	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

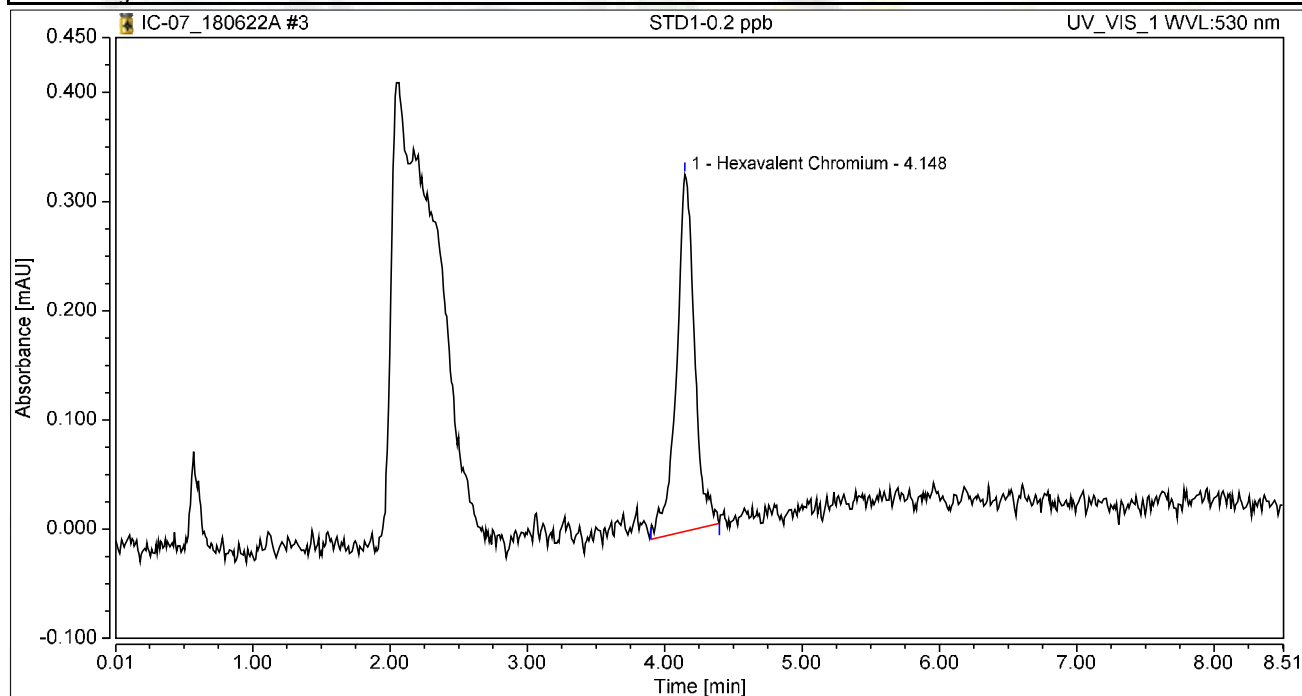
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	22/Jun/18 09:13	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

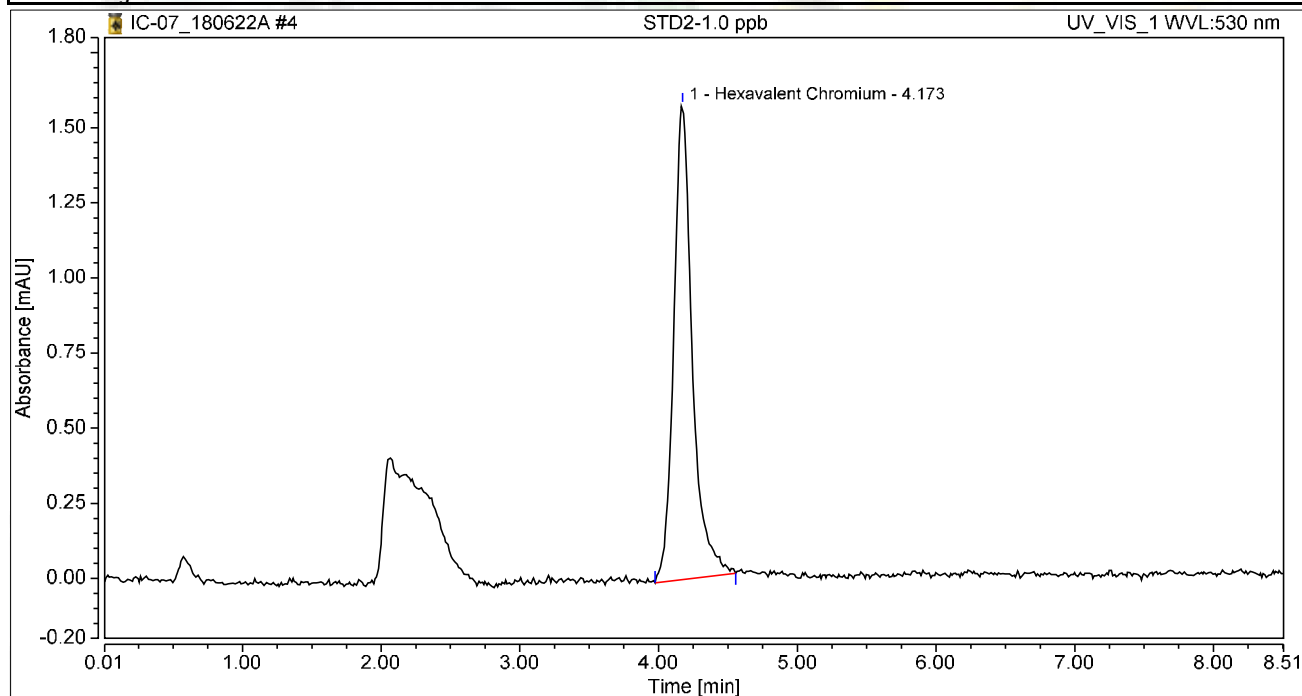
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	0.050	0.327	100.00	100.00	0.1972
<b>Total:</b>			<b>0.050</b>	<b>0.327</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD2-1.0 ppb	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	02	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	22/Jun/18 09:25	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

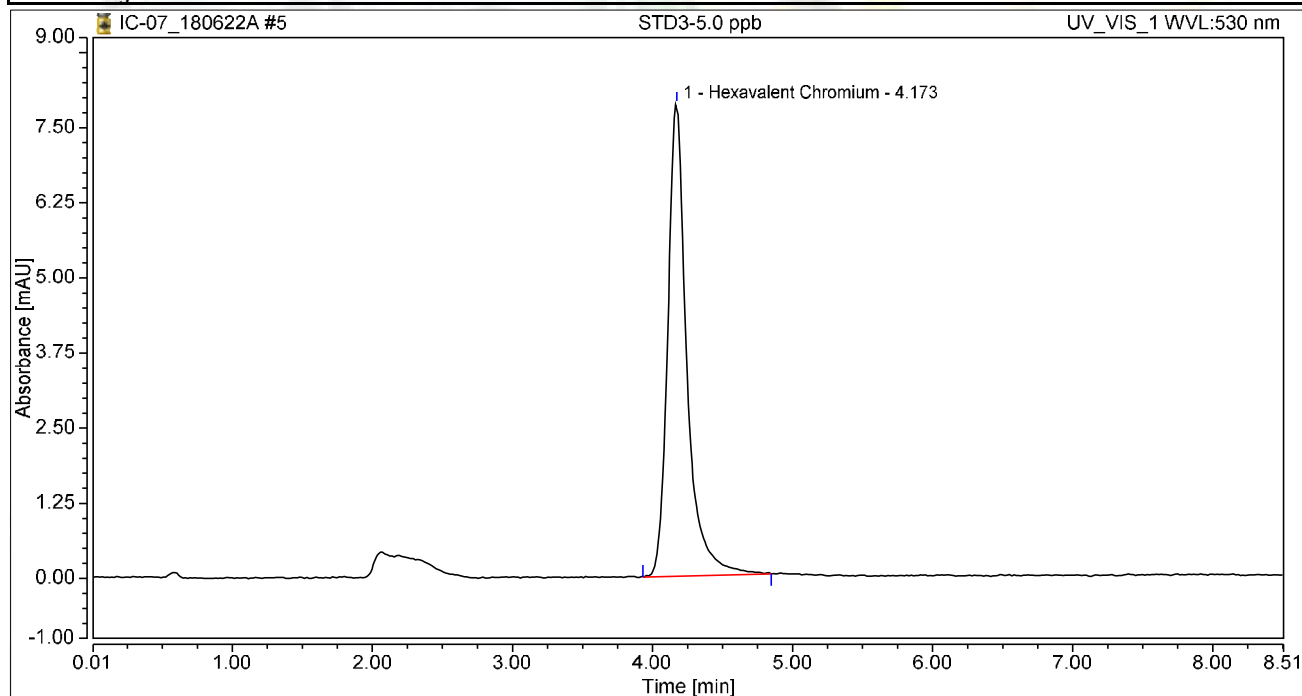
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.173	0.245	1.579	100.00	100.00	0.9723
<b>Total:</b>			<b>0.245</b>	<b>1.579</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD3-5.0 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	03	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	22/Jun/18 09:34	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

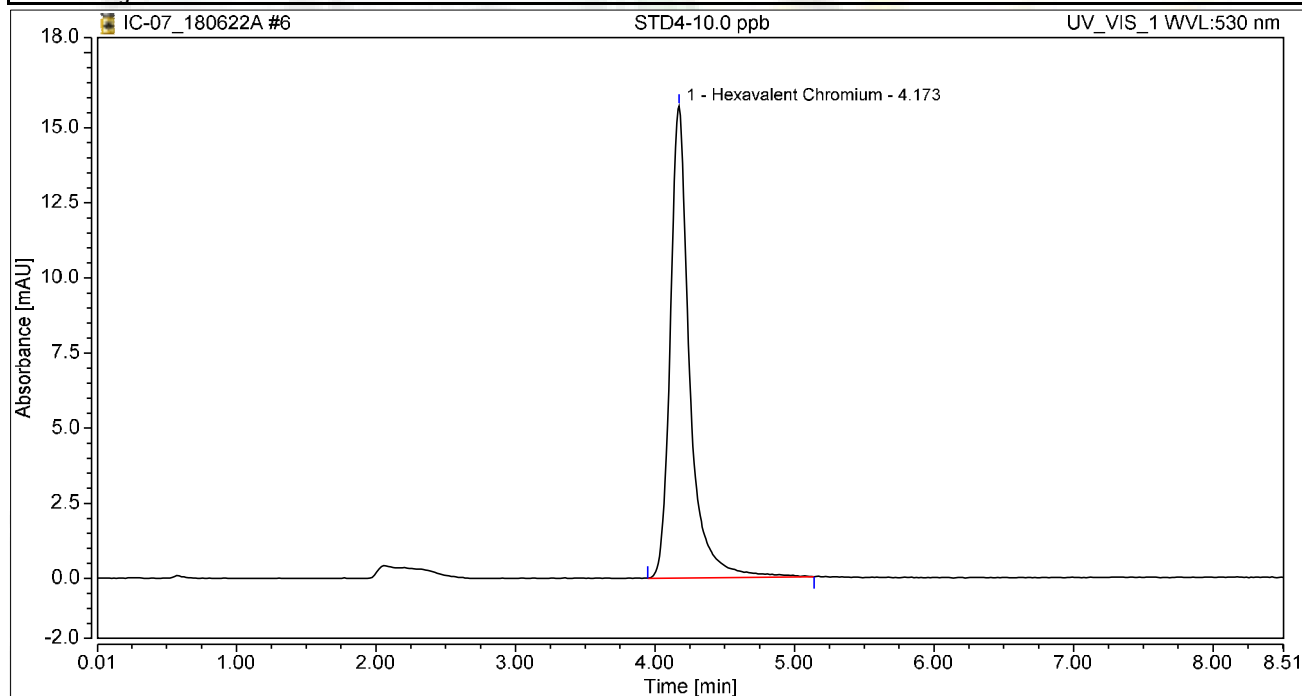
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.173	1.243	7.864	100.00	100.00	4.9392
<b>Total:</b>			<b>1.243</b>	<b>7.864</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	22/Jun/18 09:44	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

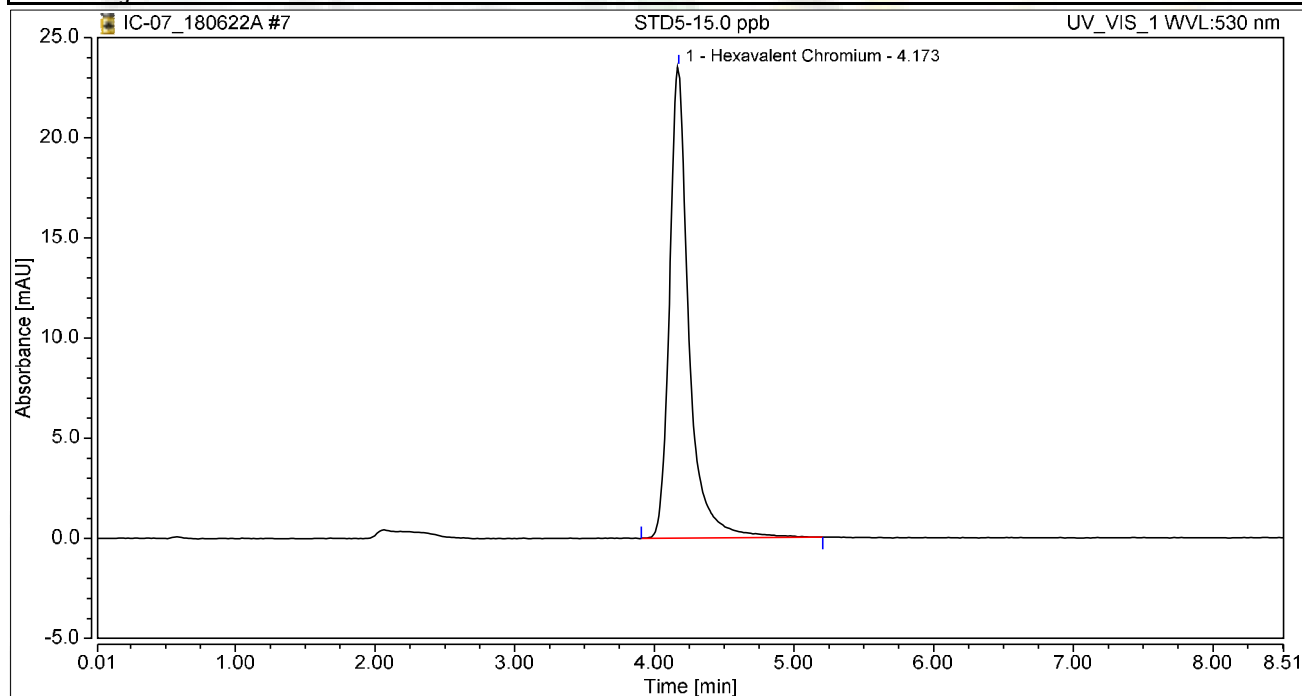
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.173	2.516	15.696	100.00	100.00	9.9963
<b>Total:</b>			<b>2.516</b>	<b>15.696</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.49
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	22/Jun/18 09:53	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.173	3.783	23.541	100.00	100.00	15.0298
<b>Total:</b>			<b>3.783</b>	<b>23.541</b>	<b>100.00</b>	<b>100.00</b>	

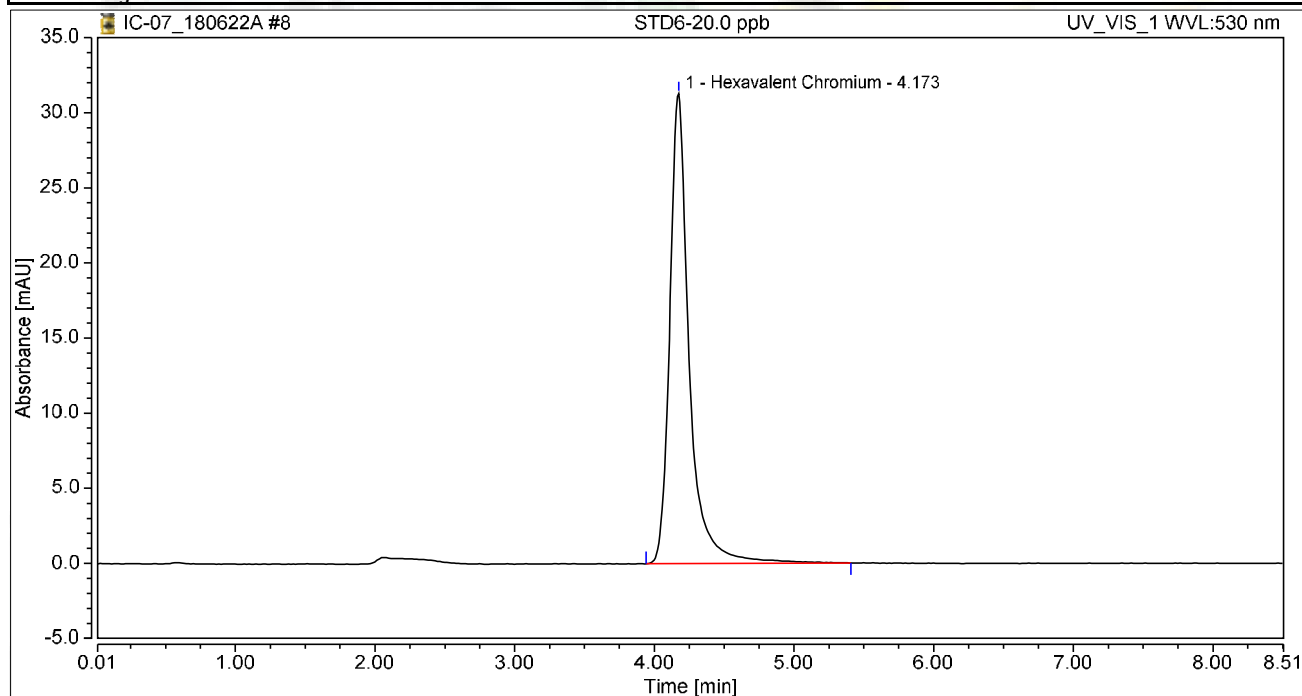


### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.49
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	22/Jun/18 10:03	Sample Weight:	1.0000

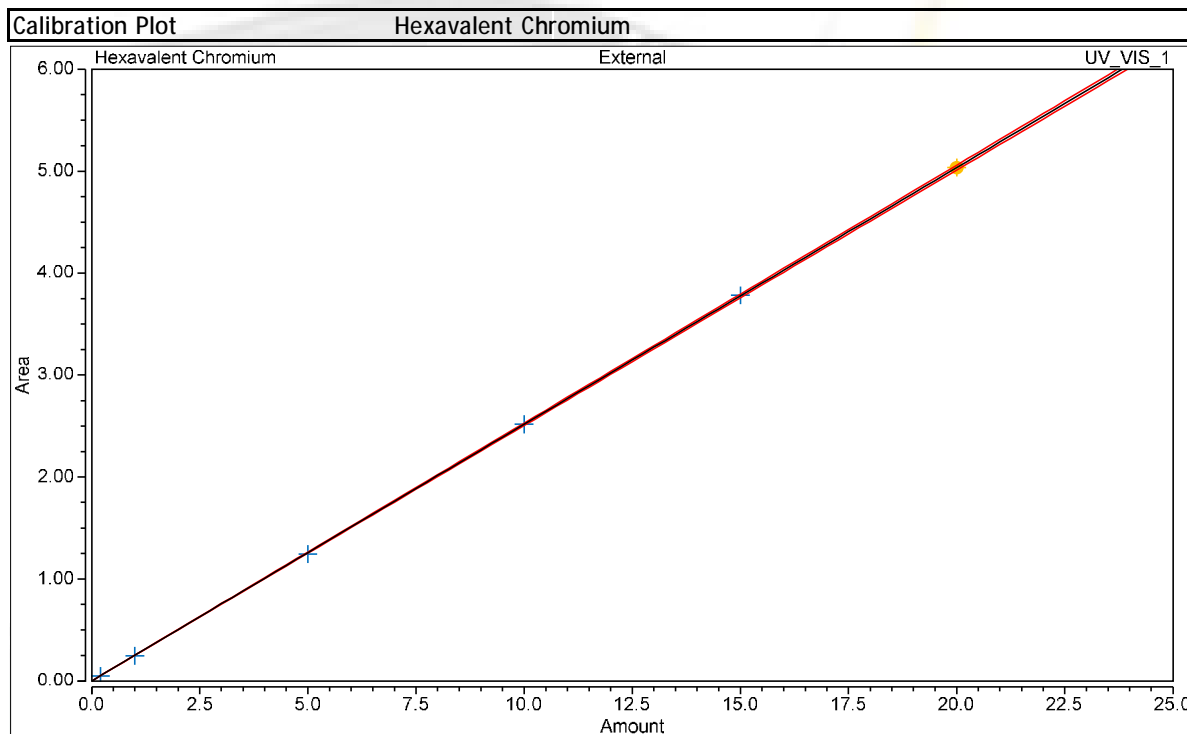
**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.173	5.033	31.285	100.00	100.00	19.9962
<b>Total:</b>			<b>5.033</b>	<b>31.285</b>	<b>100.00</b>	<b>100.00</b>	

Initial Calibration Summary			
Calibration Details		Hexavalent Chromium	
Calibration Type	Lin	Offset (C0)	0.0000
Evaluation Type	Area	Slope (C1)	0.2517
Number of Calibration Points	6	Curve (C2)	0.0000
Number of disabled Calibration Points	0	R-Square	0.99998



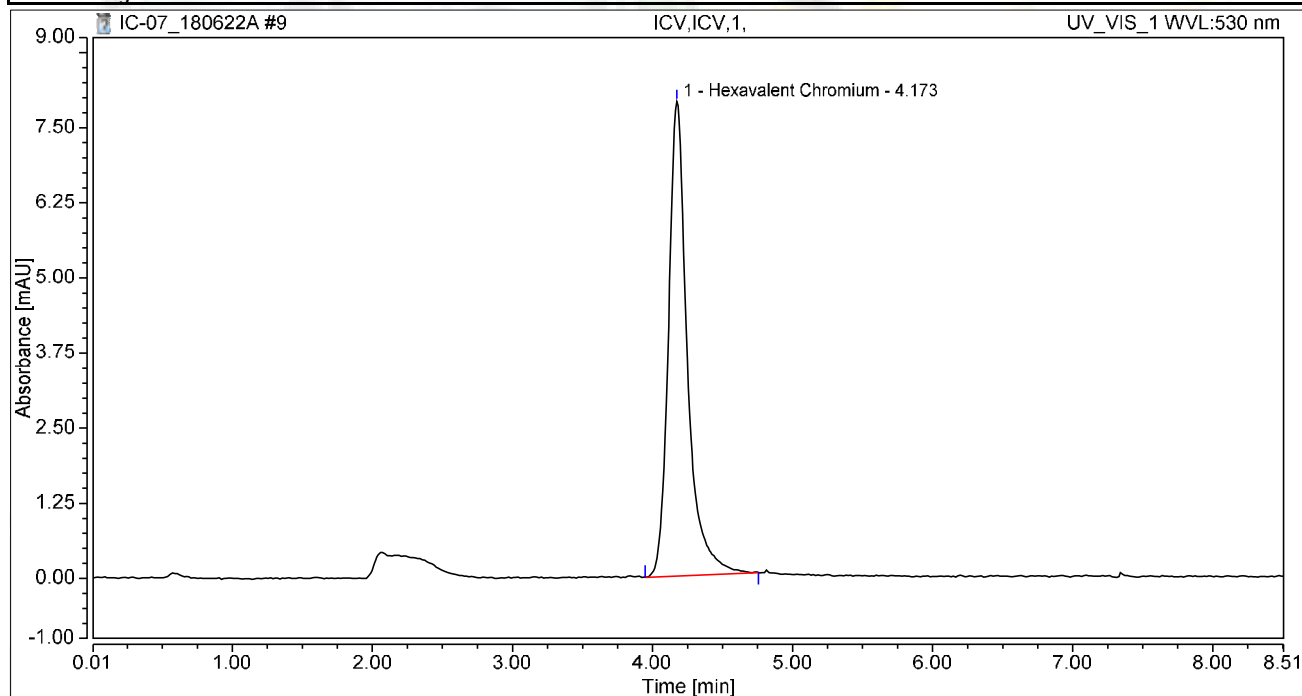
Calibration Results		Hexavalent Chromium				
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
3	STD1-0.2 ppb	01	0.2000	0.0496	0.050	0.327
4	STD2-1.0 ppb	02	1.0000	0.2448	0.245	1.579
5	STD3-5.0 ppb	03	5.0000	1.2433	1.243	7.864
6	STD4-10.0 ppb	04	10.0000	2.5163	2.516	15.696
7	STD5-15.0 ppb	05	15.0000	3.7833	3.783	23.541
8	STD6-20.0 ppb	06	20.0000	5.0335	5.033	31.285

### Chromatogram and Results

**Injection Details**

Injection Name:	ICV,ICV,1,	Run Time (min):	8.50
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	22/Jun/18 10:40	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

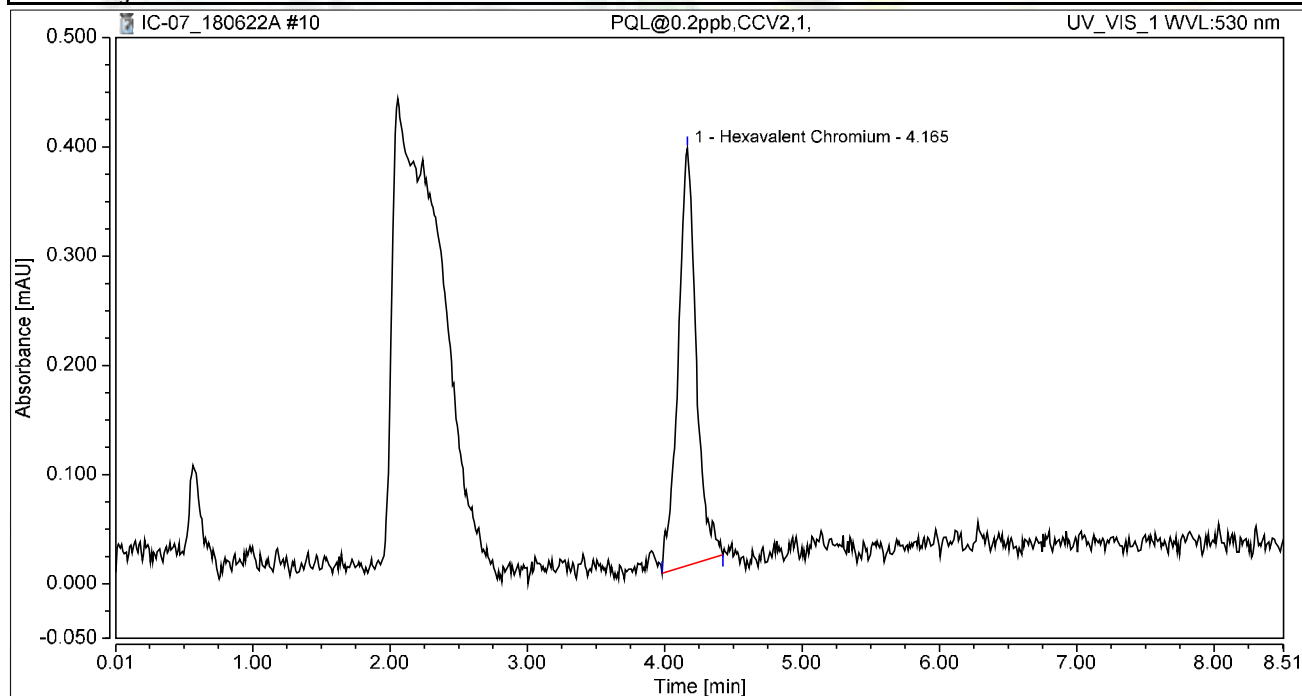
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.173	1.234	7.894	100.00	100.00	4.9019
<b>Total:</b>			<b>1.234</b>	<b>7.894</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	22/Jun/18 10:49	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

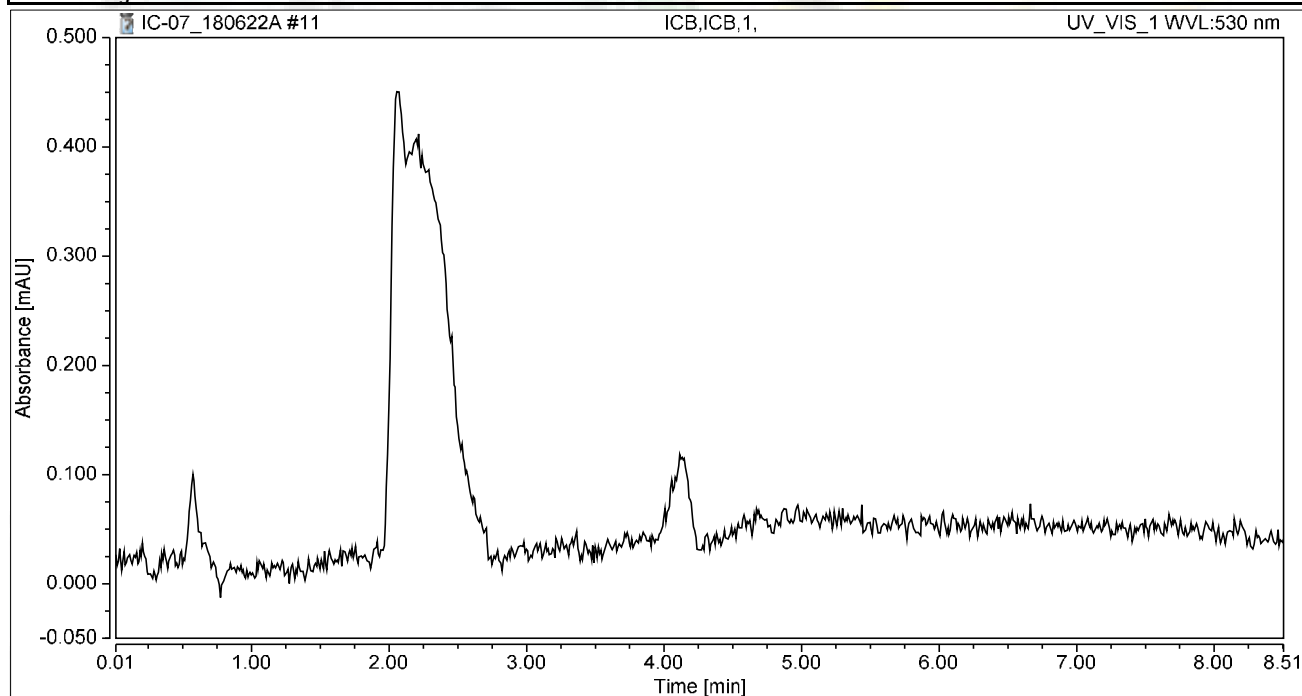
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.165	0.058	0.382	100.00	100.00	0.2309
<b>Total:</b>			<b>0.058</b>	<b>0.382</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	ICB,ICB,1,	Run Time (min):	8.49
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	22/Jun/18 10:59	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**INJECTION LOG: 180705A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	06/22/18 8:53 AM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	06/22/18 9:03 AM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:13 AM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:25 AM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:34 AM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:44 AM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 9:53 AM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	06/22/18 10:03 AM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	07/05/18 9:10 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	07/05/18 9:20 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	07/05/18 9:30 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/05/18 9:39 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	07/05/18 9:49 AM	Reported
14	MB-R126039	MBLK	1	Hexavalent Chromium	07/05/18 10:09 AM	Reported
15	LCS-R126039	LCS	1	Hexavalent Chromium	07/05/18 10:20 AM	Reported
16	N031044-001E	SAMP	1	Hexavalent Chromium	07/05/18 10:30 AM	Reported
17	N031080-001C	SAMP	100	Hexavalent Chromium	07/05/18 10:51 AM	Reported
18	N031080-001CMS	MS	100	Hexavalent Chromium	07/05/18 11:02 AM	Reported
19	N031080-001CMSD	MSD	100	Hexavalent Chromium	07/05/18 11:12 AM	Reported
20	N031080-002C	SAMP	1	Hexavalent Chromium	07/05/18 11:21 AM	Not Reported
21	N031080-002CMS	MS	1	Hexavalent Chromium	07/05/18 11:31 AM	Not Reported
22	N031080-003B	SAMP	5	Hexavalent Chromium	07/05/18 11:40 AM	Not Reported
23	N031080-003BMS	MS	5	Hexavalent Chromium	07/05/18 11:50 AM	Not Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	07/05/18 11:59 AM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	07/05/18 12:09 PM	Reported
26	N031081-001A	SAMP	1	Hexavalent Chromium	07/05/18 12:18 PM	Reported
27	N031081-001AMS	MS	1	Hexavalent Chromium	07/05/18 12:28 PM	Reported
28	N031081-002A	SAMP	100	Hexavalent Chromium	07/05/18 12:37 PM	Reported
29	N031081-002ADUP	DUP	100	Hexavalent Chromium	07/05/18 12:47 PM	Reported
30	N031081-002AMS	MS	100	Hexavalent Chromium	07/05/18 12:56 PM	Reported
31	N031080-002C	SAMP	5	Hexavalent Chromium	07/05/18 1:05 PM	Reported
32	N031080-002CMS	MS	5	Hexavalent Chromium	07/05/18 1:15 PM	Reported
33	N031080-003B	SAMP	25	Hexavalent Chromium	07/05/18 1:24 PM	Reported
34	N031080-003BMS	MS	25	Hexavalent Chromium	07/05/18 1:34 PM	Reported
35	N031080-002CMS	MS	1	Hexavalent Chromium	07/05/18 1:44 PM	Not Reported
36	CCV-3	CCV	1	Hexavalent Chromium	07/05/18 1:56 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	07/05/18 2:05 PM	Reported

*rba* 7/6/2018

Reviewed by:  
*Nancy* 7/9/2018

IC7 RBA 7/6/2018 9:36 AM

### Injection Log Summary

**Sequence Details**

Name:	IC-07_180705A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	05/Jul/18 16:02:48
No. of Injections:	40	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		06/22/2018 08:53	Finished	BLANK
2	iBLANK	2	1000	Unknown		06/22/2018 09:03	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	4	1000	Calibration Standard	01	06/22/2018 09:13	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	5	1000	Calibration Standard	02	06/22/2018 09:25	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	6	1000	Calibration Standard	03	06/22/2018 09:34	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	7	1000	Calibration Standard	04	06/22/2018 09:44	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	8	1000	Calibration Standard	05	06/22/2018 09:53	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	9	1000	Calibration Standard	06	06/22/2018 10:03	Finished	20 ppb, IWST-180622A
9	BLANK	1	1000	Unknown		07/05/2018 09:10	Finished	BLANK
10	BLANK	2	1000	Unknown		07/05/2018 09:20	Finished	BLANK
11	CCV-1,CCV,1,	3	1000	Unknown		07/05/2018 09:30	Finished	CCV @5ppb, IWST-180622A
12	PQL@0.2ppb,CCV2,	4	1000	Unknown		07/05/2018 09:39	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		07/05/2018 09:49	Finished	CCB R180702A
14	MB-H2O,MBLK,1,	6	1000	Unknown		07/05/2018 10:09	Finished	MB R180702A
15	LCS-H2O,LCS,1,	7	1000	Unknown		07/05/2018 10:20	Finished	LCS, IWST-180622B
16	N031044-001E,SAMP	8	1000	Unknown		07/05/2018 10:30	Finished	SAMP,10mL
17	N031080-001C,SAMP	10	1000	Unknown		07/05/2018 10:51	Finished	SAMP,0.1>10mL
18	N031080-001CMS,MS	11	1000	Unknown		07/05/2018 11:02	Finished	MS (5pb), IWST-180622B,0.1>
19	N031080-001CMSD,MS	12	1000	Unknown		07/05/2018 11:12	Finished	MSD (5pb), IWST-180622B,0.1>
20	N031080-002C,SAMP	13	1000	Unknown		07/05/2018 11:21	Finished	SAMP,10mL
21	N031080-002CMS,MS	14	1000	Unknown		07/05/2018 11:31	Finished	MS (1ppb), IWST-180622B,10
22	N031080-003B,SAMP	15	1000	Unknown		07/05/2018 11:40	Finished	SAMP,2>10mL
23	N031080-003BMS,MS	16	1000	Unknown		07/05/2018 11:50	Finished	MS (1ppb), IWST-180622B,2>1
24	CCV-2,CCV1,1,	17	1000	Unknown		07/05/2018 11:59	Finished	CCV @10ppb, IWST-180622A
25	CCB-2,CCB,1,	18	1000	Unknown		07/05/2018 12:09	Finished	CCB R180531A
26	N031081-001A,SAMP	19	1000	Unknown		07/05/2018 12:18	Finished	SAMP,10mL
27	N031081-001AMS,MS	20	1000	Unknown		07/05/2018 12:28	Finished	MS (1ppb), IWST-180622B,10
28	N031081-002A,SAMP	21	1000	Unknown		07/05/2018 12:37	Finished	SAMP,0.1>10mL
29	N031081-002ADUP,D	22	1000	Unknown		07/05/2018 12:47	Finished	DUP,0.1>10mL
30	N031081-002AMS,MS	23	1000	Unknown		07/05/2018 12:56	Finished	MS (5pb), IWST-180622B,0.1>
31	N031080-002C,SAMP	24	1000	Unknown		07/05/2018 13:05	Finished	SAMP,2>10mL
32	N031080-002CMS,MS	25	1000	Unknown		07/05/2018 13:15	Finished	MS (1ppb), IWST-180622B,2>1
33	N031080-003B,SAMP	26	1000	Unknown		07/05/2018 13:24	Finished	SAMP,0.4>10mL
34	N031080-003BMS,MS	27	1000	Unknown		07/05/2018 13:34	Finished	MS (1ppb), IWST-180622B,0.4>
35	N031080-002CMS,MS	29	1000	Unknown		07/05/2018 13:44	Finished	MS (1ppb), IWST-180622B,10
36	CCV-3,CCV,1,	30	1000	Unknown		07/05/2018 13:56	Finished	CCV @5ppb, IWST-180622A
37	CCB-3,CCB,1,	31	1000	Unknown		07/05/2018 14:05	Finished	CCB R180702A
38	SHUTDOWN	32	1000	Unknown		07/05/2018 14:14	Finished	
39	Eluent: R180629C	33	1000	Unknown		n.a.	Finished	Eluent
40	PCR: R180702B	34	1000	Unknown		n.a.	Finished	Post-Column Reagent

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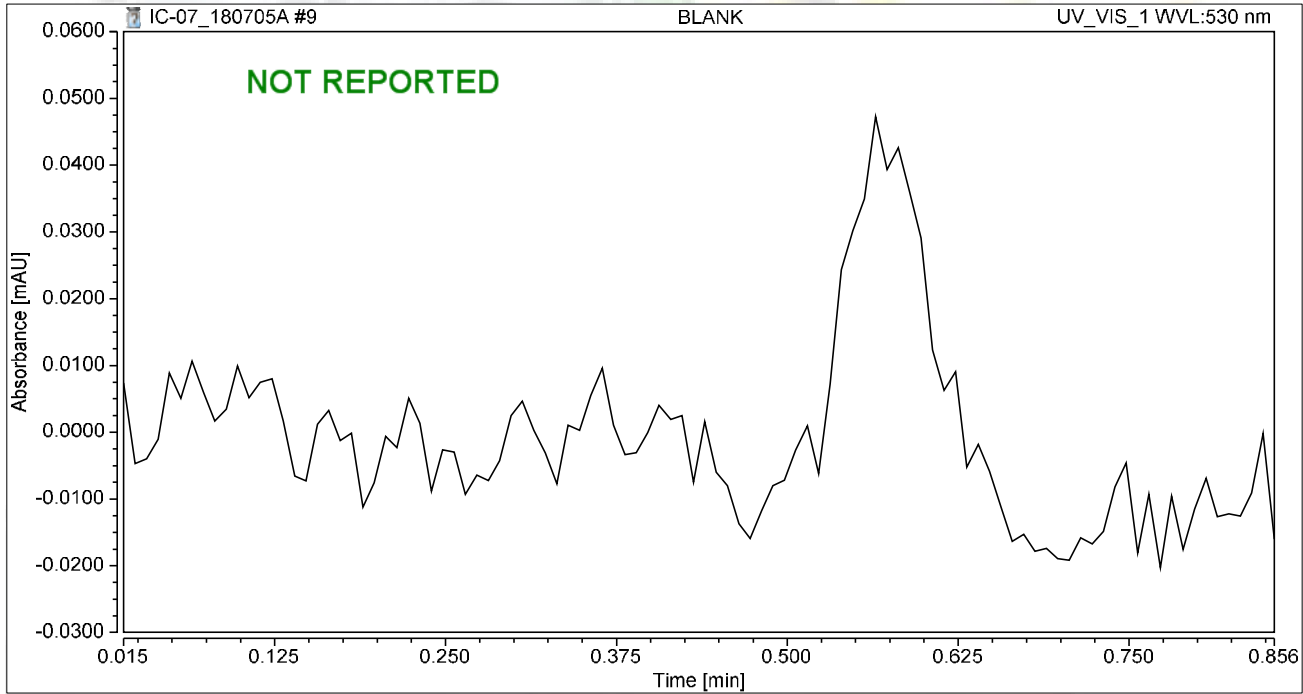


### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	0.84
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 09:10	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

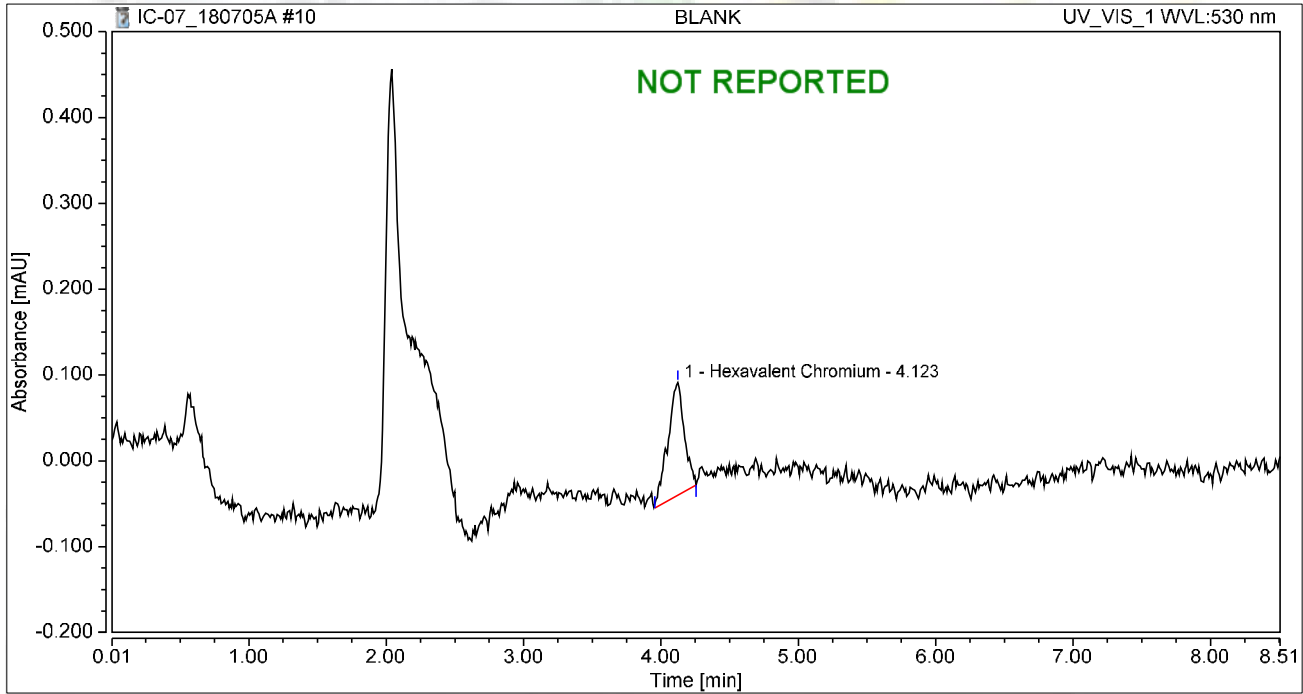
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 09:20	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

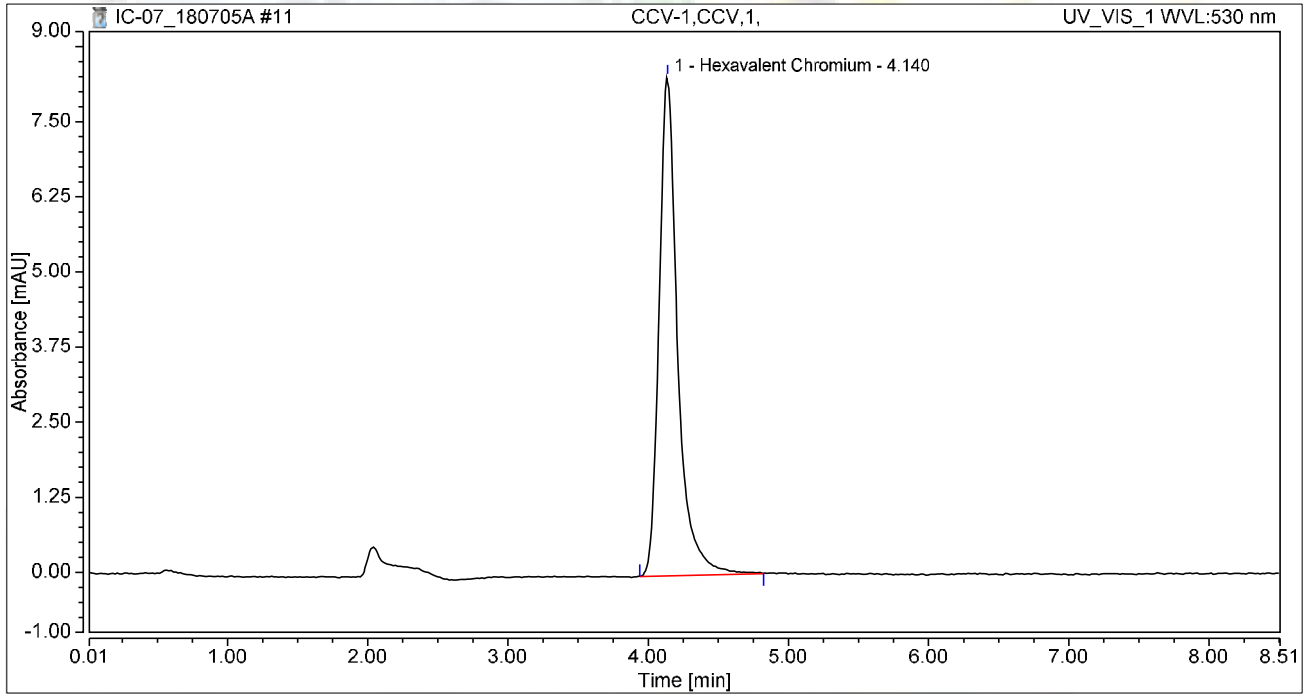
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.018	0.131	100.00	100.00	0.0731
<b>Total:</b>			<b>0.018</b>	<b>0.131</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-1,CCV,1,	Run Time (min):	8.49
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 09:30	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

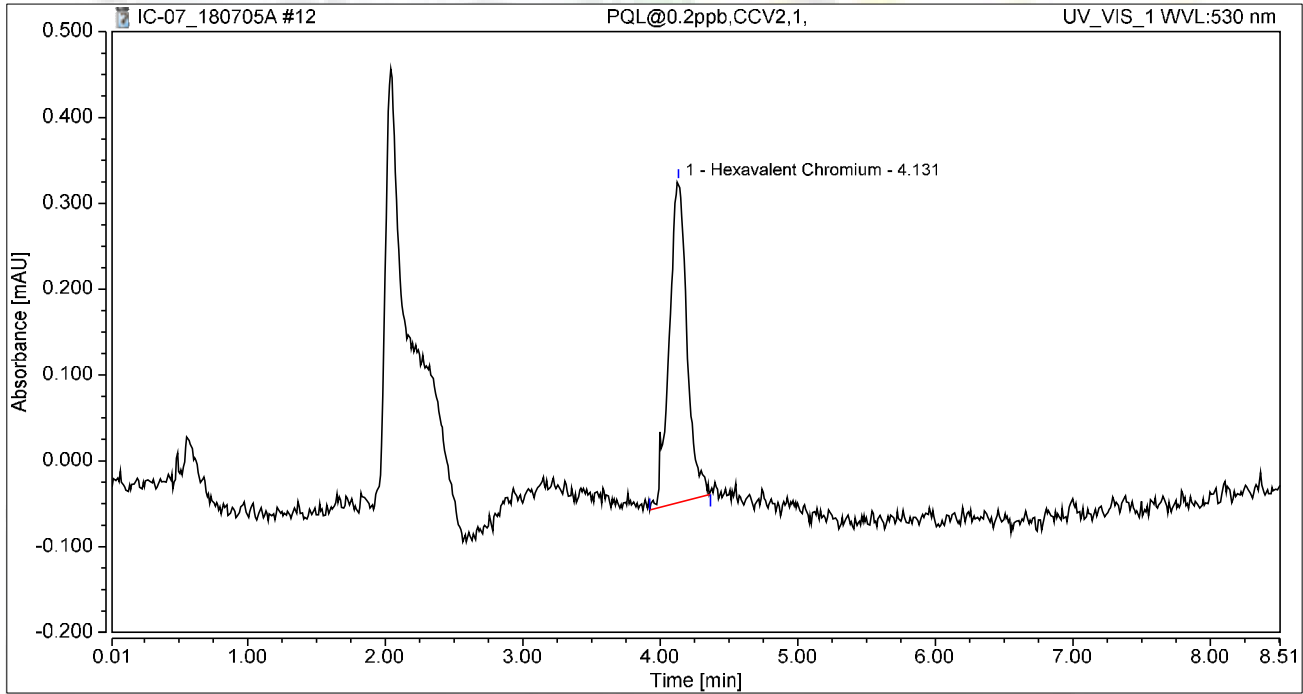
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.273	8.302	100.00	100.00	5.0591
<b>Total:</b>			<b>1.273</b>	<b>8.302</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.49
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 09:39	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

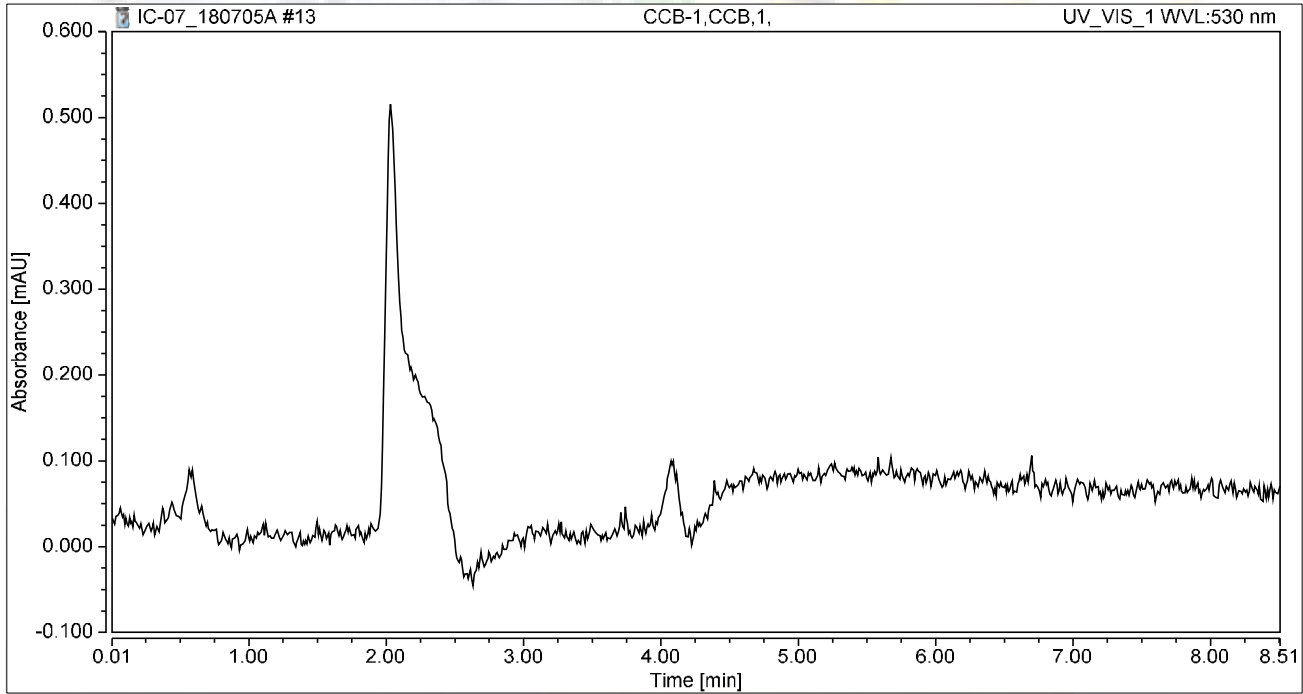
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.056	0.375	100.00	100.00	0.2225
<b>Total:</b>			<b>0.056</b>	<b>0.375</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-1,CCB,1,	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 09:49	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

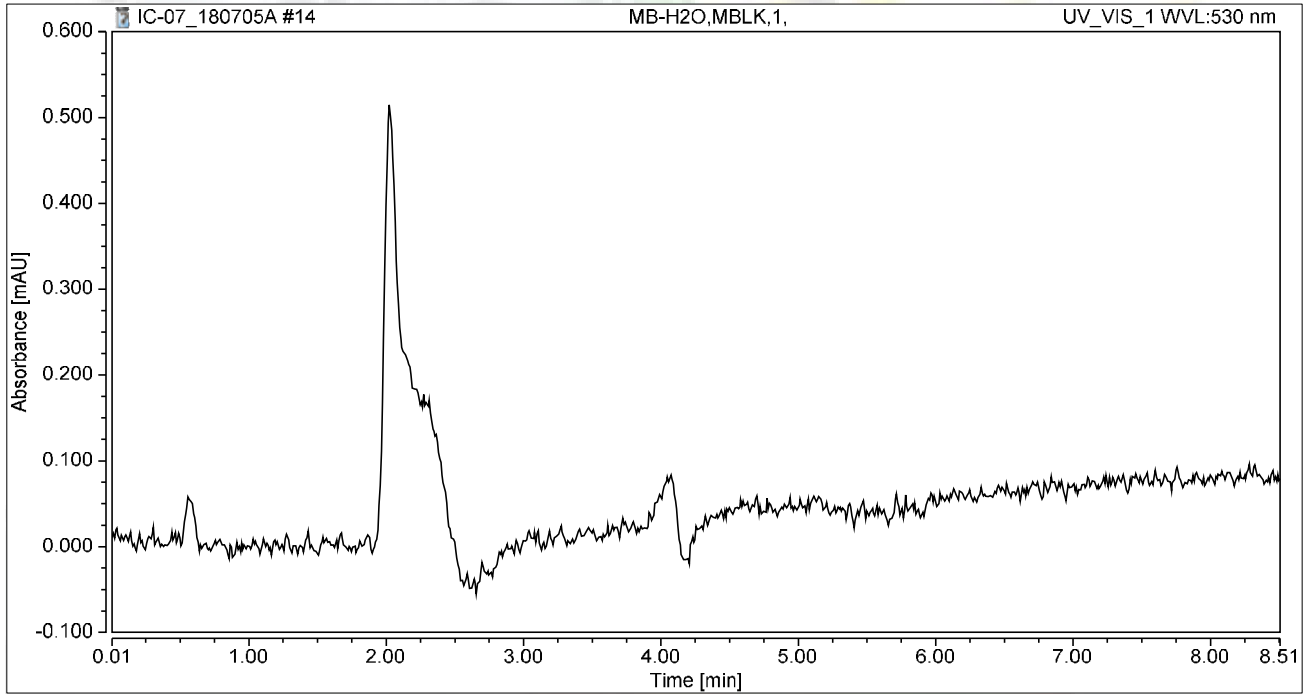
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	MB-H2O,MBLK,1,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 10:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

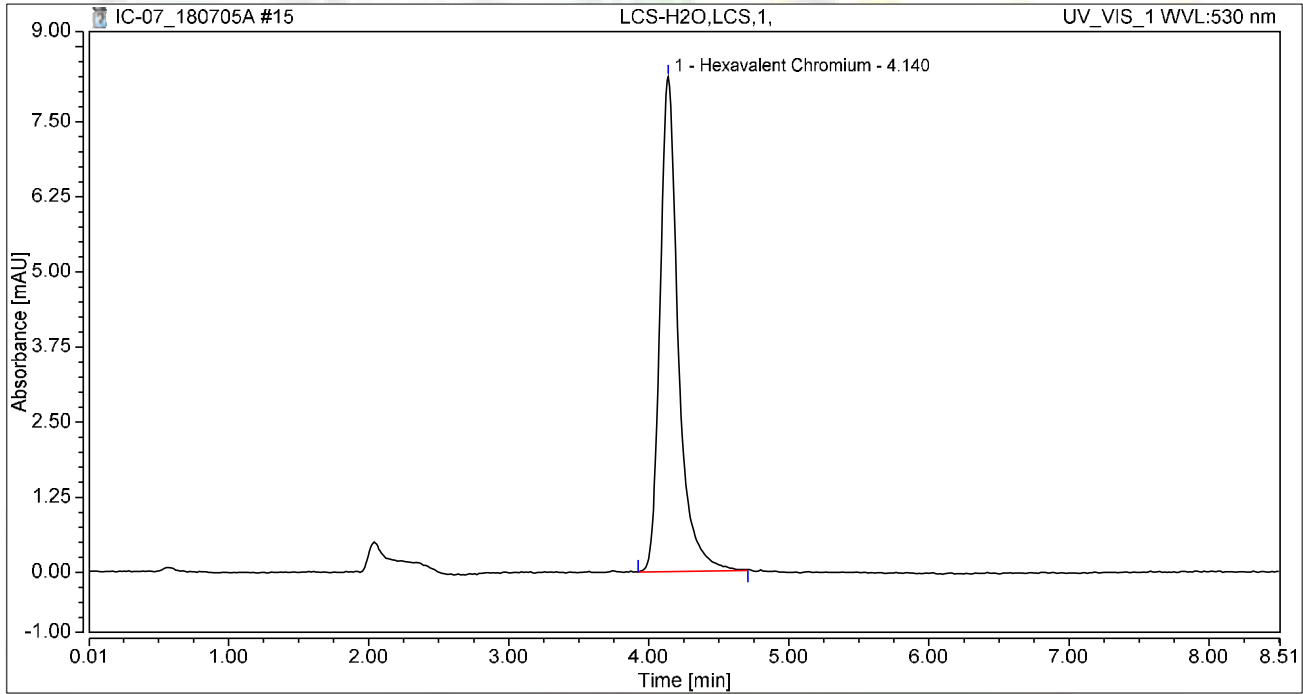
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	LCS-H2O,LCS,1,	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 10:20	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

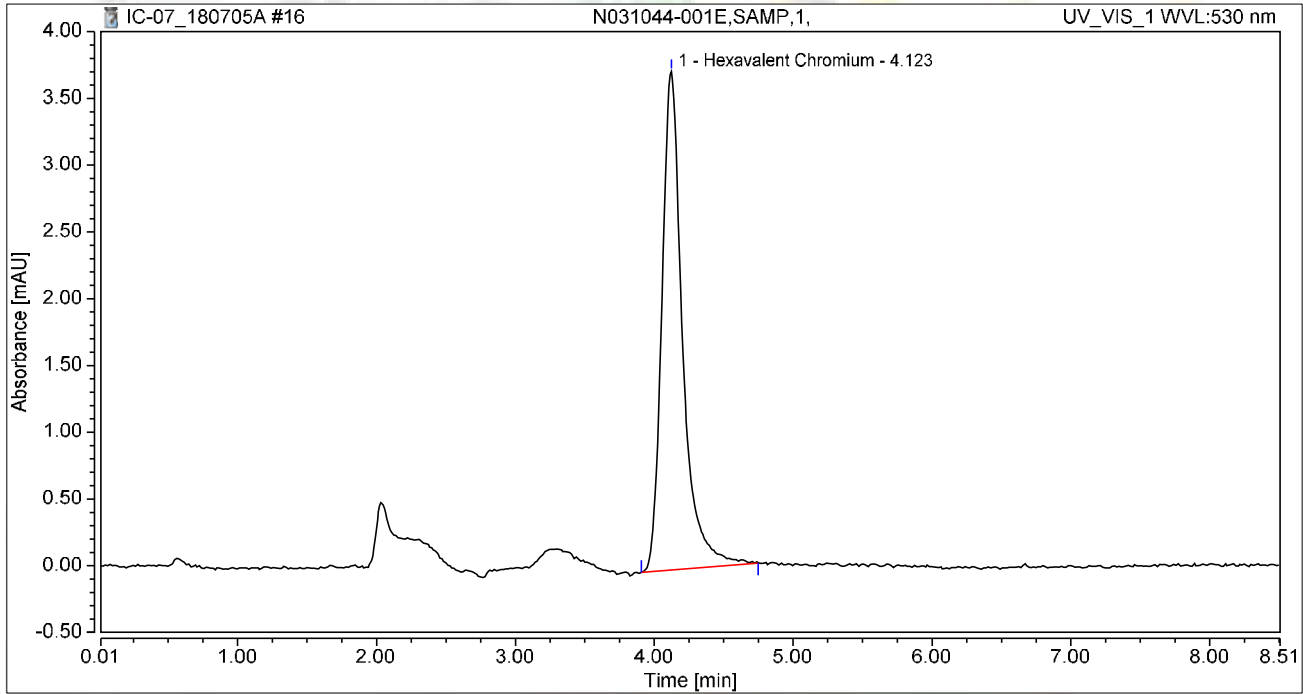
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.249	8.233	100.00	100.00	4.9627
<b>Total:</b>			<b>1.249</b>	<b>8.233</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031044-001E,SAMP,1,	Run Time (min):	8.49
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 10:30	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.643	3.733	100.00	100.00	2.5550
<b>Total:</b>			<b>0.643</b>	<b>3.733</b>	<b>100.00</b>	<b>100.00</b>	

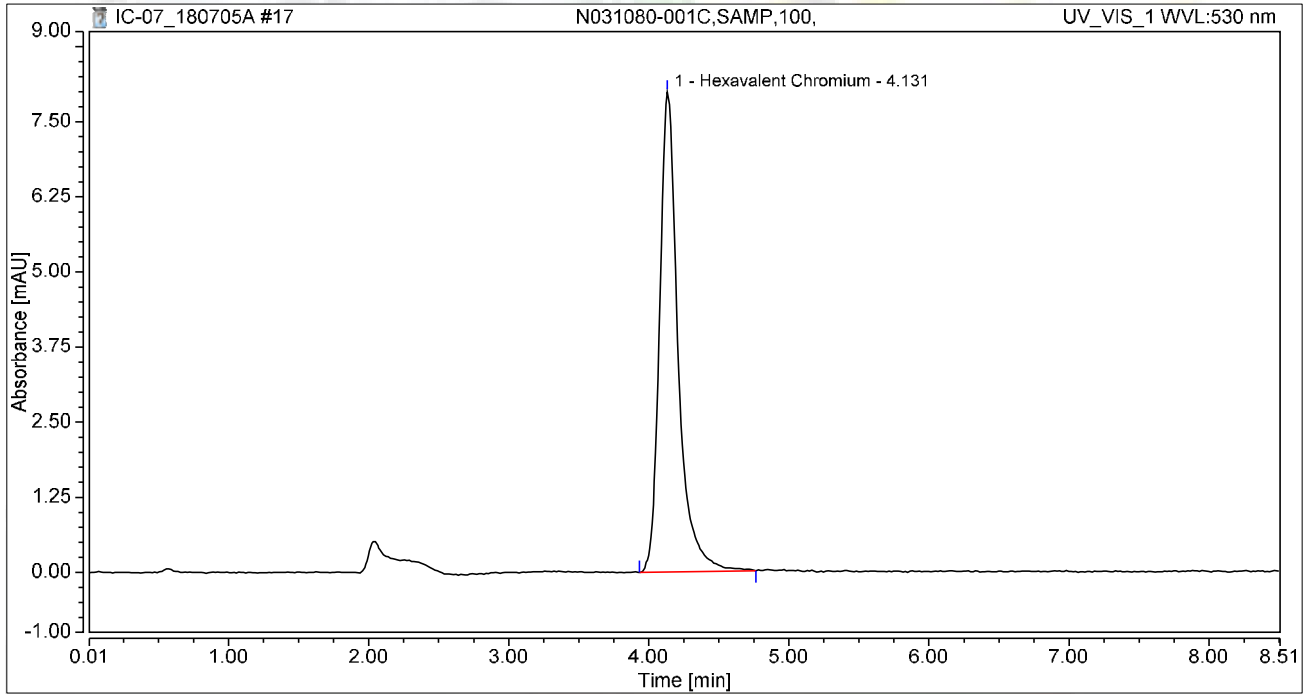


### Chromatogram and Results

**Injection Details**

Injection Name:	N031080-001C,SAMP,100,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 10:51	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

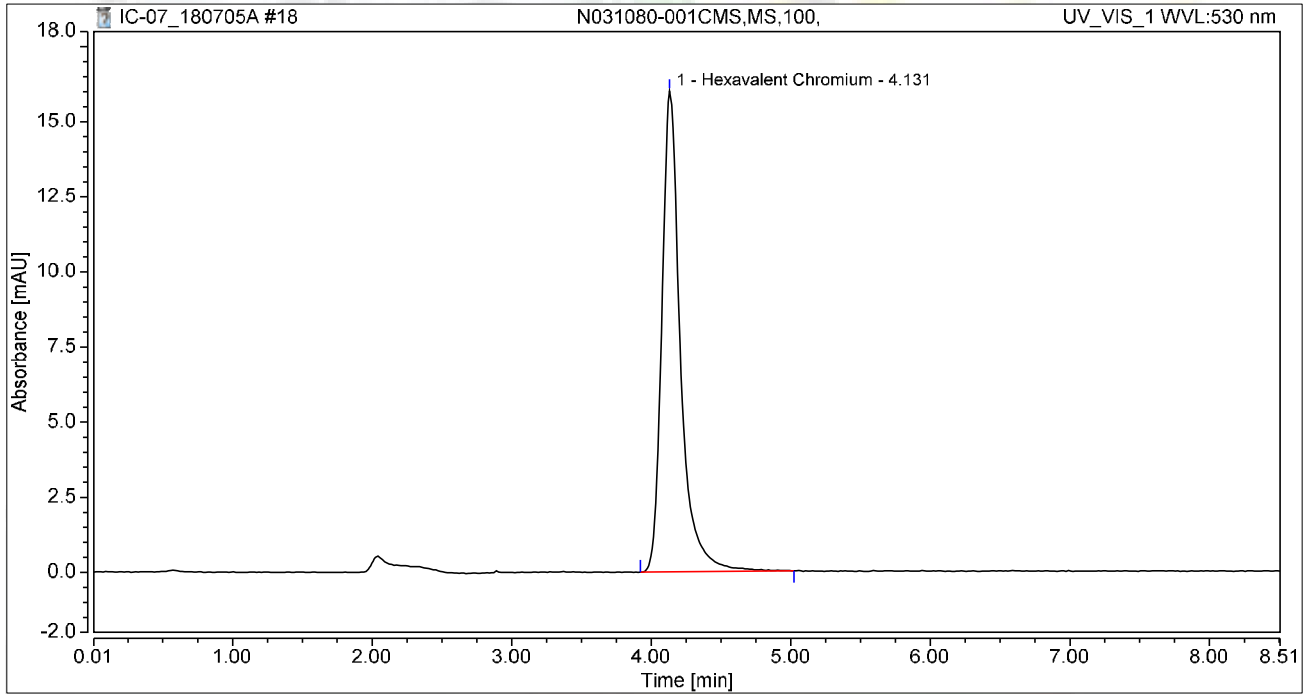
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.229	7.989	100.00	100.00	4.8828
<b>Total:</b>			<b>1.229</b>	<b>7.989</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031080-001CMS,MS,100,	Run Time (min):	8.50
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 11:02	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

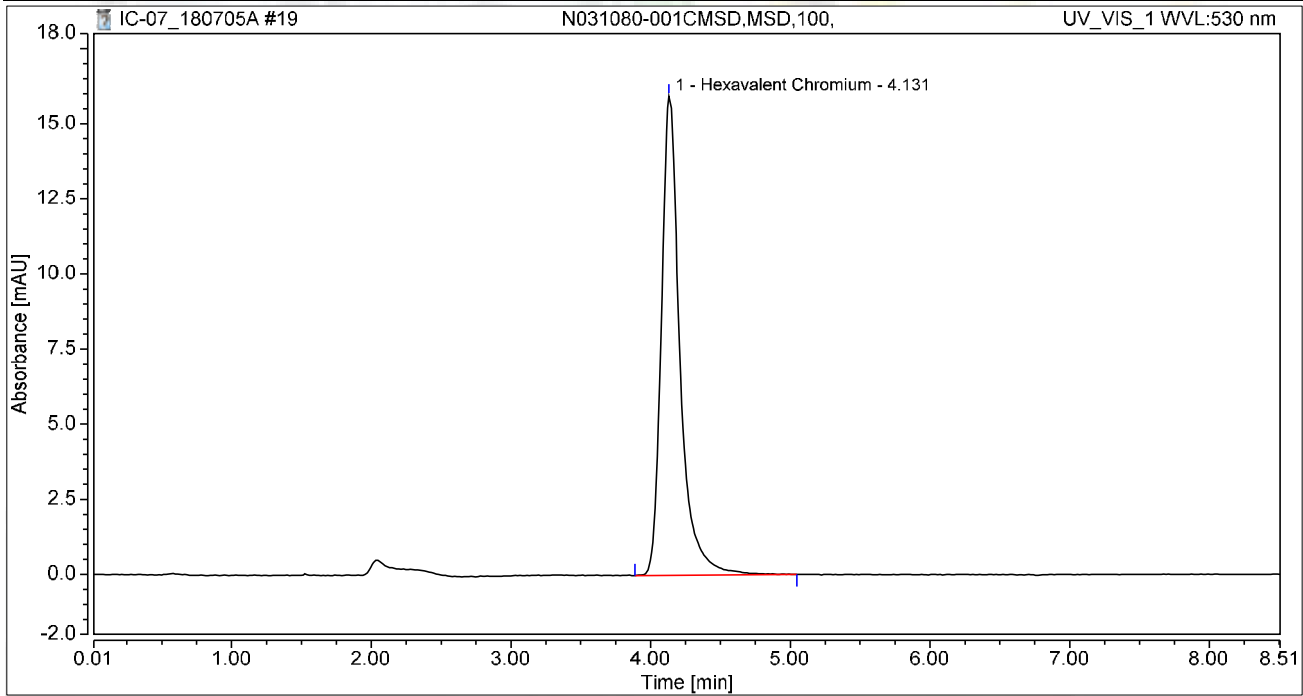
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.470	15.998	100.00	100.00	9.8114
<b>Total:</b>			<b>2.470</b>	<b>15.998</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031080-001CMSD,MSD,100,	Run Time (min):	8.49
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 11:12	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

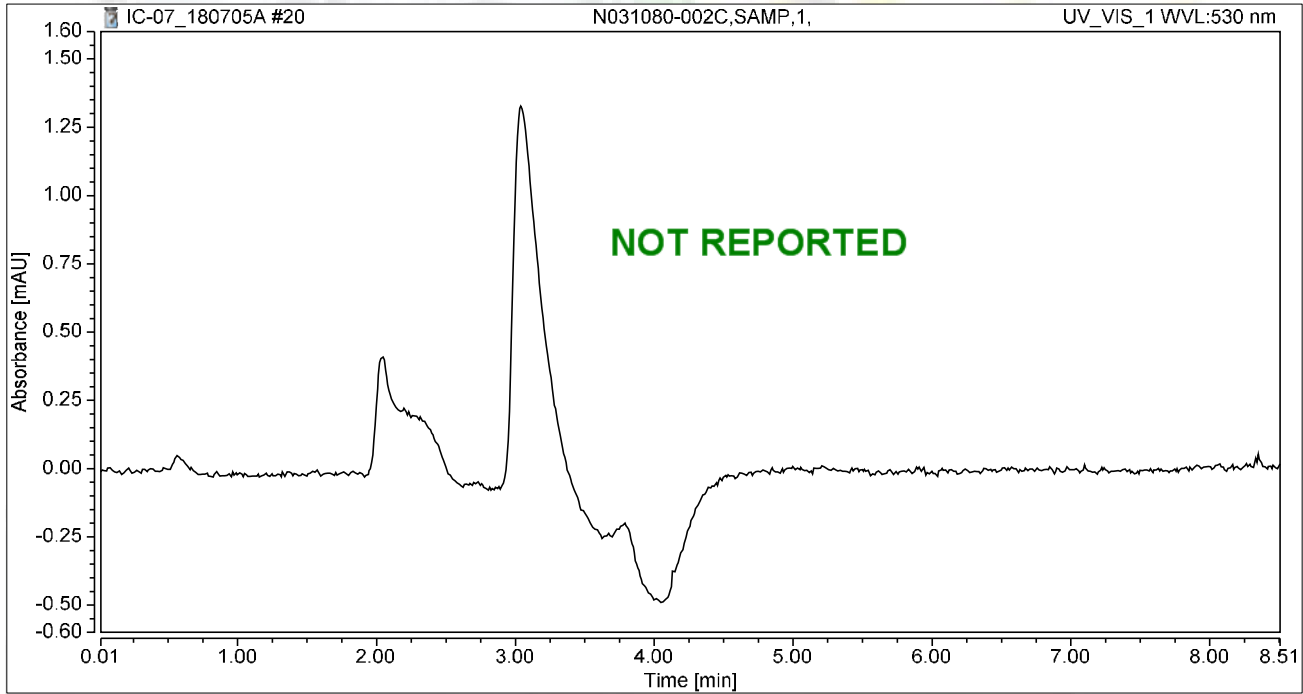
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.471	15.954	100.00	100.00	9.8160
<b>Total:</b>			<b>2.471</b>	<b>15.954</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031080-002C,SAMP,1,	Run Time (min):	8.49
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 11:21	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

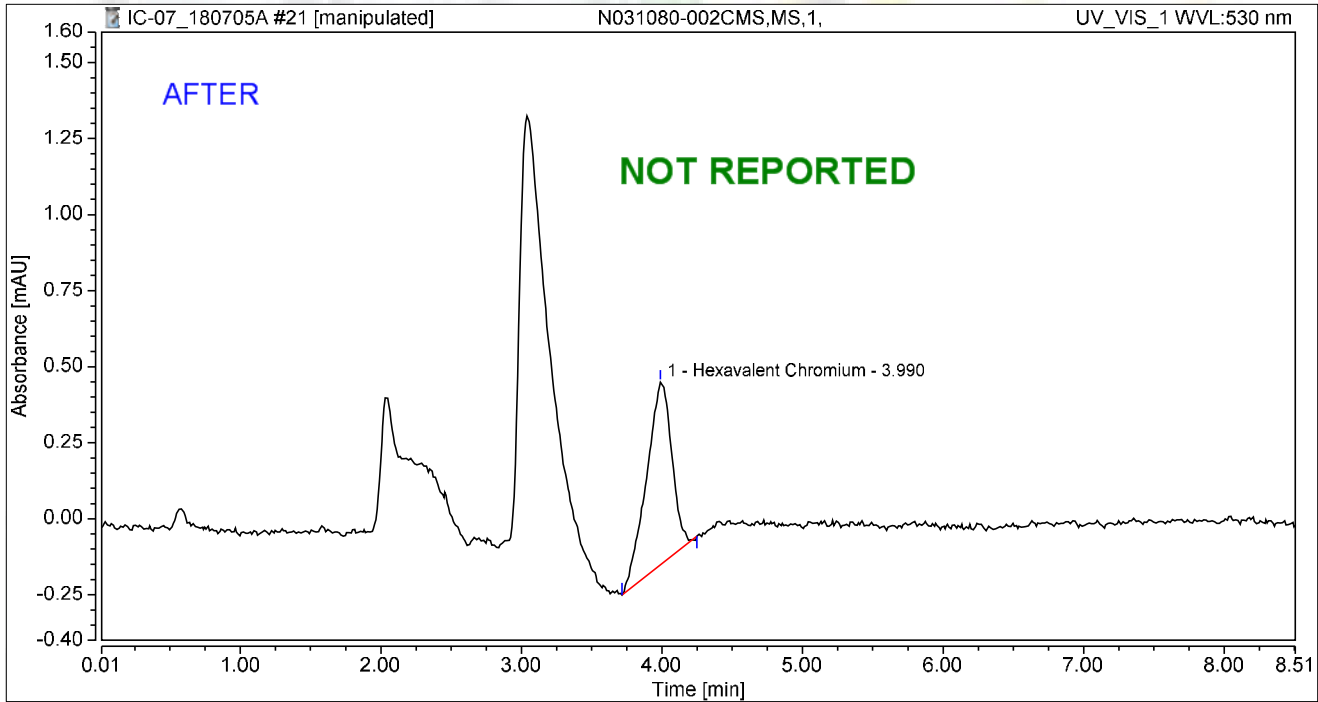
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031080-002CMS,MS,1,	Run Time (min):	8.49
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 11:31	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.990	0.125	0.600	100.00	100.00	0.4963
<b>Total:</b>			<b>0.125</b>	<b>0.600</b>	<b>100.00</b>	<b>100.00</b>	

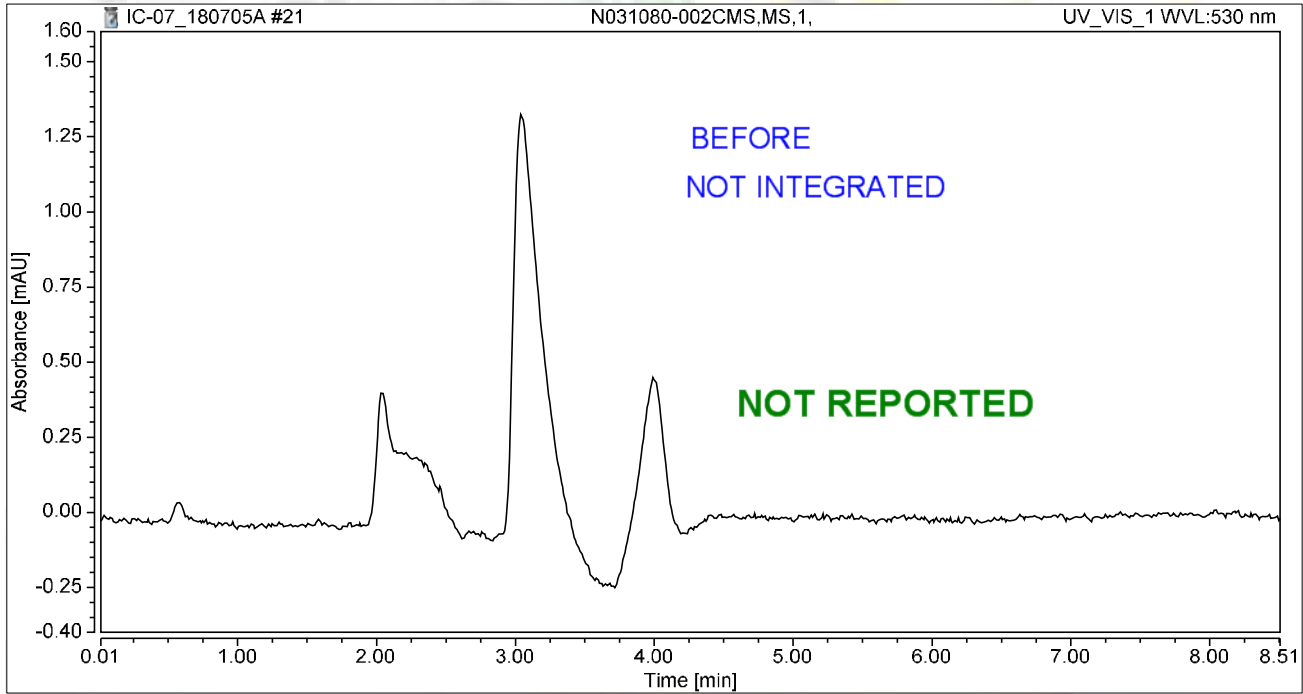
nba 7/6/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031080-002CMS,MS,1,	Run Time (min):	8.49
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 11:31	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

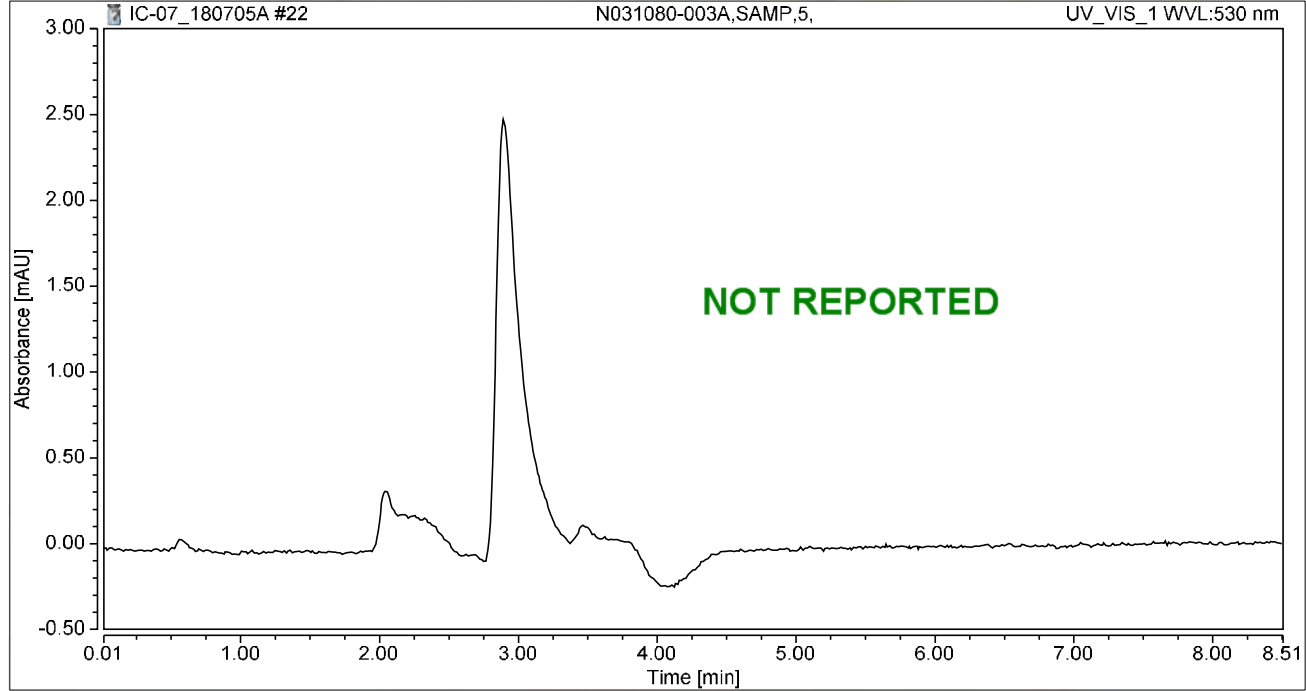
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

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### Chromatogram and Results

Injection Details		003B
Injection Name:	N031080-003A,SAMP,5,	Run Time (min): 8.49
Vial Number:	15	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	05/Jul/18 11:40	Sample Weight: 1.0000

#### Chromatogram



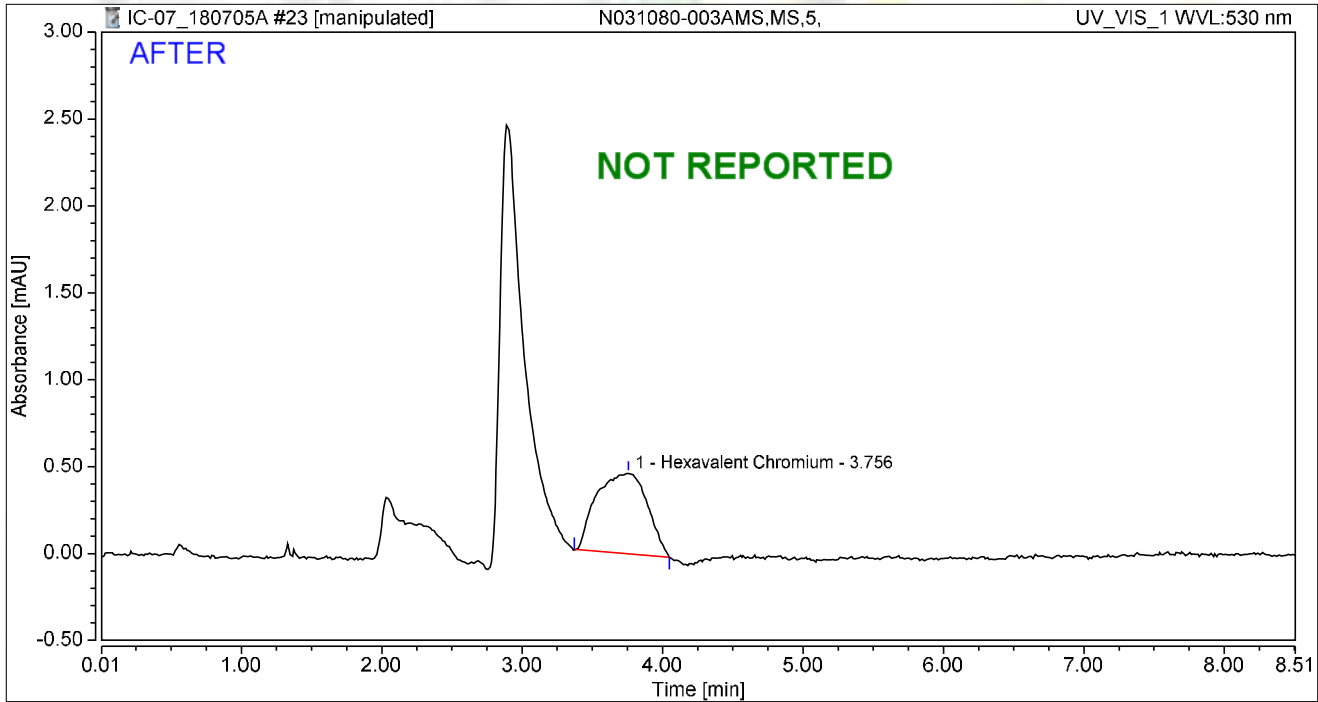
Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031080-003AMS,MS,5,	Run Time (min):	8.50
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 11:50	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.756	0.193	0.462	100.00	100.00	0.7655
<b>Total:</b>			<b>0.193</b>	<b>0.462</b>	<b>100.00</b>	<b>100.00</b>	

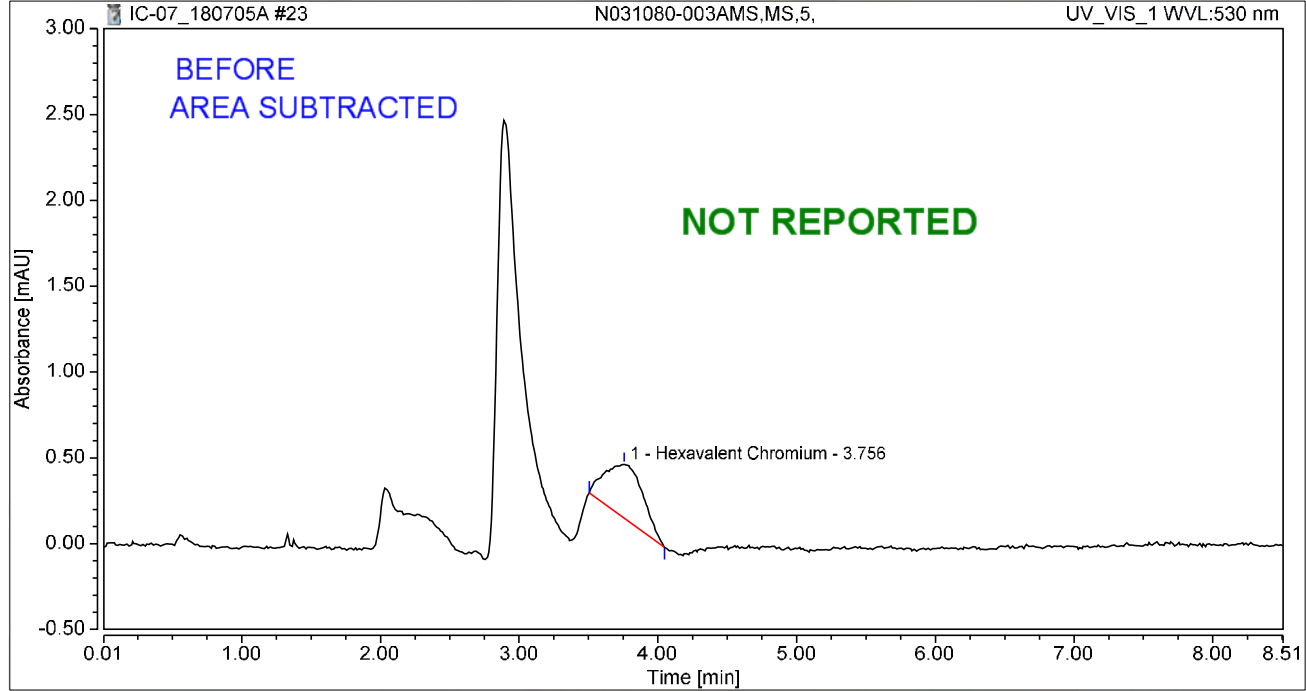
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### Chromatogram and Results

Injection Details		003B
Injection Name:	N031080-003AMS,MS,5,	Run Time (min): 8.50
Vial Number:	16	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	05/Jul/18 11:50	Sample Weight: 1.0000

#### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.756	0.101	0.311	100.00	100.00	0.3999
<b>Total:</b>			<b>0.101</b>	<b>0.311</b>	<b>100.00</b>	<b>100.00</b>	

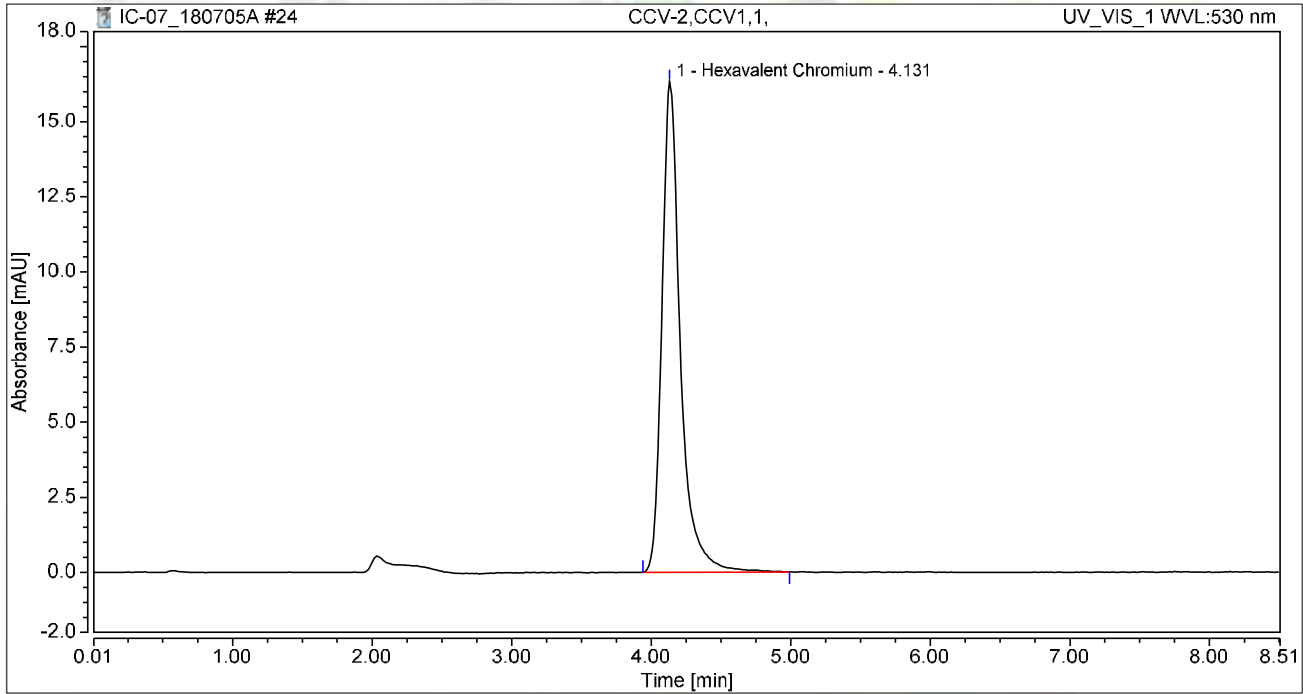
*rba* 7/6/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-2,CCV1,1,	Run Time (min):	8.50
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 11:59	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

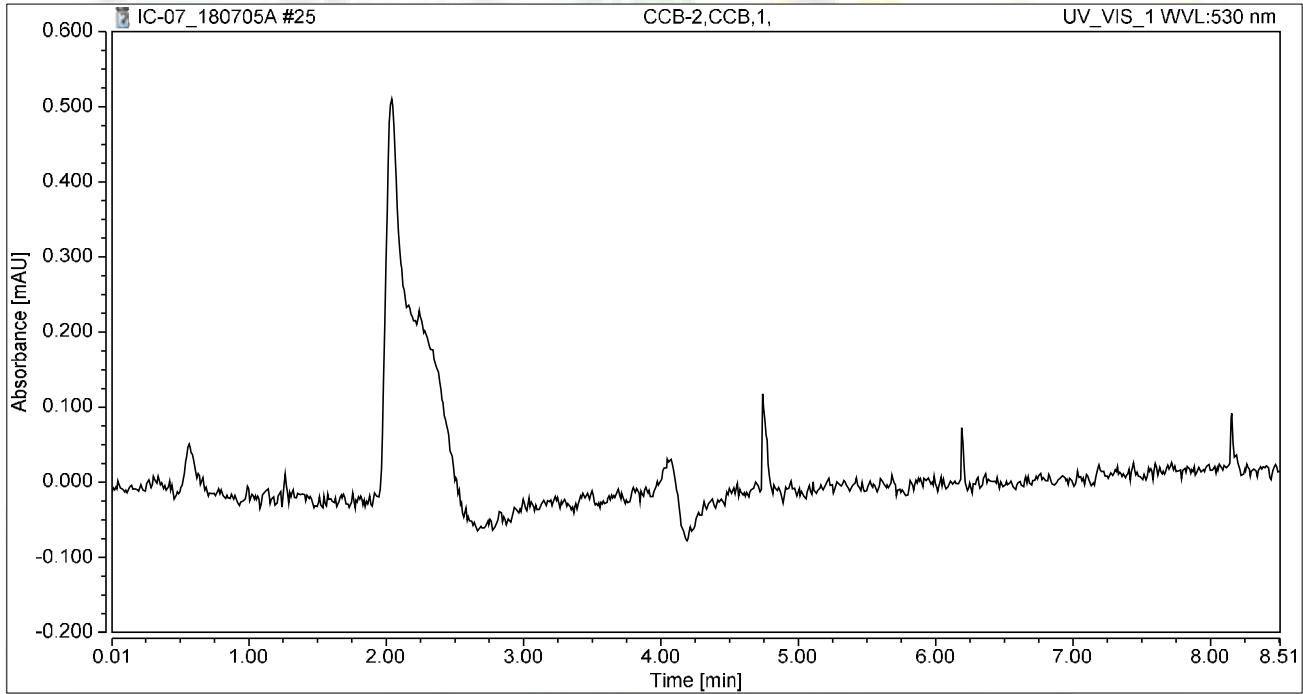
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.500	16.323	100.00	100.00	9.9321
<b>Total:</b>			<b>2.500</b>	<b>16.323</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-2,CCB,1,	Run Time (min):	8.50
Vial Number:	18	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 12:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

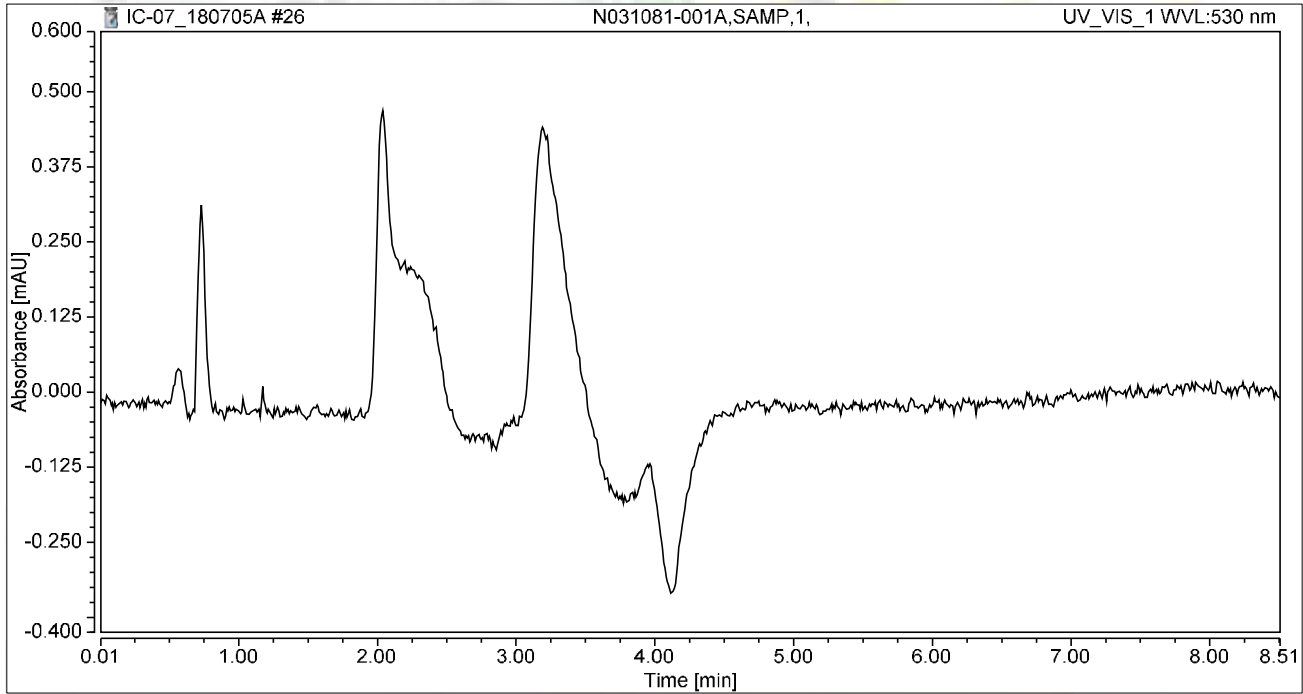
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031081-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 12:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

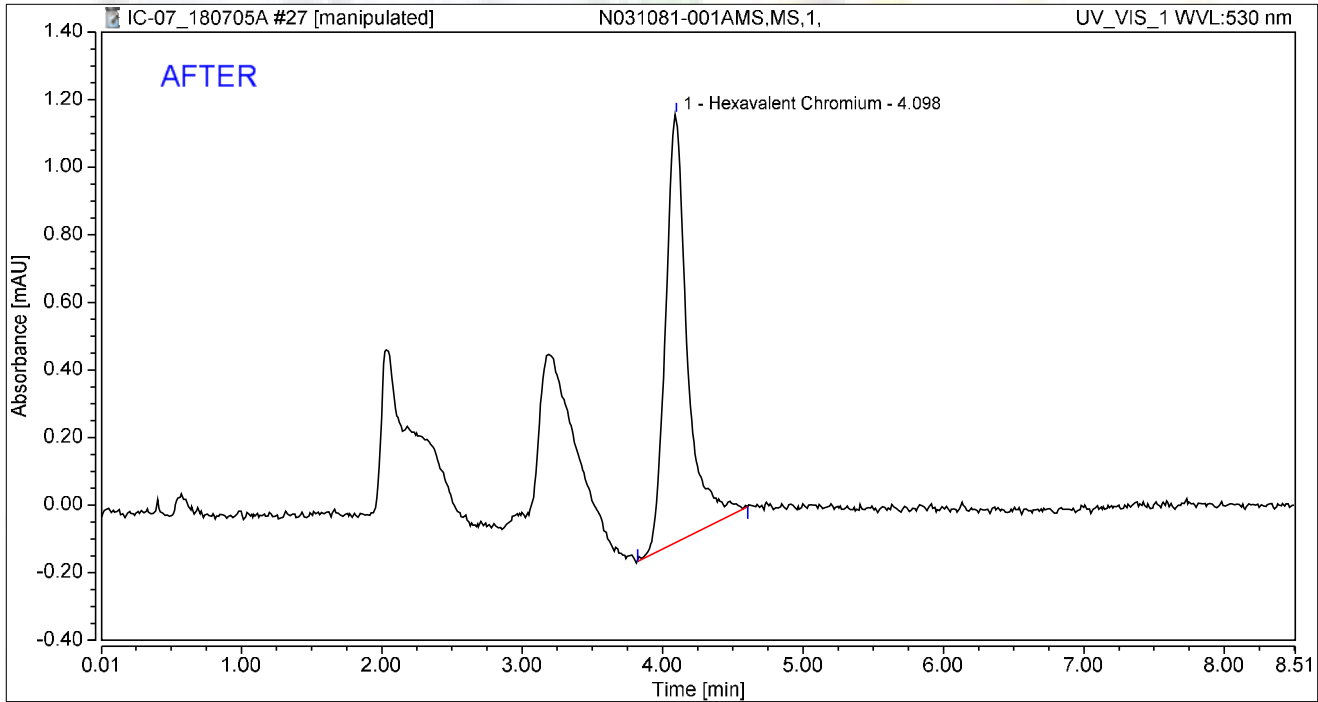
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031081-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 12:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.229	1.265	100.00	100.00	0.9097
<b>Total:</b>			<b>0.229</b>	<b>1.265</b>	<b>100.00</b>	<b>100.00</b>	

rba 7/6/2018

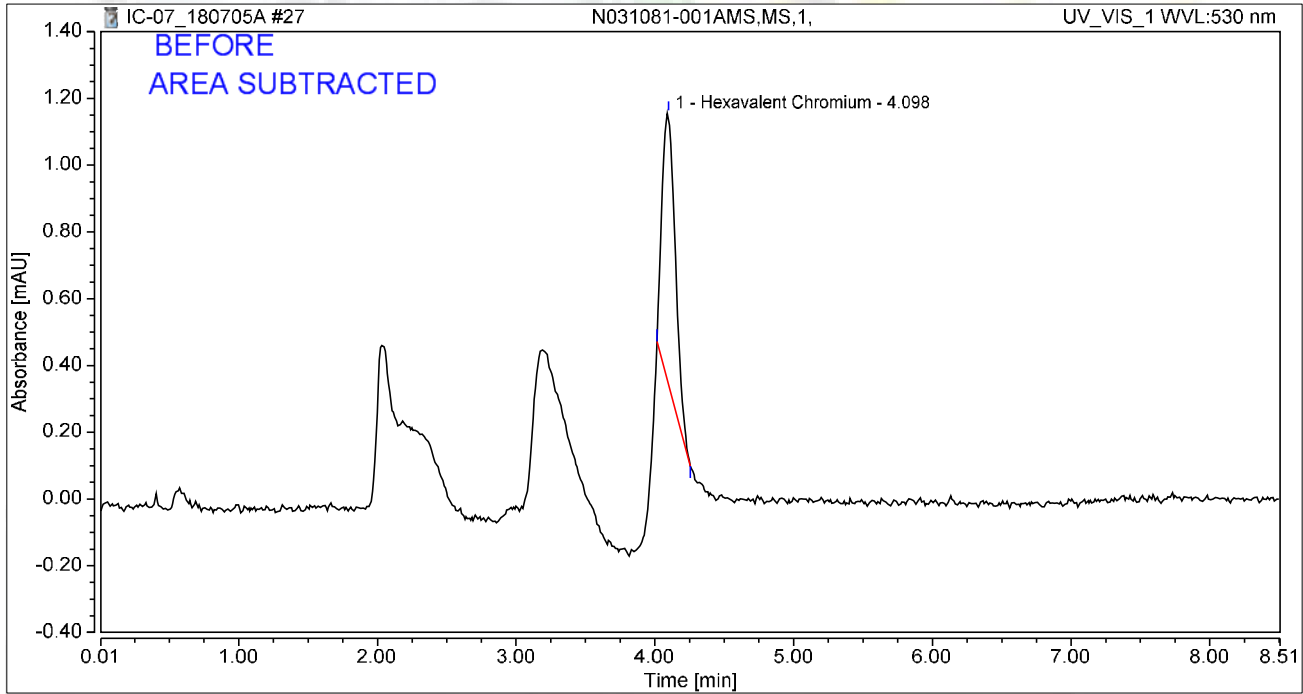
Reviewed by:  
*Nancy* 7/9/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031081-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 12:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.090	0.812	100.00	100.00	0.3564
<b>Total:</b>			<b>0.090</b>	<b>0.812</b>	<b>100.00</b>	<b>100.00</b>	

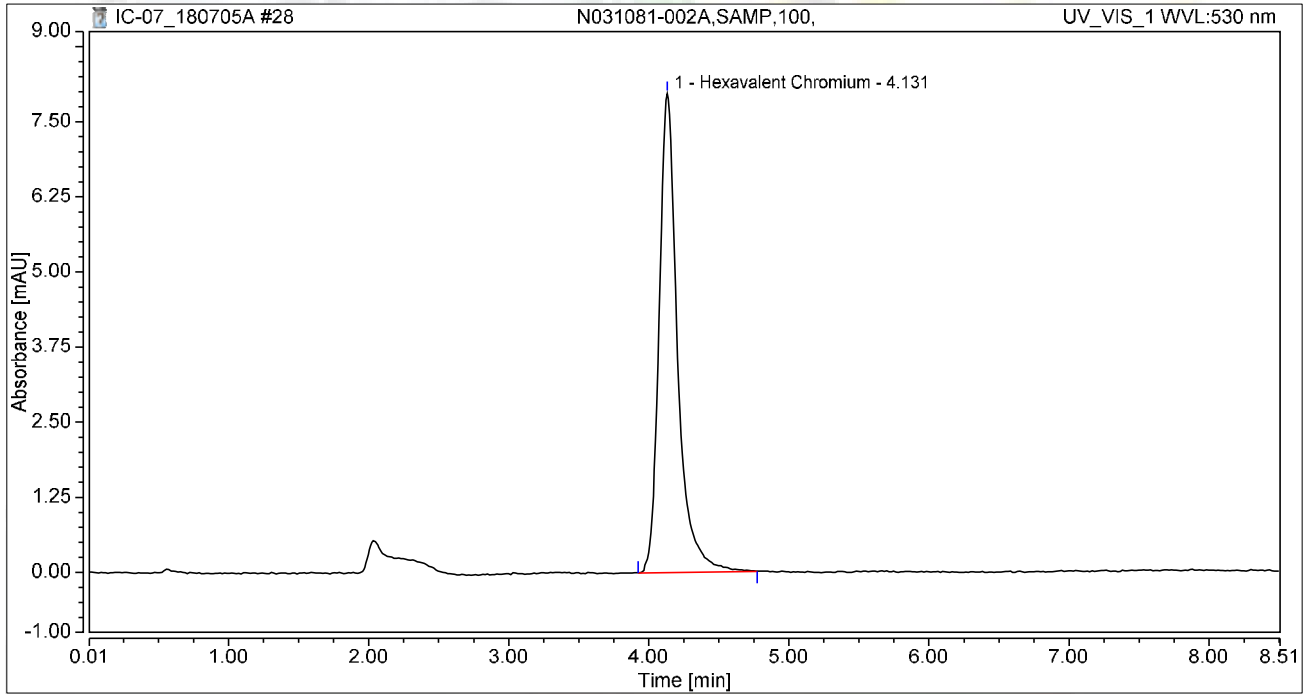
rba 7/6/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031081-002A,SAMP,100,	Run Time (min):	8.50
Vial Number:	21	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 12:37	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

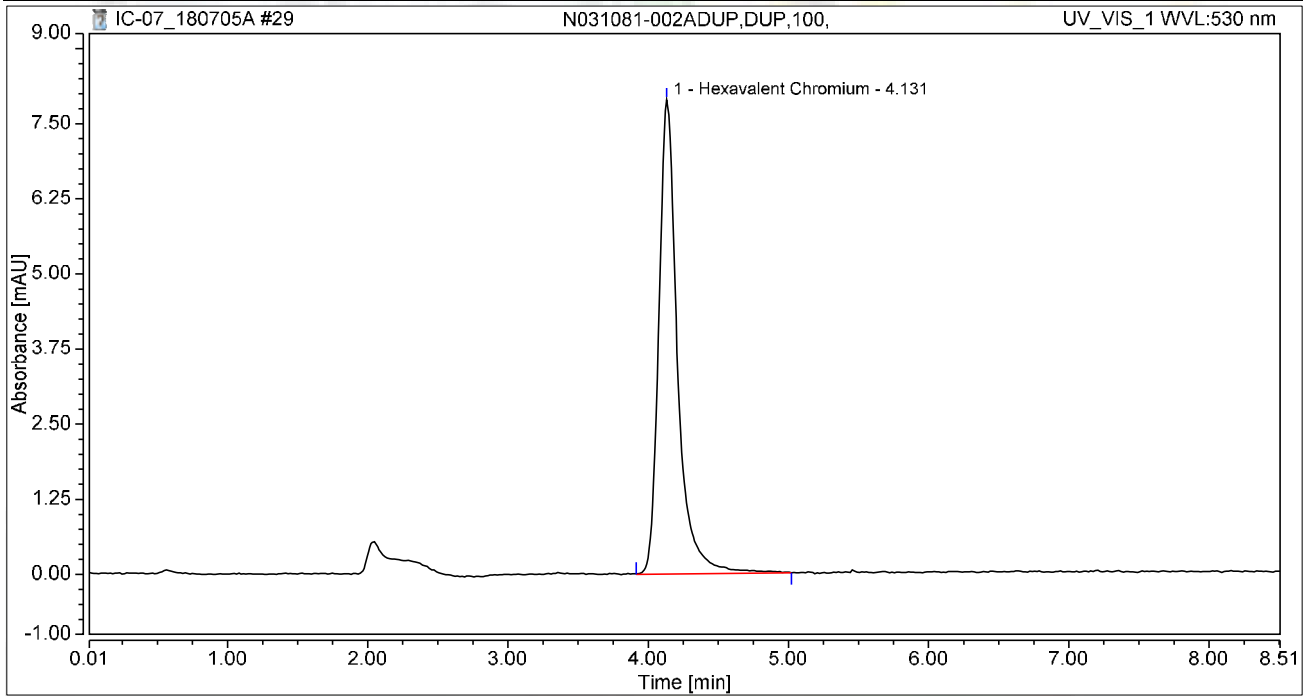
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.219	7.974	100.00	100.00	4.8426
<b>Total:</b>			<b>1.219</b>	<b>7.974</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031081-002ADUP,DUP,100,	Run Time (min):	8.49
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 12:47	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.221	7.889	100.00	100.00	4.8511
<b>Total:</b>			<b>1.221</b>	<b>7.889</b>	<b>100.00</b>	<b>100.00</b>	

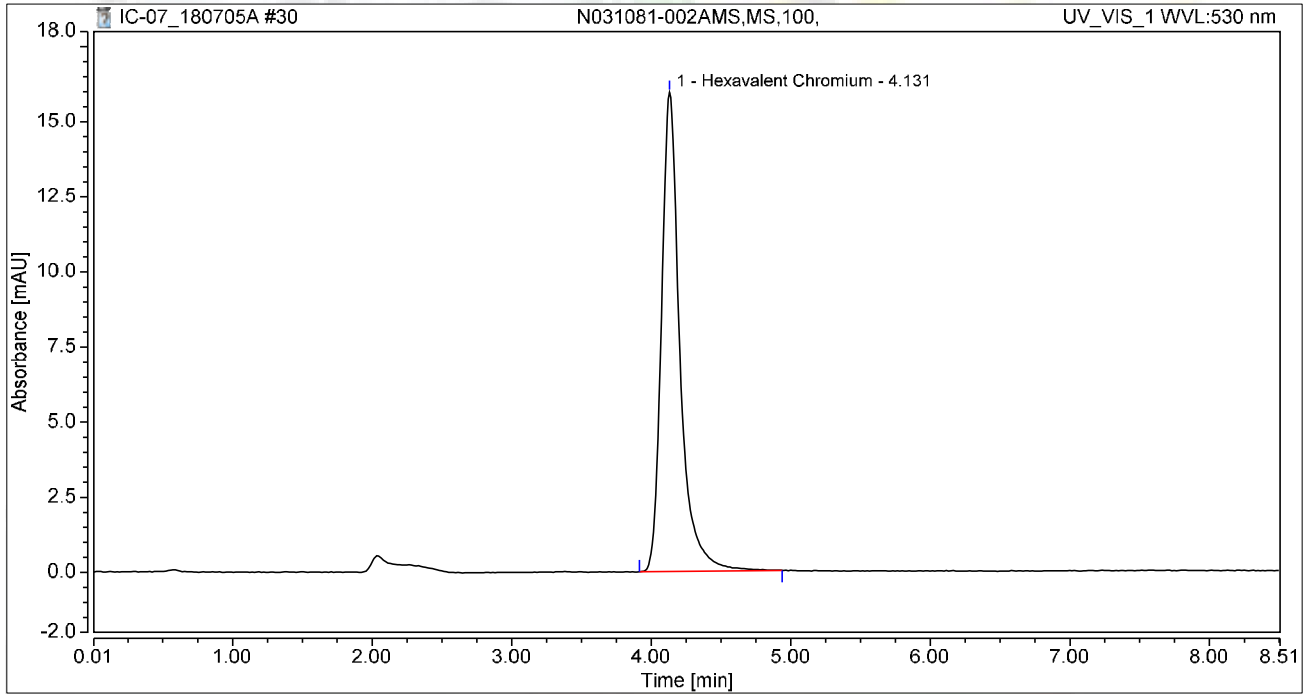


### Chromatogram and Results

**Injection Details**

Injection Name:	N031081-002AMS,MS,100,	Run Time (min):	8.50
Vial Number:	23	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 12:56	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

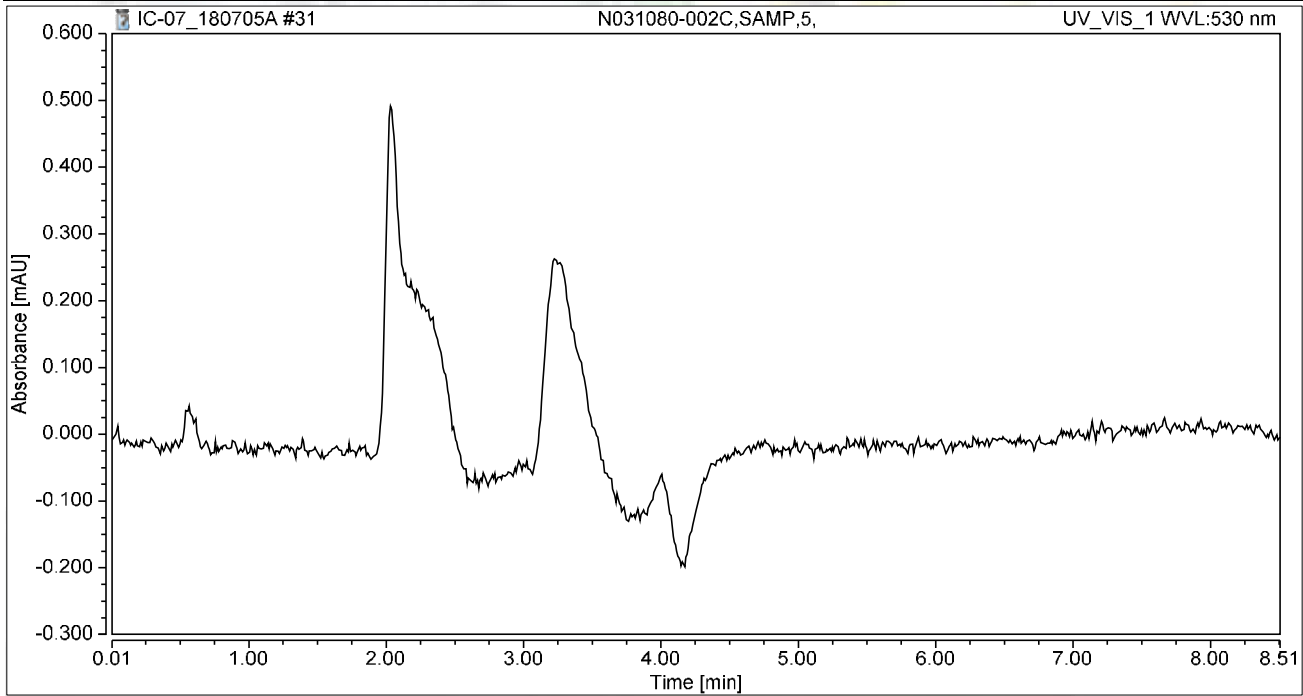
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.445	15.950	100.00	100.00	9.7120
<b>Total:</b>			<b>2.445</b>	<b>15.950</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031080-002C,SAMP,5,	Run Time (min):	8.50
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 13:05	Sample Weight:	1.0000

**Chromatogram**



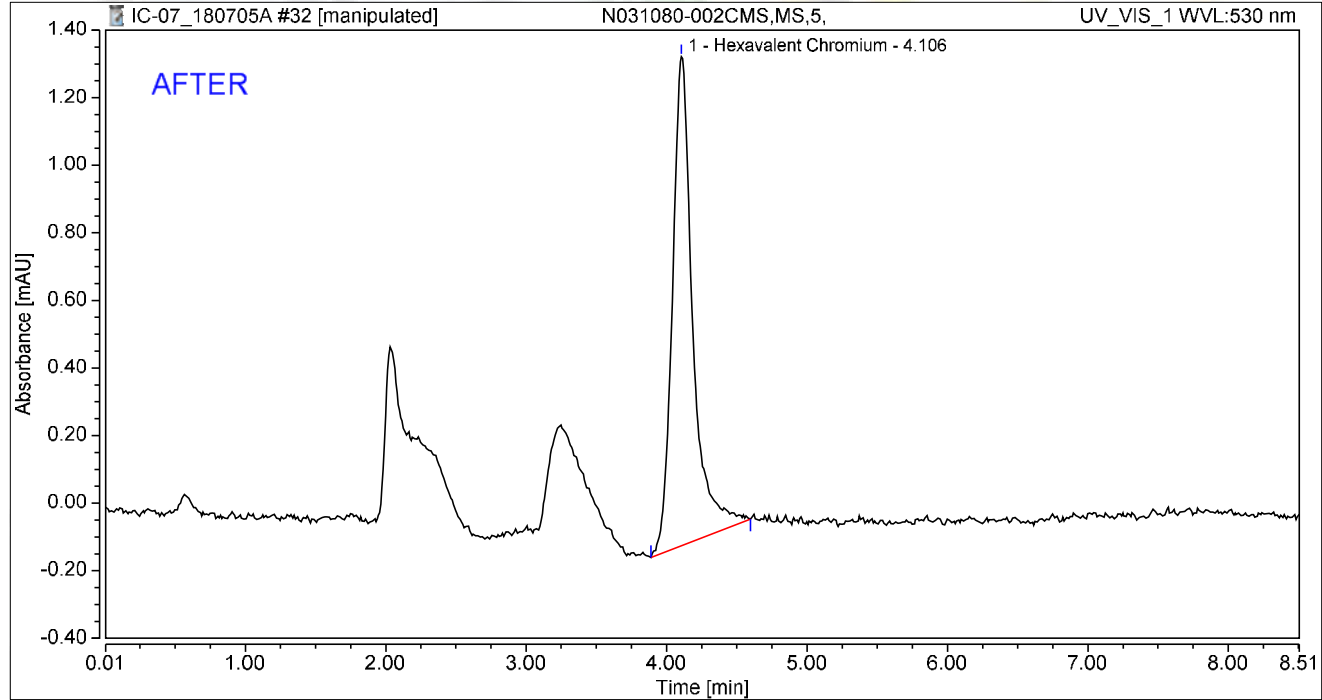
**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

Injection Details		
Injection Name:	N031080-002CMS,MS,5,	Run Time (min): 8.50
Vial Number:	25	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	05/Jul/18 13:15	Sample Weight: 1.0000

### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.244	1.447	100.00	100.00	0.9703
<b>Total:</b>			<b>0.244</b>	<b>1.447</b>	<b>100.00</b>	<b>100.00</b>	

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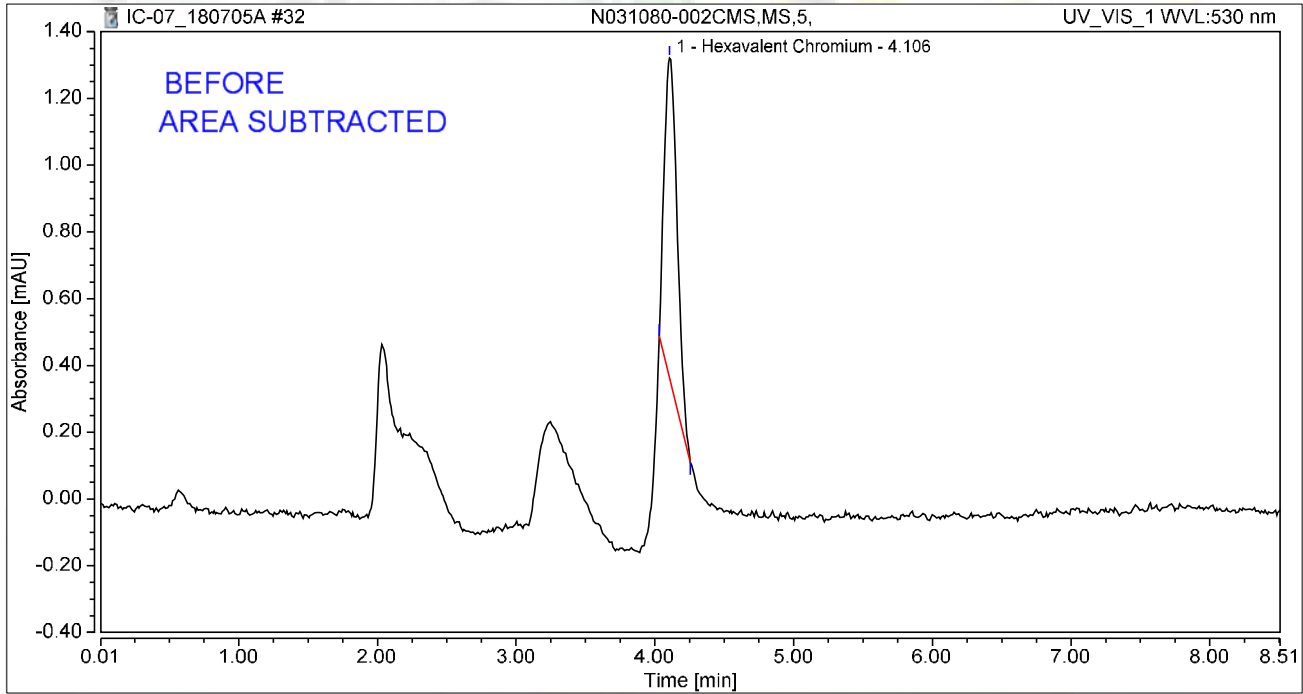
Reviewed by:  
*Henry* 7/9/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031080-002CMS,MS,5,	Run Time (min):	8.50
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 13:15	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

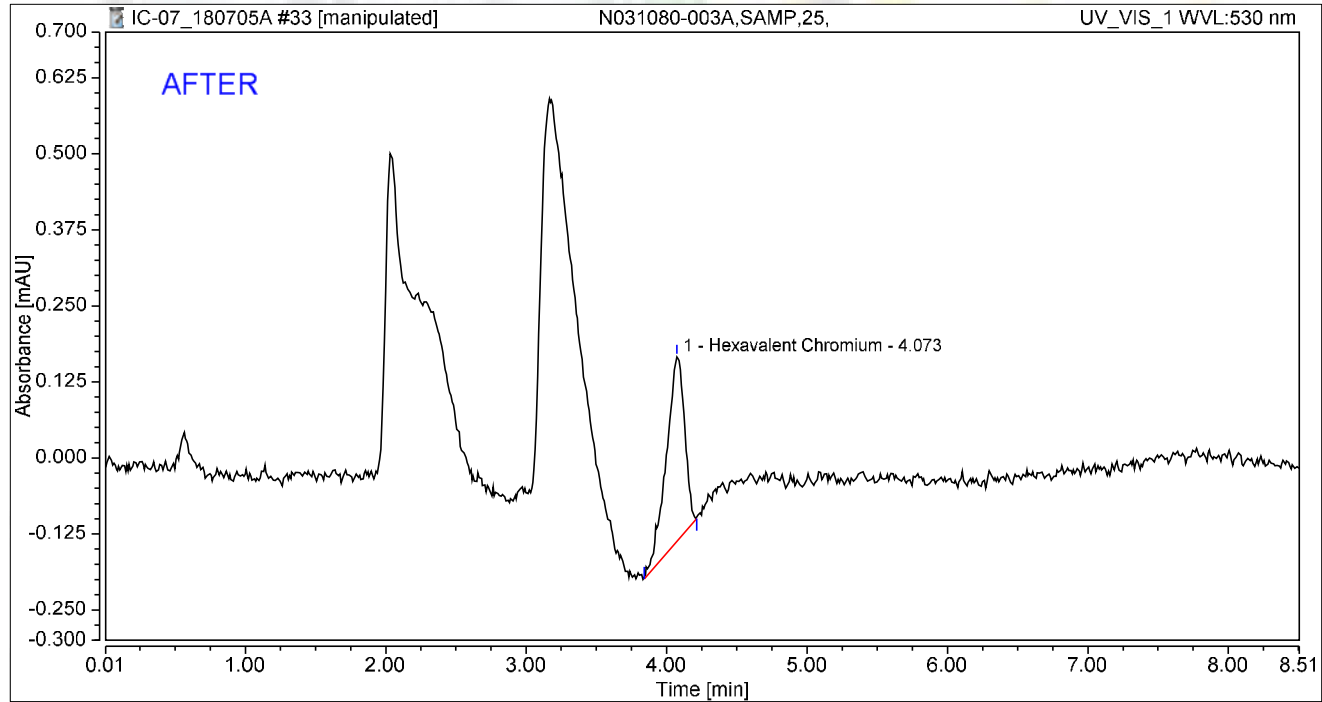
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.104	0.960	100.00	100.00	0.4135
<b>Total:</b>			<b>0.104</b>	<b>0.960</b>	<b>100.00</b>	<b>100.00</b>	

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### Chromatogram and Results

Injection Details		003B
Injection Name:	N031080-003A,SAMP,25,	Run Time (min): 8.50
Vial Number:	26	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	05/Jul/18 13:24	Sample Weight: 1.0000

#### Chromatogram



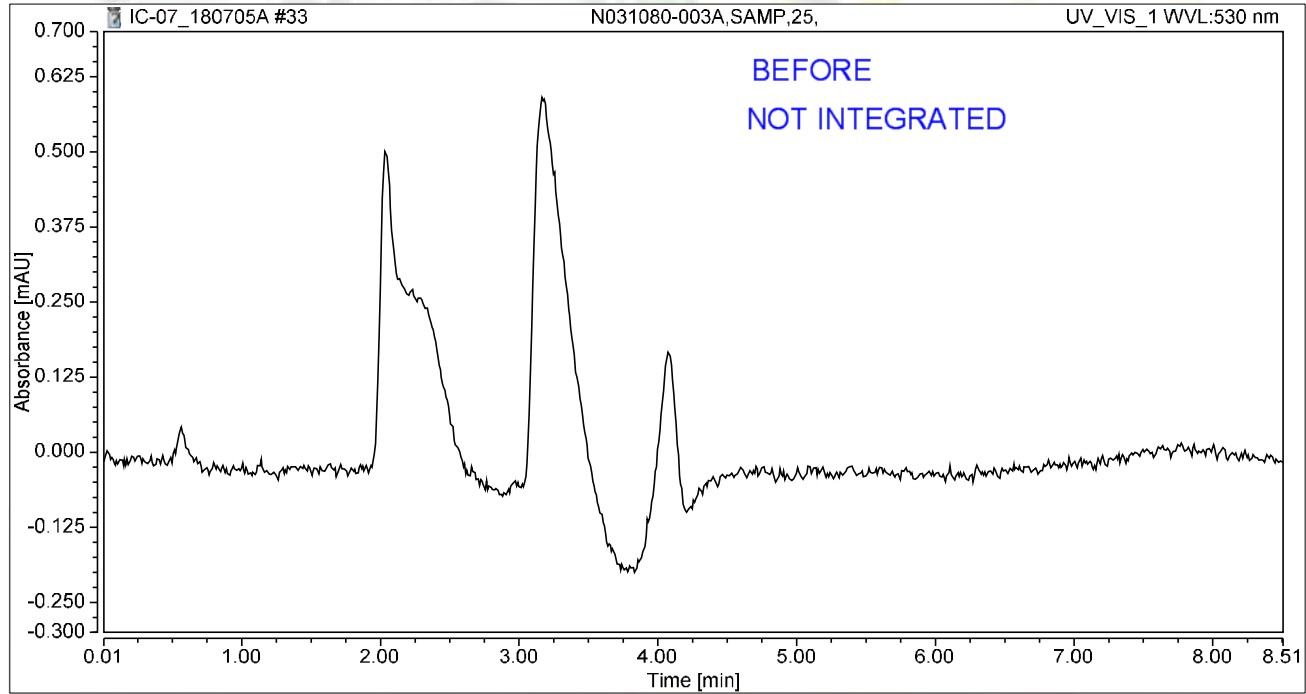
Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.046	0.304	100.00	100.00	0.1829
<b>Total:</b>			<b>0.046</b>	<b>0.304</b>	<b>100.00</b>	<b>100.00</b>	

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### Chromatogram and Results

Injection Details		003B
Injection Name:	N031080-003A,SAMP,25,	Run Time (min): 8.50
Vial Number:	26	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	05/Jul/18 13:24	Sample Weight: 1.0000

#### Chromatogram



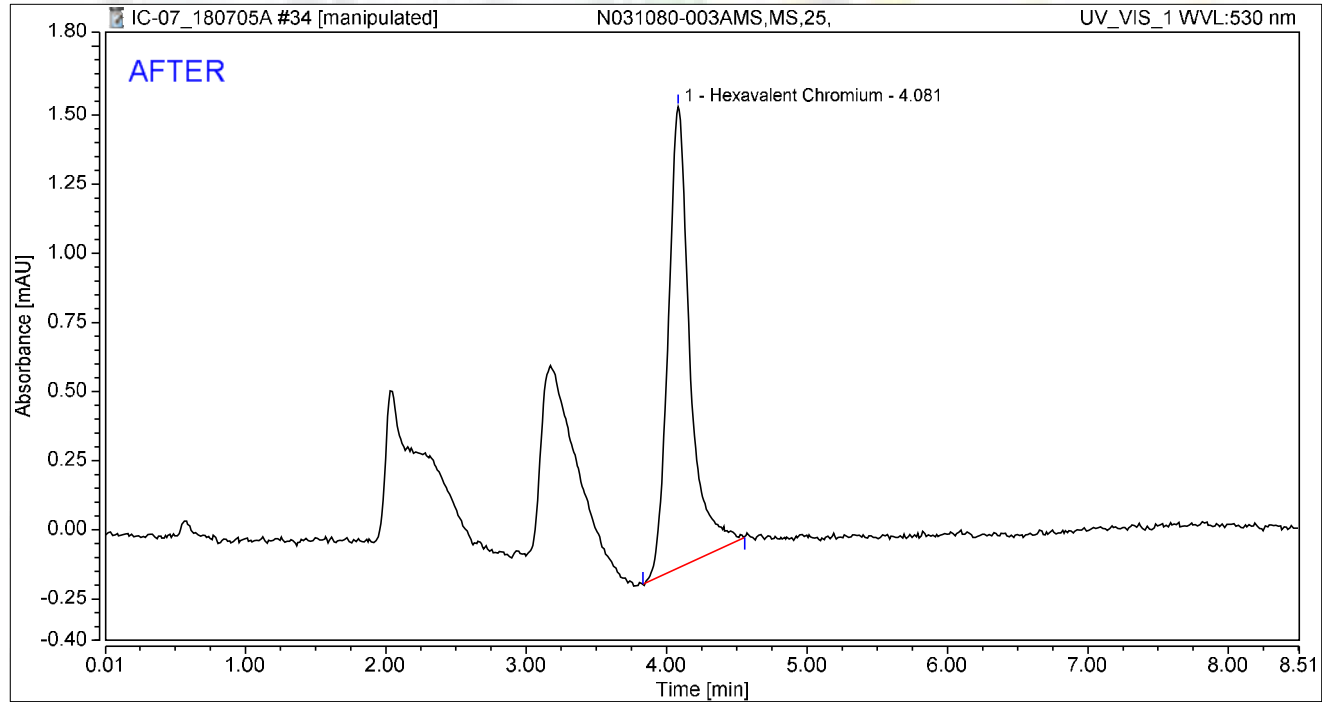
Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

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### Chromatogram and Results

Injection Details		003B
Injection Name:	N031080-003AMS,MS,25,	Run Time (min): 8.50
Vial Number:	27	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	05/Jul/18 13:34	Sample Weight: 1.0000

#### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.302	1.669	100.00	100.00	1.1997
<b>Total:</b>			<b>0.302</b>	<b>1.669</b>	<b>100.00</b>	<b>100.00</b>	

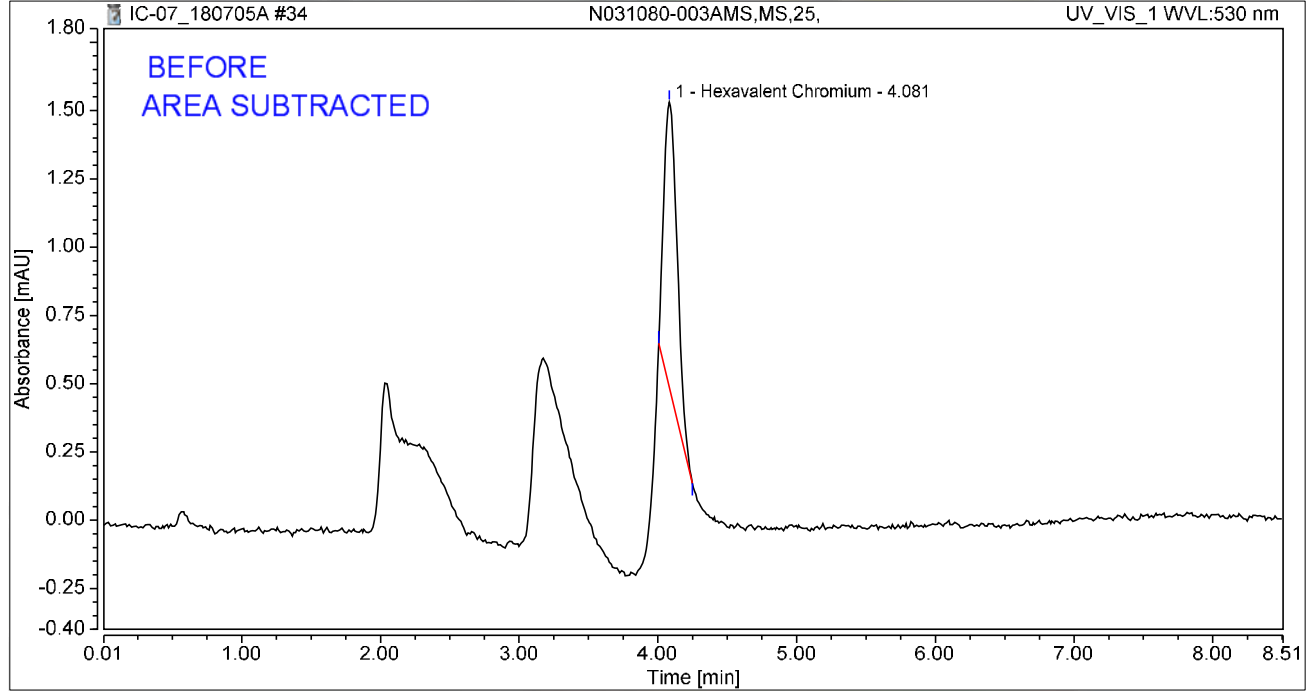
rba 7/6/2018

Reviewed by:  
 Nancy 7/9/2018  
 My first report/Integration

### Chromatogram and Results

Injection Details		003B
Injection Name:	N031080-003AMS,MS,25,	Run Time (min): <b>8.50</b>
Vial Number:	27	Injection Volume: <b>1000.00</b>
Injection Type:	Unknown	Channel: <b>UV_VIS_1</b>
Calibration Level:		Wavelength: <b>530.0</b>
Instrument Method:	Hex Chrom 4 mm	Bandwidth: <b>n.a.</b>
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor: <b>1.0000</b>
Injection Date/Time:	05/Jul/18 13:34	Sample Weight: <b>1.0000</b>

#### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.117	1.041	100.00	100.00	0.4658
<b>Total:</b>			<b>0.117</b>	<b>1.041</b>	<b>100.00</b>	<b>100.00</b>	

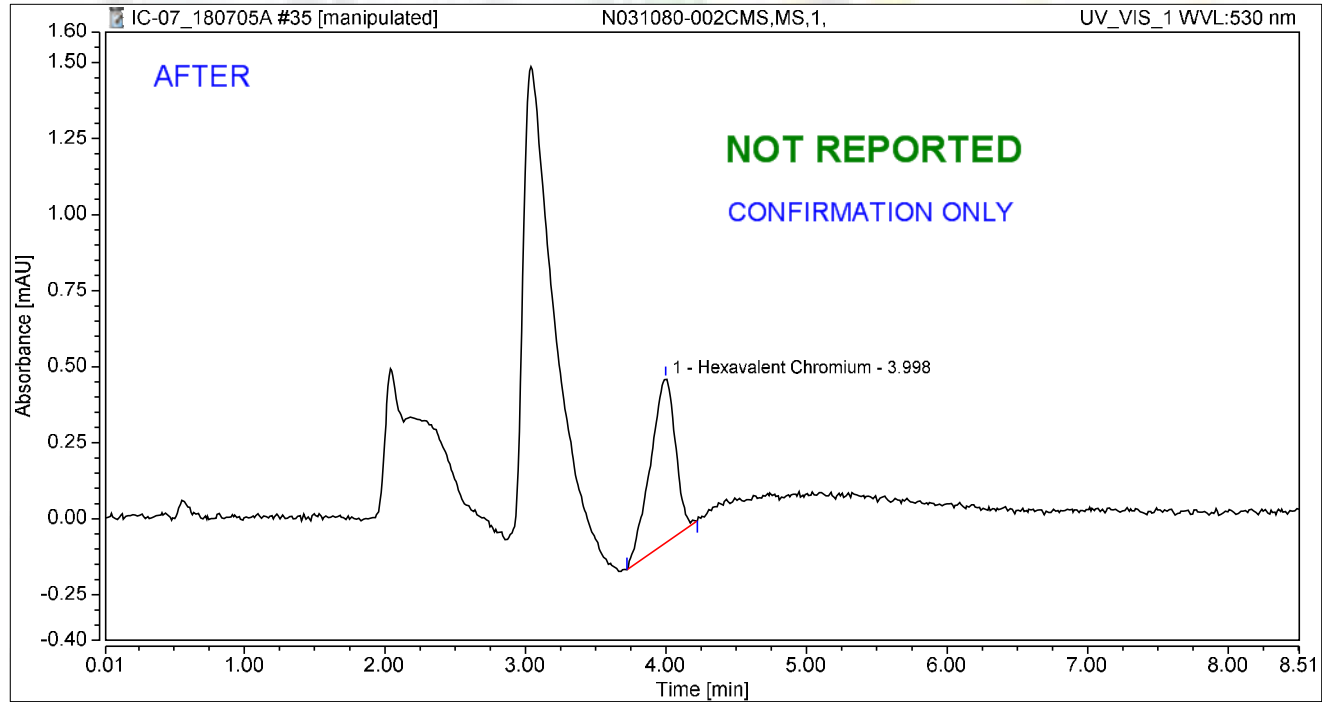
rba 7/6/2018



### Chromatogram and Results

Injection Details		
Injection Name:	N031080-002CMS,MS,1,	Run Time (min): 8.49
Vial Number:	29	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	05/Jul/18 13:44	Sample Weight: 1.0000

### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.998	0.112	0.539	100.00	100.00	0.4462
<b>Total:</b>			<b>0.112</b>	<b>0.539</b>	<b>100.00</b>	<b>100.00</b>	

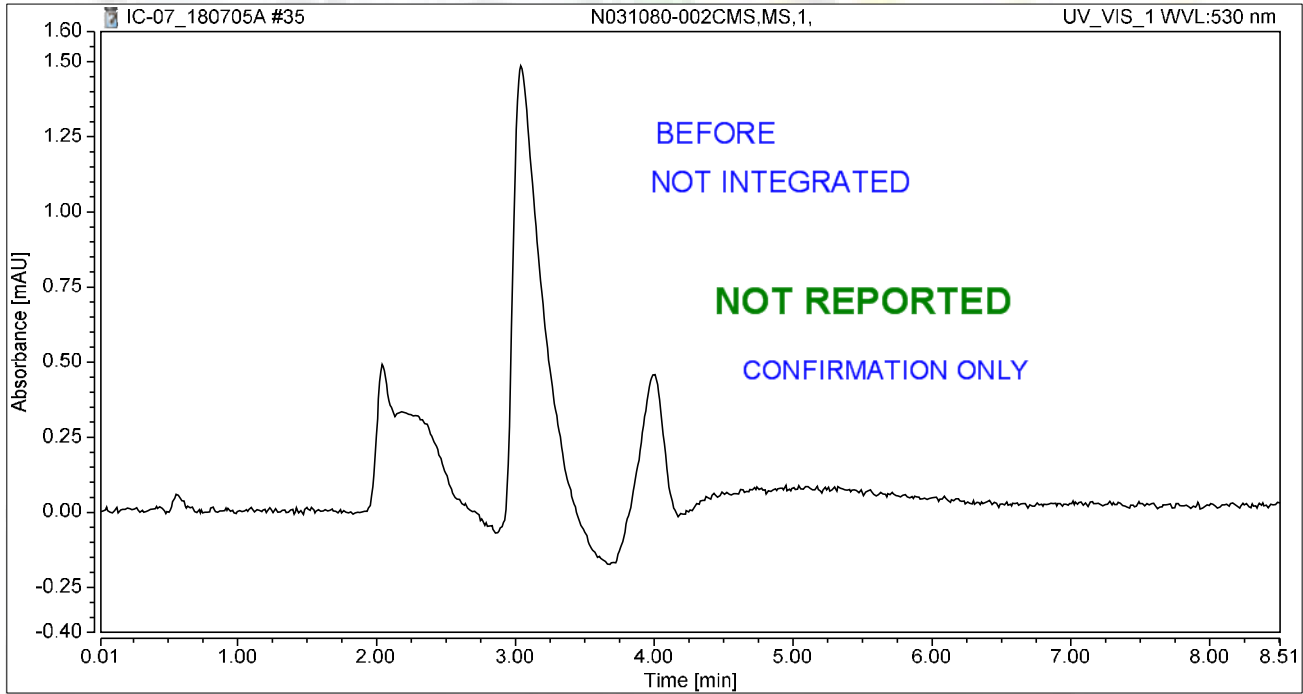
rba 7/6/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031080-002CMS,MS,1,	Run Time (min):	8.49
Vial Number:	29	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 13:44	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

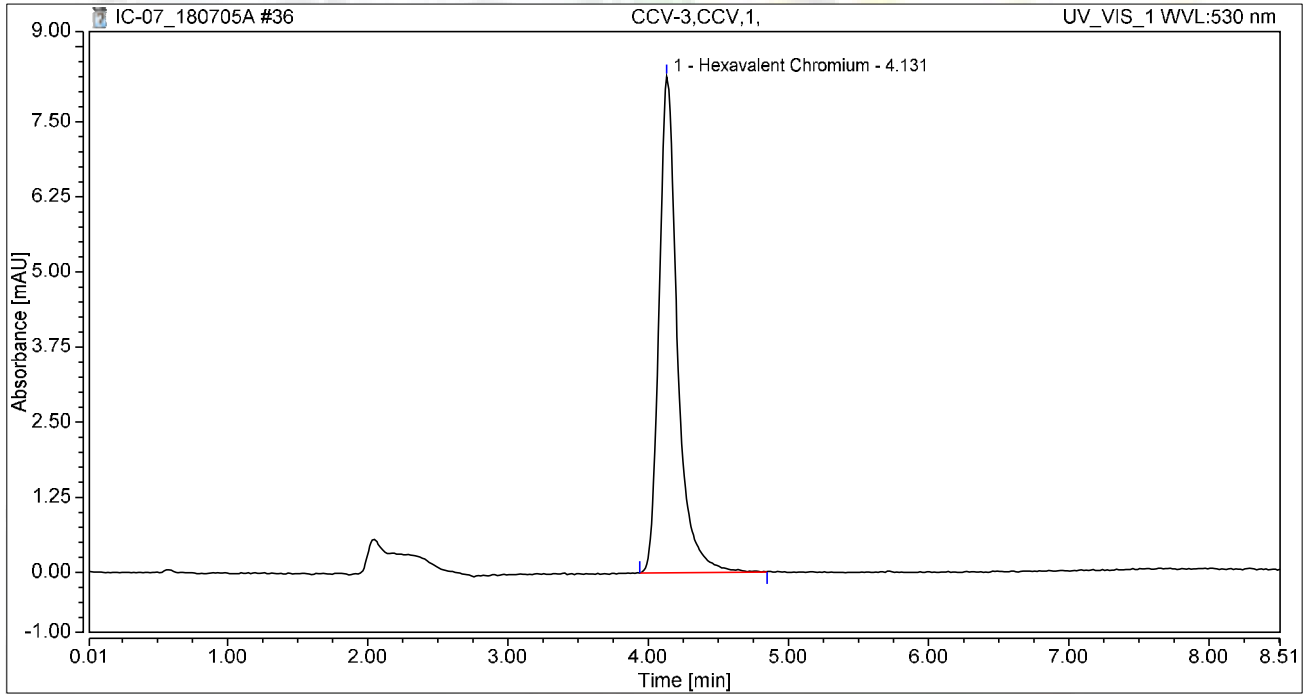
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### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-3,CCV,1,	Run Time (min):	8.49
Vial Number:	30	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 13:56	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

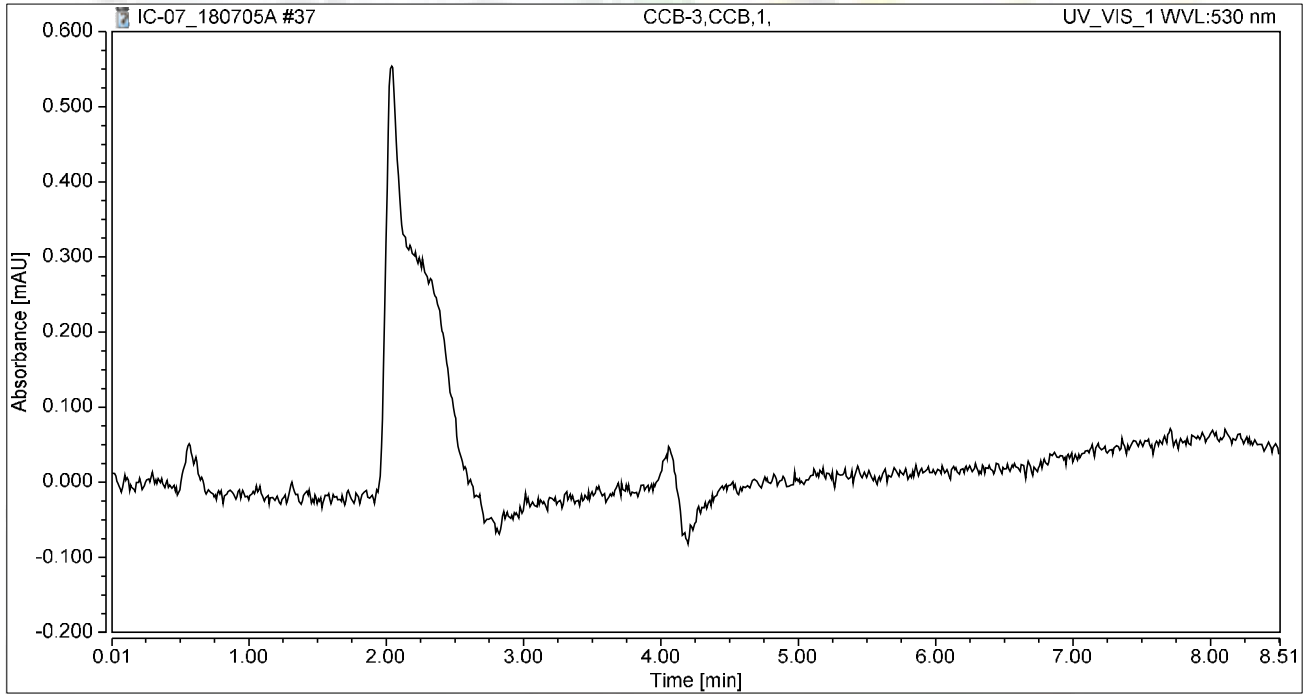
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.256	8.258	100.00	100.00	4.9899
<b>Total:</b>			<b>1.256</b>	<b>8.258</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-3,CCB,1,	Run Time (min):	8.50
Vial Number:	31	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180622_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	05/Jul/18 14:05	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# SM 2320B



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"



## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R126035

Analyst: LSR

ASSET #: N031081

Date Analyzed: 7/5/2018

Method: EPA 2320

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)			X			
<b>Sample Information</b>						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below the PQL .	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Silia Ramit

Date: 7/6/2018

2nd Level Reviewer Nancy 7/10/2018

Date: 7/10/2018

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

3151 W. Post Road, Las Vegas, NV 89118 P: 702.307.2659 F: 702.307.2659  
[www.assetlaboratories.com](http://www.assetlaboratories.com)

Sample ID: **N031081-001B @ pH 7.84**

A. Standardization of Sulfuric Acid (titrant):

$$\text{Normality of acid} = (A) (B) / (53.00) (C)$$

Where:

A, grams weighed for Na<sub>2</sub>CO<sub>3</sub> solution (Na<sub>2</sub>CO<sub>3</sub> Standardization Solution)  
B, mL Na<sub>2</sub>CO<sub>3</sub> solution taken for titration, and  
C, ml of sulfuric acid used to inflection point

Spike Standards

**Na<sub>2</sub>CO<sub>3</sub> Standardization Solution**, ACS Grade (1.00 ml = 2500ug as CaCO<sub>3</sub>):  
Dissolve 2.650 grams of Na<sub>2</sub>CO<sub>3</sub> in distilled water and dilute to 1 liter.

**LCS/MS/MSD Stock** NaHCO<sub>3</sub>, ACS Grade (1.00 ml = 5000 ug as CaCO<sub>3</sub>):  
Dissolve 0.8398 grams of NaHCO<sub>3</sub> in distilled water and dilute to 1 liter.

Therefore,

$$\begin{aligned} \text{Normality of Acid} &= (2.65 \text{ g/L}) (5\text{mL}) / (53.00) (11.75 \text{ mL}) \\ &= \mathbf{0.02128 \text{ N}} \end{aligned}$$

B. CALCULATION OF ALKALINITY (for a 50 ml sample)

$$\text{Total Alkalinity (as CaCO}_3\text{), mg/L} = M_{\text{vol.}} * N \text{ H}_2\text{SO}_4 * \text{DF} * 1000$$

Where:

M<sub>vol.</sub>, volume titrant used to reach pH 4.5, ml  
N, Normality of H<sub>2</sub>SO<sub>4</sub>  
DF, Dilution Factor = (50 ml) / (Vol. of Sample used)

Therefore,

$$\begin{aligned} \text{Total Alkalinity (as CaCO}_3\text{), mg/L} &= (10.10) (0.02128 \text{ N}) (1) * 1000 \\ &= 214.9280 \text{ mg/L} \end{aligned}$$

Reporting results in two significant figures,

$$= \mathbf{210 \text{ mg/L as CaCO}_3}$$

*Lilia Ramit* 7/6/2018



C. SPECIATED ALKALINITY:

Phenolphthalein Alkalinity

$$\begin{aligned} \text{P alkalinity, mg/L as CaCO}_3 &= P_{\text{vol.}} \cdot N \text{ H}_2\text{SO}_4 \cdot \text{DF} \cdot 1000 \\ &= (0) (0.02128 \text{ N}) (1) \cdot 1000 \\ &= \mathbf{0} \end{aligned}$$

Total Alkalinity

$$\begin{aligned} \text{T alkalinity, mg/L as CaCO}_3 &= M_{\text{vol.}} \cdot N \text{ H}_2\text{SO}_4 \cdot \text{DF} \cdot 1000 \\ &= (10.10 \text{ mL}) (0.02128) (1) \cdot 1000 \\ &= \mathbf{214.9280 \text{ mg/L as CaCO}_3} \end{aligned}$$

Where:

- $P_{\text{vol.}}$  - Volume titrant used to reach pH 8.3, ml
- $M_{\text{vol.}}$  - Volume titrant used to reach pH 4.5, ml
- $N$  - Normality of  $\text{H}_2\text{SO}_4$
- $\text{DF}$  - Dilution Factor = (50 ml) / (Vol. of Sample used)

Then OH,  $\text{CO}_3$ ,  $\text{HCO}_3$  alkalinities as  $\text{CaCO}_3$  will be calculated as follows:

Result of Titration	OH Alkalinity as $\text{CaCO}_3$	$\text{CO}_3$ Alkalinity as $\text{CaCO}_3$	$\text{HCO}_3$ Alkalinity as $\text{CaCO}_3$
$P = 0$	0	0	T
$P < \frac{1}{2} T$	0	2P	$T - 2P$
$P = \frac{1}{2} T$	0	2P	0
$P > \frac{1}{2} T$	$2P - T$	$2(T - P)$	0
$P = T$	T	0	0

Therefore,

$$\text{OH Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{CO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{HCO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{214.9280 \text{ mg/L}}$$

Reporting results in two significant figures,

$$\text{OH Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{CO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{HCO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{210 \text{ mg/L}}$$

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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<b>SAMPLE</b>	<b>PH SAMPLE</b>	<b>AMOUNT</b>	<b>V@8.3</b>	<b>VT TO 4.5</b>	<b>Sample Type</b>	<b>Standardization:</b>		
MB-1	5.24	50	0.00	0.050	MBLK	Spike amt:	5	ml
LCS-1	8.80	50	0.10	4.40	LCS	Titrant used:	11.750	ml
N031081-001B	7.84	50	0.00	10.10	SAMP			
N031081-002B	7.87	50	0.00	7.20	SAMP	N H2SO4	0.02128	Normal
N031081-002BDUP	7.90	50	0.00	7.10	DUP			
N031081-002BMS	7.96	50	0.00	11.60	MS	<b>Date Analyzed:</b>	<b>7/5/18</b>	
N031081-002BMSD	7.98	50	0.00	11.60	MSD	<b>Time:</b>	<b>10:00 AM</b>	
						<b>Analyzed By:</b>	<b>LSR</b>	
						Sodium Carbonate:	<b>CINV-161205A</b>	
						Sodium Bicarbonate:	<b>CINV-180510A</b>	
						Sulfuric Acid:	<b>R180507B</b>	

Lilia Ramif 7/6/2018

Date Analyzed:		7/5/18	Reagents:				Standardization:						P = 0
Time Started:		10:00 AM	Sodium Carbonate:		CINV-161205A	Spike amt:		5	mL			P < 1/2 T	
Analyzed By:		LSR	Hydrochloric Acid:		0	Titrant used:		11.75	mL			P = 1/2 T	
			Sulfuric Acid:		R180507B							P > 1/2 T	
						N H2SO4		0.02128	N			P = T	
Sample ID	Sample Vol/Wt.	Sample pH	Std. Code	Spike Amount	Spike Conc.	Normality, Titrant	Vol. Used to pH 8.3, ml.	Vol. Used pH 8.3 to 4.5, ml.	Total Vol. Used, ml.	DF (50ml/Vsamp.)	P Alkalinity	T Alkalinity	Comments
MB-1	50	5.24				0.02128	0.00	0.05	0.05	1	0.00	1.06	
LCS-1	50	8.8				0.02128	0.10	4.30	4.40	1	2.13	93.62	
N031081-001B	50	7.84				0.02128	0.00	10.10	10.10	1	0.00	214.89	
N031081-002B	50	7.87				0.02128	0.00	7.20	7.20	1	0.00	153.19	
N031081-002BDU	50	7.9				0.02128	0.00	7.10	7.10	1	0.00	151.06	
N031081-002BMS	50	7.96				0.02128	0.00	11.60	11.60	1	0.00	246.81	
N031081-002BMS	50	7.98				0.02128	0.00	11.60	11.60	1	0.00	246.81	

*Lilia Ramit* 7/6/2018

**Speciated, Alkalinity as CaCO3**

SM 2320B

Date Analyzed:	<u>7/5/18</u>
Time:	<u>10:00 AM</u>
Analyzed By:	<u>LSR</u>

SAMPLE ID	OH	CO3	HCO3	TOTAL	CHECK	COMMENT	REMARKS
MB-1	0.00	0.00	1.06	1.06	1.06		P = 0
LCS-1	0.00	4.26	89.36	93.62	93.62		P < 1/2 T
N031081-001B	0.00	0.00	214.89	214.89	214.89		P = 0
N031081-002B	0.00	0.00	153.19	153.19	153.19		P = 0
N031081-002BDUP	0.00	0.00	151.06	151.06	151.06		P = 0
N031081-002BMS	0.00	0.00	246.81	246.81	246.81		P = 0
N031081-002BMSD	0.00	0.00	246.81	246.81	246.81		P = 0

*Lilia Ramit*

7/6/2018

Matrix: H<sub>2</sub>O

Date Extracted: 7/5/18  
 Time Extracted: 7:51 PM  
 Extracted By: WR

Date Analyzed: 7/5/18  
 Time Analyzed: 1000  
 Analyzed By: WR

Reagent Lot # / Reagent ID  
 Sodium Carbonate: CIN-161057A  
 Hydrochloric Acid: -  
 Sulfuric Acid: R180507B  
 Sodium Bicarbonate: CIN-180510A

pH meter Calibration:  
 SLOPE: 98.01  
 pH 7 - 7.00 - CIN180515B  
 4 - 4.01 - 180515A  
 10 - 9.98 - 180119A

Sample ID	Sample Wt./Vol.	Sample pH	Std Code	Spike Amt Added	Spike Conc.	Norm. Titrant	Vol. At pH = 8.3	Vol. At pH = 4.5	Dilution (F/I)	Calculations	Comments
<b>STANDARDIZATION</b>											
#1	50 mL	10.71	1805180628A	5 mL	0.05N	-	-	11.80	50/50	$NH_2SO_4 = \frac{(2.659/L)(5 mL)}{(50)(\sqrt{H^+})} = 0.02118644$	
#2	↓	10.71		↓	↓	-	-	11.70	↓	$(50)(\sqrt{H^+}) = 0.021367521$	
1) MBUZ	50AL	5.24	-	-	-	0.02128	0	0.05	50/50		Ave: 0.02127698
2) LCS		8.80	1805180628B	1 mL	0.05N		0.10	4.40			
3) NOB1081-1B		7.84	-	-	-		0	10.10			
4) 2B		7.87	-	-	-		0	7.20			
5) 2BDF		7.90	-	-	-		0	7.10			
6) 2BMS		7.92	1805180628B	1 mL	0.05N		0	11.60			
7) 2BMSsp		7.98		↓	↓		0	11.60			
8)											
9)											
10)											
11)											
12)											
13)											
14)											
15)											
16)											
17)											
18)											
19)											
20)											
MS											
MSD											
LCS											

$$P = \frac{(V_{pH 8.3})(N_{H_2SO_4})(50,000)}{V_{OX}}$$

$$T = \frac{(V_{pH 4.5})(N_{H_2SO_4})(50,000)}{V_{OX}}$$

Julia Kamit 7/6/2018



# EPA 300.0



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

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IC Technical Batch Review Checklist (ARCUS02)  
ASSET LABORATORIES - LAS VEGAS

IC ARCUS  
REV 2.0  
011416

QC Batch Number: R126053  
ASSET #: N031081

Instrument ID: IC-08  
Analyst: RBA  
Date Analyzed: 7/5/2018

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria? (r = 0.995, r = 0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)			X			
8. Do all calibration blanks (ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?			X			
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?			X			
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)			X			
14. For Hinkley DOM samples, matrix spike protocol performed on all samples? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)			X			
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X					
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments:

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer *rba*

Date: 7/6/2018

2nd Level Reviewer *Nancy* 7/12/2018

Date: \_\_\_\_\_



# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

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3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 300  
**TEST NAME:** INORGANIC ANIONS BY IC  
**MATRIX:** GROUNDWATER

FORMULA:

Calculate the Sulfate concentration, in mg/L, in the original sample as follows:

$$\text{Sulfate, mg/L} = A * DF$$

where:

A = mg/L, IC calculated concentration  
DF = dilution factor

For **N031081-001B** concentration in mg/L is calculated as follows:

$$\begin{aligned}\text{Sulfate, mg/L} &= 5.7867 * 50 \\ &= 289.335\end{aligned}$$

Reporting result in two significant values,

$$\text{Sulfate, mg/L} = \mathbf{290}$$

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
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NEVADA  
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Sequence: IC-08\_180703A  
Operator: IC-05

Page 1 of 2  
Printed: 7/4/2018 11:30:51 PM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 19

Created: 7/3/2018 9:12:57 AM by IC-05  
Last Update: 7/4/2018 11:21:14 PM by IC-05

No.	Name	Type	Inj. Vol.	Program	Method	Status
1	BLANK,BLANK,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
2	Std - 0	Standard	1000.0	Anions Default	EPA 300_0_180703	Finished
3	Std - 1	Standard	1000.0	Anions Default	EPA 300_0_180703	Finished
4	Std - 2	Standard	1000.0	Anions Default	EPA 300_0_180703	Finished
5	Std - 3	Standard	1000.0	Anions Default	EPA 300_0_180703	Finished
6	Std - 4	Standard	1000.0	Anions Default	EPA 300_0_180703	Finished
7	Std - 5	Standard	1000.0	Anions Default	EPA 300_0_180703	Finished
8	ICV	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
9	ICB	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
10	MB-H2O,MBLK,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
11	LCS-H2O,LCS,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
12	N031066-001A,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
13	N031066-003A,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
14	N031066-001ADUP,DUP,5	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
15	N031066-003A,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
16	N031066-003AMS,MS,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
17	N031066-003AMSD,MSD,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
18	CCV-1,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
19	CCB-1,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished

*rba* 7/6/2018


Sequence: IC-08\_180703A  
Operator: IC-05

Page 2 of 2  
Printed: 7/4/2018 11:30:51 PM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 19

Created: 7/3/2018 9:12:57 AM by IC-05  
Last Update: 7/4/2018 11:21:14 PM by IC-05

No.	Name	Inj. Date/Time	Comment
1	BLANK,BLANK,1	7/3/2018 9:13:26 AM	BLANK
2	Std - 0	7/3/2018 9:28:44 AM	IBLANK
3	Std - 1	7/3/2018 10:06:00 AM	STD-LOW
4	Std - 2	7/3/2018 10:21:17 AM	STD
5	Std - 3	7/3/2018 10:36:35 AM	STD
6	Std - 4	7/3/2018 10:51:53 AM	STD
7	Std - 5	7/3/2018 11:07:11 AM	STD-HIGH
8	ICV	7/3/2018 11:22:29 AM	ICV
9	ICB	7/3/2018 11:37:47 AM	ICB
10	MB-H2O,MBLK,1	7/3/2018 11:53:05 AM	METHOD BLANK
11	LCS-H2O,LCS,1	7/3/2018 12:08:23 PM	LCS
12	N031066-001A,SAMP,5	7/3/2018 1:14:08 PM	SAMP,2>10mL
13	N031066-003A,SAMP,5	7/3/2018 1:29:27 PM	SAMP,2>10mL
14	N031066-001ADUP,DUP,5	7/3/2018 1:50:10 PM	DUP,2>10mL
15	N031066-003A,SAMP,1	7/3/2018 2:05:28 PM	SAMP,10mL
16	N031066-003AMS,MS,1	7/3/2018 2:24:34 PM	MS,10mL
17	N031066-003AMSD,MSD,1	7/3/2018 2:39:52 PM	MSD,10mL
18	CCV-1,CCV,1	7/3/2018 2:55:10 PM	CCV
19	CCB-1,CCB,1	7/3/2018 3:10:29 PM	CCB

 7/6/2018

Sequence: IC-08\_180705A  
Operator: IC-05

Page 1 of 2  
Printed: 7/5/2018 10:49:50 PM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 34

Created: 7/5/2018 9:22:07 AM by IC-05  
Last Update: 7/5/2018 2:19:58 PM by IC-05

No.	Name	Type	Inj. Vol.	Program	Method	Status
1	BLANK,BLANK,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
2	Std - 0	Standard	1000.0	Anions Default	EPA 300_0_180703	Finished
3	Std - 1	Standard	1000.0	Anions Default	EPA 300_0_180703	Finished
4	Std - 2	Standard	1000.0	Anions Default	EPA 300_0_180703	Finished
5	Std - 3	Standard	1000.0	Anions Default	EPA 300_0_180703	Finished
6	Std - 4	Standard	1000.0	Anions Default	EPA 300_0_180703	Finished
7	Std - 5	Standard	1000.0	Anions Default	EPA 300_0_180703	Finished
8	BLANK,BLANK,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
9	CCV-1,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
10	CCB-1,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
11	MB-H2O,MBLK,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
12	LCS-H2O,LCS,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
13	N031080-001B,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
14	N031080-002B,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
15	N031080-003A,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
16	N031080-001BMS,MS,5	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
17	N031080-001BMSD,MSD,5	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
18	N031080-003ADUP,DUP,20	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
19	N031080-001B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
20	N031080-002B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
21	CCV-2,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
22	CCB-2,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
23	N031081-001B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
24	N031081-002B,SAMP,500	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
25	N031081-002B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
26	N031081-001B,SAMP,100	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
27	N031081-001BDUP,DUP,100	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
28	N031081-001BMS,MS,100	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
29	N031081-001BMSD,MSD,100	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
30	N031081-001BDUP,DUP,50	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
31	N031081-001BMS,MS,50	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
32	N031081-001BMSD,MSD,50	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
33	CCV-3,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished
34	CCB-3,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180703	Finished

*rba* 7/6/2018

Sequence: IC-08\_180705A  
Operator: IC-05

Page 2 of 2  
Printed: 7/5/2018 10:49:50 PM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 34

Created: 7/5/2018 9:22:07 AM by IC-05  
Last Update: 7/5/2018 2:19:58 PM by IC-05

No.	Name	Inj. Date/Time	Comment
1	BLANK,BLANK,1	7/3/2018 9:13:26 AM	BLANK
2	Std - 0	7/3/2018 9:28:44 AM	IBLANK
3	Std - 1	7/3/2018 10:06:00 AM	STD-LOW
4	Std - 2	7/3/2018 10:21:17 AM	STD
5	Std - 3	7/3/2018 10:36:35 AM	STD
6	Std - 4	7/3/2018 10:51:53 AM	STD
7	Std - 5	7/3/2018 11:07:11 AM	STD-HIGH
8	BLANK,BLANK,1	7/5/2018 9:23:13 AM	BLANK
9	CCV-1,CCV,1	7/5/2018 9:38:31 AM	ICV
10	CCB-1,CCB,1	7/5/2018 9:53:48 AM	ICB
11	MB-H2O,MBLK,1	7/5/2018 10:09:06 AM	METHOD BLANK
12	LCS-H2O,LCS,1	7/5/2018 10:24:25 AM	LCS
13	N031080-001B,SAMP,5	7/5/2018 11:04:47 AM	SAMP,2>10mL
14	N031080-002B,SAMP,2	7/5/2018 11:20:06 AM	SAMP,5>10mL
15	N031080-003A,SAMP,20	7/5/2018 11:35:23 AM	SAMP,0.5>10mL
16	N031080-001BMS,MS,5	7/5/2018 11:50:41 AM	MS,2>10mL
17	N031080-001BMSD,MSD,5	7/5/2018 12:05:59 PM	MSD,2>10mL
18	N031080-003ADUP,DUP,20	7/5/2018 12:21:17 PM	DUP,0.5>10mL
19	N031080-001B,SAMP,50	7/5/2018 12:36:35 PM	SAMP,0.2>10mL
20	N031080-002B,SAMP,50	7/5/2018 12:51:53 PM	SAMP,0.2>10mL
21	CCV-2,CCV,1	7/5/2018 1:07:10 PM	CCV
22	CCB-2,CCB,1	7/5/2018 1:22:28 PM	CCB
23	N031081-001B,SAMP,50	7/5/2018 1:37:46 PM	SAMP,0.2>10mL
24	N031081-002B,SAMP,500	7/5/2018 1:53:04 PM	SAMP,0.02>10mL
25	N031081-002B,SAMP,50	7/5/2018 2:08:21 PM	SAMP,0.2>10mL
26	N031081-001B,SAMP,100	7/5/2018 2:23:39 PM	SAMP,0.1>10mL
27	N031081-001BDUP,DUP,100	7/5/2018 2:38:57 PM	DUP,0.1>10mL
28	N031081-001BMS,MS,100	7/5/2018 2:54:15 PM	MS,0.1>10mL
29	N031081-001BMSD,MSD,100	7/5/2018 3:09:33 PM	MSD,0.1>10mL
30	N031081-001BDUP,DUP,50	7/5/2018 3:24:51 PM	DUP,0.2>10mL
31	N031081-001BMS,MS,50	7/5/2018 3:40:09 PM	MS,0.2>10mL
32	N031081-001BMSD,MSD,50	7/5/2018 3:55:27 PM	MSD,0.2>10mL
33	CCV-3,CCV,1	7/5/2018 4:10:44 PM	CCV
34	CCB-3,CCB,1	7/5/2018 4:26:03 PM	CCB

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



(EPA 300) - INITIAL CALIBRATION

Instrument ID: IC-08  
Date Calibrated: 7/3/2018

Initial Calibration:

Chloride	STD0	STD1	STD2	STD3	STD4	STD5	
COMPOUND, in ug/L	0	0.5	1	2	5	10	R <sup>2</sup>
Area,mAU*min	0.0000	0.0709	0.1454	0.2849	0.7286	1.5430	0.999

	Stock
Standard Concentration:	1000000 PPB
Standard ID:	ISST-170814B

Calibration Acceptance Criteria: > 0.995 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

(EPA 300) - INITIAL CALIBRATION

Instrument ID: IC-08  
Date Calibrated: 7/3/2018

Initial Calibration:

Sulfate	STD0	STD1	STD2	STD3	STD4	STD5	
COMPOUND, in ug/L	0	0.5	2	4	10	20	R <sup>2</sup>
Area,mAU*min	0.0000	0.0540	0.2156	0.4349	1.1215	2.3412	1.000

	Stock
Standard Concentration:	1000000 PPB
Standard ID:	ISST-170814G

Calibration Acceptance Criteria: > 0.995 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_CLPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126053</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R126053</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>7/3/2018</b>	SeqNo: <b>3072481</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.066	0.50	2.000	0	103	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126053</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126053</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072483</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.990	0.50	2.000	0	99.5	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126053</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126053</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072487</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.016	0.50	2.000	0	101	90	110				

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126053</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126053</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072494</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.033	0.50	2.000	0	102	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126053</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R126053</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>7/3/2018</b>	SeqNo: <b>3072496</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.945	0.50	4.000	0	98.6	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126053</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126053</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072498</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.973	0.50	4.000	0	99.3	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126053</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126053</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072504</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.069	0.50	4.000	0	102	90	110				

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126053</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126053</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072511</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.080	0.50	4.000	0	102	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_CLPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126053</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R126053</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>7/3/2018</b>	SeqNo: <b>3072482</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride ND 0.50

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126053</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126053</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072484</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride ND 0.50

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126053</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126053</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072488</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride 0.128 0.50

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126053</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126053</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072495</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride ND 0.50

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 300\_W\_SO4PGE

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>300_W_SO4P</b> Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126053</b>							
Client ID: <b>ICB</b>	Batch ID: <b>R126053</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>7/3/2018</b>	SeqNo: <b>3072497</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b> Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126053</b>							
Client ID: <b>CCB</b>	Batch ID: <b>R126053</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072499</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b> Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126053</b>							
Client ID: <b>CCB</b>	Batch ID: <b>R126053</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072505</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	0.225	0.50									

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b> Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126053</b>							
Client ID: <b>CCB</b>	Batch ID: <b>R126053</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>7/5/2018</b>	SeqNo: <b>3072512</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

**Qualifiers:**

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits	S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out	Calculations are based on raw values			



# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
MULTI-PHASE CHEMISTRY SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-08

### Analytical Sequence

Date Analyzed: 7/5/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
--------------------	-----------------------	-------------------

ICV	Chloride 3.857	
-----	----------------	--

CCV-1	Chloride 3.854	
-------	----------------	--

CCV-2	Chloride 3.854	
-------	----------------	--

CCV-3	Chloride 3.853	
-------	----------------	--

**Average** 3.854

**Applied RT Window** 3.654 - 4.054

MB-R126053_CL	Chloride	N.A.	N.A.
---------------	----------	------	------

LCS-R126053_CL	Chloride	3.854	PASS
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N031081-002B	Chloride	3.854	PASS
--------------	----------	-------	------

N031081-001B	Chloride	3.854	PASS
--------------	----------	-------	------

N031081-001BDUP	Chloride	3.857	PASS
-----------------	----------	-------	------

N031081-001BMS	Chloride	3.857	PASS
----------------	----------	-------	------

N031081-001BMSD	Chloride	3.857	PASS
-----------------	----------	-------	------

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-08

### Analytical Sequence

Date Analyzed: 7/5/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
--------------------	-----------------------	-------------------

ICV	Sulfate	7.960
CCV-1	Sulfate	7.934
CCV-2	Sulfate	7.940
CCV-3	Sulfate	7.947

**Average** 7.940

**Applied RT Window** 7.740 - 8.140

MB-R126053_SO4	Sulfate	N.A.	N.A.
LCS-R126053_SO4	Sulfate	7.940	PASS
N031081-001B	Sulfate	7.933	PASS
N031081-002B	Sulfate	7.937	PASS
N031081-001BDUP	Sulfate	7.937	PASS
N031081-001BMS	Sulfate	7.940	PASS
N031081-001BMSD	Sulfate	7.940	PASS

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **INORGANIC IONS by Ion Chromatography**  
 Method Number: EPA 300.0  
 Analysis Date(s): 5/23/2017 ; 5/24/2017; 5/25/2017  
 Analyst/Technician: Ria Abes

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **IC-08**

Acceptance Criteria: MDL < spike < 10XMDL

	Datafile	170523A D36	170523A D37	170523A D38	170524A D17	170524A D18	170525A D45	170525A D46					
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	MDL	LOD	PQL	
Fluoride	0.020	0.022	0.021	0.020	0.023	0.026	0.024	0.020	0.0021	<b>0.0065</b>	0.020	0.10	
Chloride	0.133	0.136	0.136	0.133	0.141	0.133	0.136	0.025	0.0029	<b>0.0091</b>	0.020	0.50	
Nitrite	0.030	0.028	0.027	0.028	0.028	0.027	0.027	0.020	0.0010	<b>0.0030</b>	0.010	0.05	
Bromide	0.037	0.042	0.043	0.038	0.040	0.032	0.025	0.040	0.0062	<b>0.0196</b>	0.040	0.20	
Nitrate	0.035	0.034	0.033	0.033	0.033	0.031	0.030	0.020	0.0016	<b>0.0050</b>	0.010	0.05	
Phosphate	0.047	0.051	0.049	0.046	0.052	0.047	0.059	0.040	0.0043	<b>0.0135</b>	0.030	0.10	
Sulfate	0.213	0.199	0.208	0.216	0.199	0.201	0.198	0.050	0.0073	<b>0.0229</b>	0.050	0.50	



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL & INDUSTRIAL

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

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## MDL/LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Inorganic Ions by Ion Chromatography (Low Level)**  
 Method Number: EPA Method 300.0  
 Analysis Date(s): 3/29-30/2018  
 Analyst: Ria B. Abes

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **IC-08**

Compound	MDL	LOD Spike Conc., mg/L	LOD Actual Conc., mg/L	PQL Spike Conc., mg/L	PQL Actual Conc., mg/L	%Recovery
Fluoride	<b>0.0065</b>	0.020	0.0252	0.10	0.087	<b><u>87</u></b>
Chloride	<b>0.0091</b>	0.020	0.1193	0.50	0.5757	<b><u>115</u></b>
Nitrite	<b>0.0030</b>	0.010	0.0237	0.05	0.0638	<b><u>128</u></b>
Bromide	<b>0.0196</b>	0.040	0.0405	0.20	0.1993	<b><u>100</u></b>
Nitrate	<b>0.0050</b>	0.010	0.0191	0.05	0.0561	<b><u>112</u></b>
Phosphate	<b>0.0135</b>	0.030	0.0415	0.10	0.1216	<b><u>122</u></b>
Sulfate	<b>0.0229</b>	0.050	0.3682	0.50	0.6549	<b><u>131</u></b>



# SM 4500-NO3F



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Wet Chemistry Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

**FIRST LEVEL REVIEW:**

QC Batch Number:                     R126141                     Analyst:                     QBM                    

ASSET #:                     N031081                     Date Analyzed:                     7/11/2018                    

Method:                     4500\_NO3                    

Initial Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis or every 24 hrs.	X					
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value.	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)	X					
<b>Sample Information</b>						
8. All samples are within linear range.	X					
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below the PQL .	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

~~ICB has detect > 1/2 RL however, samples are either non detect (ND) or >5x the ICB detection.~~

**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer                     QBM                    

Date:                     7/18/18                    

2nd Level Reviewer                     *Murphy* 7/18/2018                    

Date:                     \_\_\_\_\_



# SAMPLE CALCULATION



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

## Sample Calculation

**METHOD:** EPA 4500N03F  
**TEST NAME:** Nitrate/Nitrite-N by Automated Cadmium Reduction  
**MATRIX:** Groundwater

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

$$\text{Nitrate/Nitrite-N, mg/L} = A * DF$$

where:

A = mg/L, instrument calculated concentration  
DF = dilution factor

For: **N031081-002C**

The concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{Nitrate/Nitrite-N} &= 0.5412 * 5 \\ &= 2.706 \text{ mg/L} \end{aligned}$$

Reporting result in two significant figures,

$$\text{Nitrate/Nitrite-N} = 2.7 \text{ mg/L}$$

# INITIAL CALIBRATION DATA SUMMARY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
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## EPA 353.2 NO3 as N (NO3CD) - Endpoint

## General setup

Measuring unit	ppm
Number of decimals	4
Stabilization time (sec)	26
Measurement time (sec)	3
Sample volume (µl)	450
Filter	546
Reagent prime	No
CD Reduction	Yes

## Limits and dilution

Low level	-0.2
High level	4
Max linearity	4
Blank min	0
Blank max	0.049
Postdilution factor %	10
Factor Calculations	No

## Washes

Number of final washes	6
Wash every	R1, R2

## O.D. Corrections

Carry Over	No
Carry Over value	0.0000
Blank	No
Gain	No

## Reagents

N.	Volume (µl)	Incubation time (sec)
1	200	102
2	300	663
3	0	0

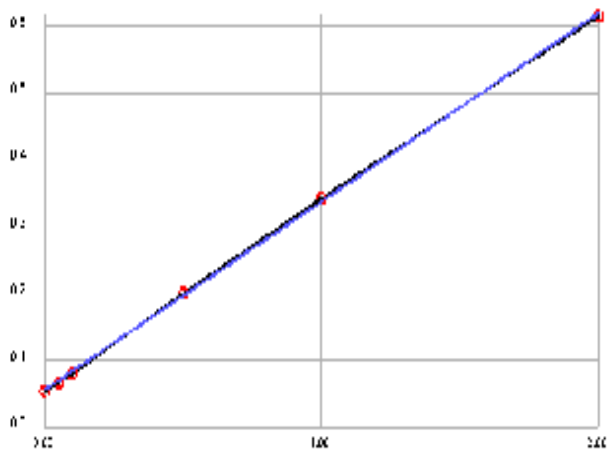
## QC

N.	Value	Tolerance
1	1	0.1

## Calibration

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	$y = 0.2818x + 0.0556$
Correlation	.999815



Calibrant	Energy	Set	Conc
1	0.0539	0.0000	-0.0060
2	0.0677	0.0500	0.0429
3	0.0806	0.1000	0.0887
4	0.2017	0.5000	0.5185
5	0.3429	1.0000	1.0196
6	0.6153	2.0000	1.9863

Notes:

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 4500N03F\_W**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126141</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R126141</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>7/11/2018</b>	SeqNo: <b>3074976</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N	0.497	0.050	0.5000	0	99.4	90	110				
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Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126141</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126141</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>7/11/2018</b>	SeqNo: <b>3074985</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N	0.522	0.050	0.5000	0	104	90	110				
----------------------	-------	-------	--------	---	-----	----	-----	--	--	--	--

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |

# INITIAL CALIBRATION AND CONTINUING CALIBRATION BLANK SUMMARY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031081  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 4500N03F\_W**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126141</b>
Client ID: <b>ICB</b>	Batch ID: <b>R126141</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>7/11/2018</b>	SeqNo: <b>3074977</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N	0.038	0.050
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Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126141</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126141</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>7/11/2018</b>	SeqNo: <b>3074986</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N	ND	0.050
----------------------	----	-------

ICB has detect > 1/2 RL however, samples are either non-detect (ND) or >5x the ICB detection.

*Nancy* 7/18/2018

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |



# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Advanced Technology Laboratories, Inc.**

**3151 W. Post Rd.  
Las Vegas, NV. 89118  
702-307-2659  
702-307-2691  
[www.atl-labs.com](http://www.atl-labs.com)**

**Time start: 07-11-2018 13:53  
Time end: 07-11-2018 15:20**

		<b>EPA 353.2 NO3 as N</b>		
		ppm	Flags	OD
1	<BLANK>	15:03:29	-0.0014	0.0552
2	<BLANK>	15:04:24	-0.0036	0.0546
3	<CAL1>	15:05:12	-0.0060 [0]	0.0539
4	<CAL2>	15:05:55	0.0429 [0.05]	0.0677
5	<CAL3>	15:06:45	0.0887 [0.1]	0.0806
6	<CAL4>	15:07:27	0.5185 [0.5]	0.2017
7	<CAL5>	15:08:16	1.0196 [1]	0.3429
8	<CAL6>	15:08:58	1.9863 [2]	0.6153
9	,BLANK,BLANK,1, <b>NOT REPORTED</b>	15:09:41	0.0525	0.0704
10	,ICV,ICV,1,	15:10:29	0.4972	0.1957
11	,ICB,ICB,1,	15:11:12	0.0376	0.0662
12	,MB-H2O,MBLK,1,	15:12:02	-0.0103	0.0527
13	,LCS-H2O,LCS,1,	15:12:43	0.4734	0.1890
14	,N031081-001C,SAMP,1,	15:13:27	0.0103	0.0585
15	,N031081-001CDUP,DUP,1,	15:14:15	-0.0078	0.0534
16	,N031081-002C,SAMP,5,	15:14:58	0.5412	0.2081
17	,N031081-002CMS,MS,5,	15:15:40	1.0657	0.3559
18	,N031081-002CMSD,MSD,5,	15:16:29	0.9997	0.3373
19	,BLANK, <b>NOT REPORTED</b>	15:17:11	0.0298	0.0640
20	,CCV-1,CCV,1,	15:17:55	0.5217	0.2026
21	,CCB-1,CCB,1,	15:18:44	0.0018	0.0561

*Nancy* 7/18/2018



# MDL STUDY



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P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Nitrate/Nitrite by Cadmium Reduction**  
 Method Number: SM4500NO3F  
 Analysis Date(s): 10/25,2017, 10/26/2017, 10/27/2017  
 Analyst/Technician: Quennie B. Manimtim

Matrix: **Water**  
 Unit: mg/L  
 Spike Conc: 0.05 mg/L

Analyte	#1	#2	#3	#4	#5	#6	#7	Ave	SD	t <sub>(n-1)</sub> value	MDL	PQL
Nitrate/Nitrite as N	0.0573	0.0562	0.0500	0.0730	0.0698	0.0637	0.0564	0.0609	0.0082	3.143	0.0259	0.05

**Method Blank**

Nitrate/Nitrite as N	0.0160	0.0067	0.0064	0.0204	0.0173	0.0036	0.0083	0.0112	0.0065	3.143	0.0317	0.05
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**MDL:** 0.0317 mg/L



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 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 ELAP Cert 2921

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
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**"Serving Clients with Passion and Professionalism"**

August 16, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N031503

RE: PG&E Topock - PMP

Attention: Dan Bush

Enclosed are the results for sample(s) received on August 01, 2018 by ASSET Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Quennie Manimtim*

Quennie Manimtim  
Laboratory Director

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**NEVADA** | P:702.307.2659 F:702.307.2691  
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---

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - PMP  
**Lab Order:** N031503

---

**CASE NARRATIVE**

**SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time except for pH. pH testing is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

**Analytical Comments for EPA 200.7\_Dissolved:**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Calcium in QC samples N031502-002E-MS1 and N031502-002E-MSD1 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

**Analytical Comments for SM 4500-NO3F:**

Matrix Spike Duplicate (MSD) is outside recovery criteria in QC sample N031503-002CMSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - PMP  
**Lab Order:** N031503  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N031503-001A	PE-01-0818	Groundwater	8/1/2018 11:55:00 AM	8/1/2018	8/16/2018
N031503-001B	PE-01-0818	Groundwater	8/1/2018 11:55:00 AM	8/1/2018	8/16/2018
N031503-001C	PE-01-0818	Groundwater	8/1/2018 11:55:00 AM	8/1/2018	8/16/2018
N031503-001D	PE-01-0818	Groundwater	8/1/2018 11:55:00 AM	8/1/2018	8/16/2018
N031503-002A	TW-03D-0818	Groundwater	8/1/2018 12:10:00 PM	8/1/2018	8/16/2018
N031503-002B	TW-03D-0818	Groundwater	8/1/2018 12:10:00 PM	8/1/2018	8/16/2018
N031503-002C	TW-03D-0818	Groundwater	8/1/2018 12:10:00 PM	8/1/2018	8/16/2018
N031503-002D	TW-03D-0818	Groundwater	8/1/2018 12:10:00 PM	8/1/2018	8/16/2018





**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180802B</b>	QC Batch: <b>R126660</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	1900	0.10	0.10		umhos/cm	1	8/2/2018 10:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CALIFORNIA** | P:562.219.7435 F:562.219.7436  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 ELAP Cert 2921  
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**NEVADA** | P:702.307.2659 F:702.307.2691  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180802B</b>	QC Batch: <b>R126660</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	7200	0.10	0.10		umhos/cm	1	8/2/2018 10:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID	<b>N031502-001ADUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>120.1_WPGE</b>	Units:	<b>umhos/cm</b>	Prep Date:		RunNo:	<b>126660</b>		
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R126660</b>	TestNo:	<b>EPA 120.1</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3097774</b>		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance		7090.000		0.10						7120	0.422		2

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180802C</b>	QC Batch: <b>R126661</b>				PrepDate		Analyst: <b>LR</b>
pH	7.4	0.10	0.10	H	pH Units	1	8/2/2018 10:25 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	8/2/2018 10:25 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: NV00922-WC_180802C	QC Batch: R126661				PrepDate	Analyst: LR	
pH	7.2	0.10	0.10	H	pH Units	1	8/2/2018 10:25 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	8/2/2018 10:25 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 150.1\_4500H+B\_W**

Sample ID	<b>N031503-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>150.1_4500H</b>	Units:	<b>pH Units</b>	Prep Date:		RunNo:	<b>126661</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R126661</b>	TestNo:	<b>SM4500-H+B</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3097779</b>			
Analyte		Result		PQL		SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH		7.460		0.10							7.440	0.268	10	H
Temp. at time of pH Analysis		25.000		0.10							25.00	0	10	H

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_180802G</b>	QC Batch: <b>70088</b>				PrepDate	<b>8/2/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	1200	13	13		mg/L	1	8/2/2018 12:51 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
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 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_180802G</b>	QC Batch: <b>70088</b>				PrepDate	<b>8/2/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	4300	50	50		mg/L	1	8/2/2018 12:51 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 160.1\_2540C\_W**

Sample ID	<b>LCS-70088</b>	SampType:	<b>LCS</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>8/2/2018</b>	RunNo:	<b>126702</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>70088</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3099339</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		974.000		10	1000	0		97.4	80	120				

Sample ID	<b>MB-70088</b>	SampType:	<b>MBLK</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>8/2/2018</b>	RunNo:	<b>126702</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>70088</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3099340</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		ND		10										

Sample ID	<b>N031503-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>8/2/2018</b>	RunNo:	<b>126702</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>70088</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3099348</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		4430.000		50						4285		3.33	5	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
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- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 200.7**

RunID: NV00922-ICP2_180814B	QC Batch: 70171	PrepDate	8/9/2018	Analyst: CEI		
Calcium	120000	85	500	µg/L	1	8/14/2018 11:45 AM
Iron	93	18	20	µg/L	1	8/14/2018 11:45 AM
Magnesium	30000	48	100	µg/L	1	8/14/2018 11:45 AM
Sodium	290000	2400	12000	µg/L	25	8/9/2018 01:38 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
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 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 200.7**

RunID: NV00922-ICP2_180814B	QC Batch: 70171			PrepDate	8/9/2018	Analyst: CEI
Calcium	200000	85	500	µg/L	1	8/14/2018 11:54 AM
Iron	ND	18	20	µg/L	1	8/14/2018 11:54 AM
Magnesium	25000	48	100	µg/L	1	8/14/2018 11:54 AM
Sodium	1400000	4800	25000	µg/L	50	8/9/2018 01:34 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>MB-70171</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>8/9/2018</b>	RunNo: <b>126820</b>
Client ID: <b>PBW</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105551</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sodium	ND	500			

Sample ID <b>LCS2-70171</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>8/9/2018</b>	RunNo: <b>126820</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105552</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sodium	19494.863	500	20000	0	97.5 85 115

Sample ID <b>N031503-001D-MS2</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>8/9/2018</b>	RunNo: <b>126820</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105560</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sodium	308902.369	12000	20000	286100	114 75 125

Sample ID <b>N031503-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>8/9/2018</b>	RunNo: <b>126820</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105561</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sodium	309902.538	12000	20000	286100	119 75 125 308900 0.323 20

Sample ID <b>MB-70171</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>8/9/2018</b>	RunNo: <b>126913</b>
Client ID: <b>PBW</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108037</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Calcium	ND	500			
Iron	ND	20			
Magnesium	ND	100			

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGPPB**

Sample ID	<b>LCS1-70171</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>8/9/2018</b>	RunNo: <b>126913</b>					
Client ID:	<b>LCSW</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108038</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	4885.143	500	5000	0	97.7	85	115				
Iron	107.917	20	100.0	0	108	85	115				
Magnesium	5008.125	100	5000	0	100	85	115				

Sample ID	<b>N031502-002E-MS1</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>8/9/2018</b>	RunNo: <b>126913</b>					
Client ID:	<b>ZZZZZ</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108042</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	118092.710	500	5000	109400	174	75	125				S
Iron	119.627	20	100.0	22.59	97.0	75	125				
Magnesium	27796.777	100	5000	22960	96.7	75	125				

Sample ID	<b>N031502-002E-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>8/9/2018</b>	RunNo: <b>126913</b>					
Client ID:	<b>ZZZZZ</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108043</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	117973.214	500	5000	109400	172	75	125	118100	0.101	20	S
Iron	119.131	20	100.0	22.59	96.5	75	125	119.6	0.415	20	
Magnesium	27811.472	100	5000	22960	97.0	75	125	27800	0.0529	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICPMS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180807F</b>	QC Batch: <b>70123</b>				PrepDate	<b>8/6/2018</b>	Analyst: <b>CEI</b>
Manganese	370	1.3	2.5		µg/L	5	8/8/2018 01:02 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICPMS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180807F</b>	QC Batch: <b>70123</b>			PrepDate	<b>8/6/2018</b>	Analyst: <b>CEI</b>
Manganese	13	0.26	0.50	µg/L	1	8/8/2018 01:19 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>MB-70123</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>8/6/2018</b>	RunNo: <b>126792</b>
Client ID: <b>PBW</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104196</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			

Sample ID <b>LCS-70123</b>	SampType: <b>LCS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>8/6/2018</b>	RunNo: <b>126792</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104197</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	98.643	0.50	100.0	0	98.6 85 115

Sample ID <b>N031512-001H-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>8/6/2018</b>	RunNo: <b>126792</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104215</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	160.872	0.50	100.0	66.37	94.5 75 125

Sample ID <b>N031512-001H-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>8/6/2018</b>	RunNo: <b>126792</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104217</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	156.659	0.50	100.0	66.37	90.3 75 125 160.9 2.65 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180803A</b>	QC Batch: <b>R126742</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	8/3/2018 12:10 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180807F</b>	QC Batch: <b>70123</b>				PrepDate	<b>8/6/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	8/8/2018 12:57 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180803A</b>	QC Batch: <b>R126742</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	480	3.3	20		µg/L	100	8/3/2018 11:32 AM

**DISSOLVED METALS BY ICP-MS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180807F</b>	QC Batch: <b>70123</b>				PrepDate	<b>8/6/2018</b>	Analyst: <b>CEI</b>
Chromium	480	0.65	5.0		µg/L	5	8/8/2018 01:25 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>MB-70123</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>8/6/2018</b>	RunNo: <b>126792</b>
Client ID: <b>PBW</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104149</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	ND	1.0			

Sample ID <b>LCS-70123</b>	SampType: <b>LCS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>8/6/2018</b>	RunNo: <b>126792</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104150</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	9.712	1.0	10.00	0	97.1 85 115

Sample ID <b>N031512-001H-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>8/6/2018</b>	RunNo: <b>126792</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104168</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	9.966	1.0	10.00	0.5677	94.0 75 125

Sample ID <b>N031512-001H-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>8/6/2018</b>	RunNo: <b>126792</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104170</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	10.086	1.0	10.00	0.5677	95.2 75 125 9.966 1.20 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
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- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID: <b>MB-R126742</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101444</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	ND	0.20
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Sample ID: <b>LCS-R126742</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101445</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	5.129	0.20	5.000	0	103	90	110
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Sample ID: <b>N031502-001BMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101447</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	965.770	20	500.0	480.1	97.1	90	110
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Sample ID: <b>N031502-001BMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101448</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	978.020	20	500.0	480.1	99.6	90	110	965.8	1.26	20
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Sample ID: <b>N031503-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101450</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	994.340	20	500.0	476.2	104	90	110
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N031503-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101454</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.952	0.20	1.000	0	95.2	90	110				

Sample ID <b>N031503-002ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101455</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	483.490	20						476.2	1.53	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_180802F</b>	QC Batch: <b>R126666</b>				PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	190	1.2	5.0		mg/L	1	8/2/2018 01:30 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_180802F</b>	QC Batch: <b>R126666</b>				PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	150	1.2	5.0		mg/L	1	8/2/2018 01:30 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 2320\_W\_SP**

Sample ID	<b>LCS-R126666</b>	SampType:	<b>LCS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126666</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R126666</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3097848</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		92.553		5.0	100.0	0		92.6	85	115				

Sample ID	<b>MB-R126666</b>	SampType:	<b>MBLK</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126666</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R126666</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3097849</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		ND		5.0										

Sample ID	<b>N031482-001CDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126666</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126666</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3097851</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		53.191		5.0							53.19	0	30	

Sample ID	<b>N031503-002BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126666</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126666</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3097854</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		244.681		5.0	100.0	148.9		95.7	75	125				

Sample ID	<b>N031503-002BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126666</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126666</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3097855</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		242.553		5.0	100.0	148.9		93.6	75	125	244.7	0.873	20	

**Qualifiers:**

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- E Value above quantitation range
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- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180802B	QC Batch: R126715				PrepDate		Analyst: RAB
Chloride	380	0.91	50		mg/L	100	8/3/2018 12:43 AM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180802B	QC Batch: R126715				PrepDate		Analyst: RAB
Sulfate	270	1.1	25		mg/L	50	8/3/2018 12:28 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180802B	QC Batch: R126715				PrepDate		Analyst: RAB
Chloride	2100	4.6	250		mg/L	500	8/2/2018 11:27 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180802B	QC Batch: R126715				PrepDate		Analyst: RAB
Sulfate	490	1.1	25		mg/L	50	8/2/2018 11:11 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_CLPGE**

Sample ID	<b>LCS-R126715_CL</b>	SampType:	<b>LCS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126715</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R126715</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3100252</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		1.956		0.50	2.000	0		97.8	90	110				

Sample ID	<b>MB-R126715_CL</b>	SampType:	<b>MBLK</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126715</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R126715</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3100253</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		0.115		0.50										

Sample ID	<b>N031503-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126715</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126715</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3100259</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		2130.450		250							2123	0.353	20	

Sample ID	<b>N031503-002BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126715</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126715</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3100260</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		3130.800		250	1000	2123		101	80	120				

Sample ID	<b>N031503-002BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126715</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126715</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>8/3/2018</b>	SeqNo:	<b>3100261</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		3151.150		250	1000	2123		103	80	120	3131	0.648	20	

**Qualifiers:**

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Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID	<b>LCS-R126715_SO4</b>	SampType: <b>LCS</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>
Client ID:	<b>LCSW</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100269</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sulfate	3.894	0.50	4.000	0	97.3	90 110

Sample ID	<b>MB-R126715_SO4</b>	SampType: <b>MBLK</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>
Client ID:	<b>PBW</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100270</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sulfate	ND	0.50				

Sample ID	<b>N031433-009CMS</b>	SampType: <b>MS</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>
Client ID:	<b>ZZZZZ</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100274</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sulfate	127.944	5.0	40.00	87.36	101	80 120

Sample ID	<b>N031433-009CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>
Client ID:	<b>ZZZZZ</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100275</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sulfate	127.364	5.0	40.00	87.36	100	80 120 127.9 0.454 20

Sample ID	<b>N031444-005CMS</b>	SampType: <b>MS</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>
Client ID:	<b>ZZZZZ</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100276</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sulfate	68.735	2.5	20.00	48.54	101	80 120

**Qualifiers:**

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- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID	<b>N031433-002CDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126715</b>		
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R126715</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3100277</b>		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate		64.067		2.5						64.19	0.194	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180815A</b>	QC Batch: <b>R126959</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	ND	0.032	0.050		mg/L	1	8/15/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180815A</b>	QC Batch: <b>R126959</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	2.7	0.16	0.25		mg/L	5	8/15/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R126959</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126959</b>
Client ID: <b>PBW</b>	Batch ID: <b>R126959</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>8/15/2018</b>	SeqNo: <b>3109937</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R126959</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126959</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R126959</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>8/15/2018</b>	SeqNo: <b>3109938</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.523	0.050	0.5000	0	105 85 115

Sample ID <b>N031502-002DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126959</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126959</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>8/15/2018</b>	SeqNo: <b>3109942</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	2.905	0.25			2.624 10.2 20

Sample ID <b>N031503-002CMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126959</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126959</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>8/15/2018</b>	SeqNo: <b>3109944</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	4.829	0.25	2.500	2.702	85.1 75 125

Sample ID <b>N031503-002CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126959</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126959</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>8/15/2018</b>	SeqNo: <b>3109945</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	5.900	0.25	2.500	2.702	128 75 125 4.829 20.0 20 S

**Qualifiers:**

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- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

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Page 1 of 1

<b>Client:</b> Arcadis		<b>Report to:</b> Dan Bush		<b>Bill to:</b> Lisa Kellog		<b>EDD Requirement</b>		<b>QA/QC</b>		<b>Sample Receipt Condition</b>					
<b>Address:</b> 1410 Rocky Ridge Dr. #330		<b>Company:</b> Arcadis		<b>Address:</b> 2999 Oak Road, Suite 300		Excel EDD <input type="checkbox"/>		RTNE <input type="checkbox"/>		1. Chilled <input type="checkbox"/>					
<b>Address:</b> Roseville, CA 95661		<b>Email:</b> dan.bush@arcadis.com daniel.moore@critigen.com		<b>Address:</b> Walnut Creek, CA 94597		Geotracker <input type="checkbox"/>		RWOCB <input type="checkbox"/>		2. Headspace <input type="checkbox"/>					
<b>Phone:</b> 916.786.3302		<b>Address:</b> 1410 Rocky Ridge Dr. #330		<b>Email to:</b> lisa.kellog@arcadis.com		Labepec <input type="checkbox"/>		CalTrans <input type="checkbox"/>		3. Container Intact <input type="checkbox"/>					
<b>Submitted By:</b> <i>Nana Tay</i>		<b>Address:</b> Roseville, CA 95661		<b>Phone:</b> 951.677.0577		Others <input type="checkbox"/>		Level III <input type="checkbox"/>		4. Seal Present <input type="checkbox"/>					
<b>Title:</b> <i>sample tech</i>		<b>Phone:</b> 916.786.3302		<b>Matrix</b>		Specify:		LEVEL IV <input checked="" type="checkbox"/>		5. IR number <input type="checkbox"/>					
<b>Signature:</b> <i>[Signature]</i>		<b>Date:</b> 8/1/18		<b>Sampled By:</b> <i>Nana Tay</i>		<b>Analyses Requested</b>		Regulatory <input type="checkbox"/>		6. Method of Cooling <input type="checkbox"/>					
<b>Project Name:</b> PG&E Topock - PMP		<b>Signature:</b> <i>[Signature]</i>		<b>Date:</b> 8/1/18		Cr-6 by SM3500		Specify State:		Sample Temp: <i>29C</i>					
<b>Project Number:</b>		<b>Signature:</b> <i>[Signature]</i>		<b>Date:</b> 8/1/18		Alkalinity		Global ID:		Courier:					
<b>Item No.</b>		<b>Laboratory Work Order No.</b>		<b>Sample ID/Location</b>		pH		Turn Around Time		Tracking No.					
1		N031503-01		PE-01-0718		Chloride		No. of container		Remarks					
2		-02		TW-03D-0718		Specific Conductance		Container Type							
3						Sulfate		PRESERVATION							
4						TDS									
5						NO2/NO3 by SM 4500									
6						Ca, Fe, Mg, Na by EPA 200.7									
7						Cu, Mn by 200.8									
8															
9															
10															
11															
12															
<b>Relinquished by (Signature and Printed Name):</b> <i>Nana Tay</i>				<b>Received by (Signature and Printed Name):</b> <i>[Signature]</i>				<b>Turn Around Time (TAT)</b>				<b>Special Instruction:</b>			
<b>Date / Time:</b> 8/1/18 1510				<b>Date / Time:</b> 8/1/18 1510				<input type="checkbox"/> A < 24 Hrs or Same Day TAT							
<b>Relinquished by (Signature and Printed Name):</b> <i>[Signature]</i>				<b>Received by (Signature and Printed Name):</b> <i>[Signature]</i>				<input type="checkbox"/> B = Next Workday							
<b>Date / Time:</b> 8/1/18 1725				<b>Date / Time:</b> 8/1/18 1725				<input type="checkbox"/> C = 2 Workdays							
<b>Relinquished by (Signature and Printed Name):</b> <i>[Signature]</i>				<b>Received by (Signature and Printed Name):</b> <i>[Signature]</i>				<input type="checkbox"/> D = 3 Workdays							
<b>Date / Time:</b>				<b>Date / Time:</b>				<input checked="" type="checkbox"/> E = Routine 5-7 Workdays							
								TAT Starts at 8 AM the following day if samples received after 3:00 PM.							
<b>Terms</b>				<b>Terms</b>				<b>Preservatives:</b>				<b>Container Type:</b>			
1. All samples will be disposed in 45 days upon receipt and records will be destroyed in 5 years upon submission of final report.				5. Trip Blanks and Equipment blanks are billable sample.				H = HCl				T = Tube			
2. Regular TAT is 5-7 business days, rush charges will apply for rush analysis.				6. ASSET Laboratories is not responsible for samples collected using incorrect methodology.				N = HNO3				V = VOA			
Less than 24 Hrs = 300% Next Day = 100% 2 Workdays = 50% 3 Workdays = 35% 4 Workdays = 20%				7. Terms are net 30 Days.				S = H2SO4				P = Pint			
3. Custom EDD formats will be an additional 5% of the total project price.				8. All reports are submitted in electronic format. Please Inform ASSET Laboratories if hard copy of report is needed.				C = 4°C				J = Jar			
4. Add 10% surcharge for Level III Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.				9. For subcontract analysis, TAT and Surcharges will vary.				Z = Zn(AC)2				B = Tedlar			
								O = NaOH				G = Glass			
								T = Na2S2O3				M = Metal			
								Others/Specify:				P = Plastic			
												C = Can			

White = Laboratory Copy

Yellow = Customer's Copy

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 8/1/2018 Workorder: N031503  
 Rep sample Temp (Deg C): 2.9 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |   |  |   |
|---|---|--|---|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>                                  |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                       |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                       |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 11. All samples received within holding time?   | Yes <input type="checkbox"/>  | No <input checked="" type="checkbox"/>                     |   |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>                                |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input checked="" type="checkbox"/><br>Yes <input type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input type="checkbox"/><br>NA <input checked="" type="checkbox"/> |

Comments: Samples for pH were past holding time upon receipt.

Checklist Completed By: YR  8/2/2018

Reviewed By:  LG 080718

# ASSET Laboratories

## WORK ORDER Summary

16-Aug-18

WorkOrder: N031503

Client ID: ARCUS02

Project: PG&E Topock - PMP

QC Level: Level IV

Date Received: 8/1/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N031503-001A	PE-01-0818	8/1/2018 11:55:00 AM	8/15/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031503-001B			8/15/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031503-001C			8/15/2018		SM 1030F1	Cation-Anion Balance Calculation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031503-001D			8/15/2018		EPA 200.7	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		EPA 200.8	DISSOLVED METALS BY ICPMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		EPA 200.8	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031503-002A	TW-03D-0818	8/1/2018 12:10:00 PM	8/15/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031503-002B			8/15/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

16-Aug-18

**WorkOrder:** N031503

**Client ID:** ARCUS02

**Project:** PG&E Topock - PMP

**QC Level:** Level IV

**Date Received:** 8/1/2018

**Comments:**

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N031503-002B	TW-03D-0818	8/1/2018 12:10:00 PM	8/15/2018	Groundwater	EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		SM 1030F1	Cation-Anion Balance Calculation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031503-002C			8/15/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031503-002D			8/15/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		EPA 200.7	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		EPA 200.8	DISSOLVED METALS BY ICPMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		EPA 200.8	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031503-003A	FOLDER	8/15/2018	8/15/2018		EDD	Client specific project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			8/15/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			8/15/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

Subject: Topock Sample ID Corection Request - Batch N031503

From: Tina Rice <Tina.Rice@critigen.com>

Date: 8/15/2018 1:20 PM

To: Nancy Sibucao <nancy@assetlaboratories.com>

CC: "Madsen, Laura" <Laura.Madsen@arcadis.com>

Hi Nancy,

You may have already been asked to do this but looks like the sample IDs for batch N031503 need to be updated per below:

WorkOrder	ClientSampID	New ClientSampID	DateCollected
N031503	PE-01-0718	PE-01-0818	8/1/2018
N031503	TW-03D-0718	TW-03D-0818	8/1/2018

Tina

**Tina Rice**  
**Database Analyst**

**CRITIGEN**

[Tina.Rice@critigen.com](mailto:Tina.Rice@critigen.com)

1 360 600 3562 Direct

1 360 600 3562 Mobile

[critigen.com](http://critigen.com)

[critigen.co.uk](http://critigen.co.uk)

# ***ARCADIS***

Project: PG&E Topock - PMP

ASSET Laboratories Work Order:  
N031503

***ANALYTICAL and QC RESULTS  
SAMPLE RECEIVING ITEMS***

***PRIVILEGED AND CONFIDENTIAL***



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NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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August 16, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N031503

RE: PG&E Topock - PMP

Attention: Dan Bush

Enclosed are the results for sample(s) received on August 01, 2018 by ASSET Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Quennie Manimtim*

Quennie Manimtim  
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories - Las Vegas.



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - PMP  
**Lab Order:** N031503

---

**CASE NARRATIVE**

**SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time except for pH. pH testing is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

**Analytical Comments for EPA 200.7\_Dissolved:**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Calcium in QC samples N031502-002E-MS1 and N031502-002E-MSD1 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

**Analytical Comments for SM 4500-NO3F:**

Matrix Spike Duplicate (MSD) is outside recovery criteria in QC sample N031503-002CMSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - PMP  
**Lab Order:** N031503  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N031503-001A	PE-01-0818	Groundwater	8/1/2018 11:55:00 AM	8/1/2018	8/16/2018
N031503-001B	PE-01-0818	Groundwater	8/1/2018 11:55:00 AM	8/1/2018	8/16/2018
N031503-001C	PE-01-0818	Groundwater	8/1/2018 11:55:00 AM	8/1/2018	8/16/2018
N031503-001D	PE-01-0818	Groundwater	8/1/2018 11:55:00 AM	8/1/2018	8/16/2018
N031503-002A	TW-03D-0818	Groundwater	8/1/2018 12:10:00 PM	8/1/2018	8/16/2018
N031503-002B	TW-03D-0818	Groundwater	8/1/2018 12:10:00 PM	8/1/2018	8/16/2018
N031503-002C	TW-03D-0818	Groundwater	8/1/2018 12:10:00 PM	8/1/2018	8/16/2018
N031503-002D	TW-03D-0818	Groundwater	8/1/2018 12:10:00 PM	8/1/2018	8/16/2018



**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
----------	--------	-----	-----	------	-------	----	---------------

**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180802B</b>	QC Batch: <b>R126660</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	1900	0.10	0.10		umhos/cm	1	8/2/2018 10:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
----------	--------	-----	-----	------	-------	----	---------------

**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180802B</b>	QC Batch: <b>R126660</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	7200	0.10	0.10		umhos/cm	1	8/2/2018 10:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID <b>N031502-001ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>120.1_WPGE</b>	Units: <b>umhos/cm</b>	Prep Date:	RunNo: <b>126660</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126660</b>	TestNo: <b>EPA 120.1</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3097774</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	7090.000	0.10						7120	0.422	2	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180802C</b>	QC Batch: <b>R126661</b>				PrepDate		Analyst: <b>LR</b>
pH	7.4	0.10	0.10	H	pH Units	1	8/2/2018 10:25 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	8/2/2018 10:25 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180802C</b>	QC Batch: <b>R126661</b>				PrepDate		Analyst: <b>LR</b>
pH	7.2	0.10	0.10	H	pH Units	1	8/2/2018 10:25 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	8/2/2018 10:25 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 150.1\_4500H+B\_W**

Sample ID	<b>N031503-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>150.1_4500H</b>	Units:	<b>pH Units</b>	Prep Date:		RunNo:	<b>126661</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R126661</b>	TestNo:	<b>SM4500-H+B</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3097779</b>			
Analyte		Result		PQL		SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH		7.460		0.10							7.440	0.268	10	H
Temp. at time of pH Analysis		25.000		0.10							25.00	0	10	H

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_180802G</b>	QC Batch: <b>70088</b>				PrepDate	<b>8/2/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	1200	13	13		mg/L	1	8/2/2018 12:51 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_180802G</b>	QC Batch: <b>70088</b>				PrepDate	<b>8/2/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	4300	50	50		mg/L	1	8/2/2018 12:51 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 160.1\_2540C\_W**

Sample ID	<b>LCS-70088</b>	SampType:	<b>LCS</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>8/2/2018</b>	RunNo:	<b>126702</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>70088</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3099339</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		974.000		10	1000	0		97.4	80	120				

Sample ID	<b>MB-70088</b>	SampType:	<b>MBLK</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>8/2/2018</b>	RunNo:	<b>126702</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>70088</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3099340</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		ND		10										

Sample ID	<b>N031503-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>8/2/2018</b>	RunNo:	<b>126702</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>70088</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3099348</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		4430.000		50						4285		3.33	5	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
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- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 200.7**

RunID: NV00922-ICP2_180814B	QC Batch: 70171	PrepDate	8/9/2018	Analyst: CEI		
Calcium	120000	85	500	µg/L	1	8/14/2018 11:45 AM
Iron	93	18	20	µg/L	1	8/14/2018 11:45 AM
Magnesium	30000	48	100	µg/L	1	8/14/2018 11:45 AM
Sodium	290000	2400	12000	µg/L	25	8/9/2018 01:38 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 200.7**

RunID: NV00922-ICP2_180814B	QC Batch: 70171	PrepDate	8/9/2018	Analyst: CEI		
Calcium	200000	85	500	µg/L	1	8/14/2018 11:54 AM
Iron	ND	18	20	µg/L	1	8/14/2018 11:54 AM
Magnesium	25000	48	100	µg/L	1	8/14/2018 11:54 AM
Sodium	1400000	4800	25000	µg/L	50	8/9/2018 01:34 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>MB-70171</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>8/9/2018</b>	RunNo: <b>126820</b>
Client ID: <b>PBW</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105551</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sodium	ND	500			

Sample ID <b>LCS2-70171</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>8/9/2018</b>	RunNo: <b>126820</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105552</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sodium	19494.863	500	20000	0	97.5 85 115

Sample ID <b>N031503-001D-MS2</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>8/9/2018</b>	RunNo: <b>126820</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105560</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sodium	308902.369	12000	20000	286100	114 75 125

Sample ID <b>N031503-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>8/9/2018</b>	RunNo: <b>126820</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105561</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sodium	309902.538	12000	20000	286100	119 75 125 308900 0.323 20

Sample ID <b>MB-70171</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>8/9/2018</b>	RunNo: <b>126913</b>
Client ID: <b>PBW</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108037</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Calcium	ND	500			
Iron	ND	20			
Magnesium	ND	100			

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGPPB**

Sample ID	<b>LCS1-70171</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>8/9/2018</b>	RunNo: <b>126913</b>					
Client ID:	<b>LCSW</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108038</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	4885.143	500	5000	0	97.7	85	115				
Iron	107.917	20	100.0	0	108	85	115				
Magnesium	5008.125	100	5000	0	100	85	115				

Sample ID	<b>N031502-002E-MS1</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>8/9/2018</b>	RunNo: <b>126913</b>					
Client ID:	<b>ZZZZZ</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108042</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	118092.710	500	5000	109400	174	75	125				S
Iron	119.627	20	100.0	22.59	97.0	75	125				
Magnesium	27796.777	100	5000	22960	96.7	75	125				

Sample ID	<b>N031502-002E-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>8/9/2018</b>	RunNo: <b>126913</b>					
Client ID:	<b>ZZZZZ</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108043</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	117973.214	500	5000	109400	172	75	125	118100	0.101	20	S
Iron	119.131	20	100.0	22.59	96.5	75	125	119.6	0.415	20	
Magnesium	27811.472	100	5000	22960	97.0	75	125	27800	0.0529	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICPMS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180807F</b>	QC Batch: <b>70123</b>			PrepDate	<b>8/6/2018</b>	Analyst: <b>CEI</b>
Manganese	370	1.3	2.5	µg/L	5	8/8/2018 01:02 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICPMS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180807F</b>	QC Batch: <b>70123</b>			PrepDate	<b>8/6/2018</b>	Analyst: <b>CEI</b>
Manganese	13	0.26	0.50	µg/L	1	8/8/2018 01:19 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>MB-70123</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>8/6/2018</b>	RunNo: <b>126792</b>
Client ID: <b>PBW</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104196</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			

Sample ID <b>LCS-70123</b>	SampType: <b>LCS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>8/6/2018</b>	RunNo: <b>126792</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104197</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	98.643	0.50	100.0	0	98.6 85 115

Sample ID <b>N031512-001H-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>8/6/2018</b>	RunNo: <b>126792</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104215</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	160.872	0.50	100.0	66.37	94.5 75 125

Sample ID <b>N031512-001H-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>8/6/2018</b>	RunNo: <b>126792</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104217</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	156.659	0.50	100.0	66.37	90.3 75 125 160.9 2.65 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180803A</b>	QC Batch: <b>R126742</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	8/3/2018 12:10 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180807F</b>	QC Batch: <b>70123</b>				PrepDate	<b>8/6/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	8/8/2018 12:57 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180803A</b>	QC Batch: <b>R126742</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	480	3.3	20		µg/L	100	8/3/2018 11:32 AM

**DISSOLVED METALS BY ICP-MS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180807F</b>	QC Batch: <b>70123</b>				PrepDate	<b>8/6/2018</b>	Analyst: <b>CEI</b>
Chromium	480	0.65	5.0		µg/L	5	8/8/2018 01:25 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>MB-70123</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>8/6/2018</b>	RunNo: <b>126792</b>
Client ID: <b>PBW</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104149</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	ND	1.0			

Sample ID <b>LCS-70123</b>	SampType: <b>LCS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>8/6/2018</b>	RunNo: <b>126792</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104150</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	9.712	1.0	10.00	0	97.1 85 115

Sample ID <b>N031512-001H-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>8/6/2018</b>	RunNo: <b>126792</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104168</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	9.966	1.0	10.00	0.5677	94.0 75 125

Sample ID <b>N031512-001H-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>8/6/2018</b>	RunNo: <b>126792</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104170</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	10.086	1.0	10.00	0.5677	95.2 75 125 9.966 1.20 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID: <b>MB-R126742</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101444</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      ND                      0.20

Sample ID: <b>LCS-R126742</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101445</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      5.129                      0.20                      5.000                      0                      103                      90                      110

Sample ID: <b>N031502-001BMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101447</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      965.770                      20                      500.0                      480.1                      97.1                      90                      110

Sample ID: <b>N031502-001BMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101448</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      978.020                      20                      500.0                      480.1                      99.6                      90                      110                      965.8                      1.26                      20

Sample ID: <b>N031503-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101450</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      994.340                      20                      500.0                      476.2                      104                      90                      110

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N031503-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101454</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.952	0.20	1.000	0	95.2	90	110				

Sample ID <b>N031503-002ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101455</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	483.490	20						476.2	1.53	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_180802F</b>	QC Batch: <b>R126666</b>				PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	190	1.2	5.0		mg/L	1	8/2/2018 01:30 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_180802F</b>	QC Batch: <b>R126666</b>				PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	150	1.2	5.0		mg/L	1	8/2/2018 01:30 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 2320\_W\_SP**

Sample ID	<b>LCS-R126666</b>	SampType:	<b>LCS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126666</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R126666</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3097848</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		92.553		5.0	100.0	0		92.6	85	115				

Sample ID	<b>MB-R126666</b>	SampType:	<b>MBLK</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126666</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R126666</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3097849</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		ND		5.0										

Sample ID	<b>N031482-001CDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126666</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126666</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3097851</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		53.191		5.0							53.19	0	30	

Sample ID	<b>N031503-002BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126666</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126666</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3097854</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		244.681		5.0	100.0	148.9		95.7	75	125				

Sample ID	<b>N031503-002BMSSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126666</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126666</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3097855</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		242.553		5.0	100.0	148.9		93.6	75	125	244.7	0.873	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180802B	QC Batch: R126715				PrepDate		Analyst: RAB
Chloride	380	0.91	50		mg/L	100	8/3/2018 12:43 AM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180802B	QC Batch: R126715				PrepDate		Analyst: RAB
Sulfate	270	1.1	25		mg/L	50	8/3/2018 12:28 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: <b>NV00922-IC8_180802B</b>	QC Batch: <b>R126715</b>				PrepDate		Analyst: <b>RAB</b>
Chloride	2100	4.6	250		mg/L	500	8/2/2018 11:27 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: <b>NV00922-IC8_180802B</b>	QC Batch: <b>R126715</b>				PrepDate		Analyst: <b>RAB</b>
Sulfate	490	1.1	25		mg/L	50	8/2/2018 11:11 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_CLPGE**

Sample ID	<b>LCS-R126715_CL</b>	SampType:	<b>LCS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126715</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R126715</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3100252</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		1.956		0.50	2.000	0		97.8	90	110				

Sample ID	<b>MB-R126715_CL</b>	SampType:	<b>MBLK</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126715</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R126715</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3100253</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		0.115		0.50										

Sample ID	<b>N031503-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126715</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126715</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3100259</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		2130.450		250							2123	0.353	20	

Sample ID	<b>N031503-002BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126715</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126715</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>8/2/2018</b>	SeqNo:	<b>3100260</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		3130.800		250	1000	2123		101	80	120				

Sample ID	<b>N031503-002BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>126715</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R126715</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>8/3/2018</b>	SeqNo:	<b>3100261</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		3151.150		250	1000	2123		103	80	120	3131	0.648	20	

**Qualifiers:**

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Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID	<b>LCS-R126715_SO4</b>	SampType: <b>LCS</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>
Client ID:	<b>LCSW</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100269</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sulfate	3.894	0.50	4.000	0	97.3	90 110

Sample ID	<b>MB-R126715_SO4</b>	SampType: <b>MBLK</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>
Client ID:	<b>PBW</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100270</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sulfate	ND	0.50				

Sample ID	<b>N031433-009CMS</b>	SampType: <b>MS</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100274</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sulfate	127.944	5.0	40.00	87.36	101	80 120

Sample ID	<b>N031433-009CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100275</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sulfate	127.364	5.0	40.00	87.36	100	80 120 127.9 0.454 20

Sample ID	<b>N031444-005CMS</b>	SampType: <b>MS</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100276</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sulfate	68.735	2.5	20.00	48.54	101	80 120

**Qualifiers:**

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- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID: <b>N031433-002CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100277</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	64.067	2.5						64.19	0.194	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-001

**Client Sample ID:** PE-01-0818  
**Collection Date:** 8/1/2018 11:55:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180815A</b>	QC Batch: <b>R126959</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	ND	0.032	0.050		mg/L	1	8/15/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 16-Aug-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031503  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031503-002

**Client Sample ID:** TW-03D-0818  
**Collection Date:** 8/1/2018 12:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180815A</b>	QC Batch: <b>R126959</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	2.7	0.16	0.25		mg/L	5	8/15/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R126959</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126959</b>
Client ID: <b>PBW</b>	Batch ID: <b>R126959</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>8/15/2018</b>	SeqNo: <b>3109937</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R126959</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126959</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R126959</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>8/15/2018</b>	SeqNo: <b>3109938</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.523	0.050	0.5000	0	105 85 115

Sample ID <b>N031502-002DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126959</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126959</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>8/15/2018</b>	SeqNo: <b>3109942</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	2.905	0.25			2.624 10.2 20

Sample ID <b>N031503-002CMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126959</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126959</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>8/15/2018</b>	SeqNo: <b>3109944</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	4.829	0.25	2.500	2.702	85.1 75 125

Sample ID <b>N031503-002CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126959</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126959</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>8/15/2018</b>	SeqNo: <b>3109945</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	5.900	0.25	2.500	2.702	128 75 125 4.829 20.0 20 S

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
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- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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# SAMPLE RECEIVING ITEMS



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## CHAIN OF CUSTODY RECORD

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Page 1 of 1

<b>Client:</b> Arcadis		<b>Report to:</b> Dan Bush		<b>Bill to:</b> Lisa Kellog		<b>EDD Requirement</b>		<b>QA/QC</b>		<b>Sample Receipt Condition</b>					
<b>Address:</b> 1410 Rocky Ridge Dr. #330		<b>Company:</b> Arcadis		<b>Address:</b> 2999 Oak Road, Suite 300		Excel EDD <input type="checkbox"/>		RTNE <input type="checkbox"/>		1. Chilled <input type="checkbox"/>					
<b>Address:</b> Roseville, CA 95661		<b>Email:</b> dan.bush@arcadis.com daniel.moore@critigen.com		<b>Address:</b> Walnut Creek, CA 94597		Geotracker <input type="checkbox"/>		RWOCB <input type="checkbox"/>		2. Headspace <input type="checkbox"/>					
<b>Phone:</b> 916.786.3302		<b>Address:</b> 1410 Rocky Ridge Dr. #330		<b>Email to:</b> lisa.kellog@arcadis.com		Labepec <input type="checkbox"/>		CalTrans <input type="checkbox"/>		3. Container Intact <input type="checkbox"/>					
<b>Submitted By:</b> Nana Tay		<b>Address:</b> Roseville, CA 95661		<b>Phone:</b> 951.677.0577		Others <input type="checkbox"/>		Level III <input type="checkbox"/>		4. Seal Present <input type="checkbox"/>					
<b>Title:</b> sample tech		<b>Phone:</b> 916.786.3302		<b>Matrix</b>		Specify:		LEVEL IV <input checked="" type="checkbox"/>		5. IR number <input type="checkbox"/>					
<b>Signature:</b> [Signature]		<b>Date:</b> 8/1/18		<b>Sampled By:</b> Nana Tay		<b>Analyses Requested</b>		Regulatory <input type="checkbox"/>		6. Method of Cooling <input type="checkbox"/>					
<b>Project Name:</b> PG&E Topock - PMP		<b>Signature:</b> [Signature]		<b>Date:</b> 8/1/18		Cr-6 by SM3500		Specify State:		7. Sample Temp: 29C					
<b>Project Number:</b>		<b>Signature:</b> [Signature]		<b>Date:</b> 8/1/18		Alkalinity		Global ID:		8. Courier:					
<b>Item No.</b>		<b>Laboratory Work Order No.</b>		<b>Sample ID/Location</b>		pH		Turn Around Time		Tracking No.					
1		N031503-01		PE-01-0718		Chloride		No. of container		Remarks					
2		-02		TW-03D-0718		Specific Conductance		Container Type							
3						Sulfate		PRESERVATION							
4						TDS									
5						NO2/NO3 by SM 4500									
6						Ca, Fe, Mg, Na by EPA 200.7									
7						Cu, Mn by 200.8									
8															
9															
10															
11															
12															
<b>Relinquished by (Signature and Printed Name):</b> Nana Tay				<b>Date / Time:</b> 8/1/18 1510				<b>Received by (Signature and Printed Name):</b> [Signature]				<b>Date / Time:</b> 8/1/18 1510			
<b>Relinquished by (Signature and Printed Name):</b> [Signature]				<b>Date / Time:</b> 8/1/18 1725				<b>Received by (Signature and Printed Name):</b> [Signature]				<b>Date / Time:</b> 8/1/18 1725			
<b>Relinquished by (Signature and Printed Name):</b> [Signature]				<b>Date / Time:</b>				<b>Received by (Signature and Printed Name):</b>				<b>Date / Time:</b>			
<b>Turn Around Time (TAT)</b>								<b>Special Instruction:</b>							
<input type="checkbox"/> A = 24 Hrs or Same Day TAT															
<input type="checkbox"/> B = Next Workday															
<input type="checkbox"/> C = 2 Workdays															
<input type="checkbox"/> D = 3 Workdays															
<input checked="" type="checkbox"/> E = Routine 5-7 Workdays															
TAT Starts at 8 AM the following day if samples received after 3:00 PM.															
<b>Terms</b>								<b>Preservatives:</b>							
1. All samples will be disposed in 45 days upon receipt and records will be destroyed in 5 years upon submission of final report.								H = HCl							
2. Regular TAT is 5-7 business days, rush charges will apply for rush analysis.								N = HNO3							
Less than 24 Hrs = 300% Next Day = 100% 2 Workdays = 50% 3 Workdays = 35% 4 Workdays = 20%								S = H2SO4							
3. Custom EDD formats will be an additional 5% of the total project price.								C = 4°C							
4. Add 10% surcharge for Level III Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.								Z = Zn(AC)2							
								O = NaOH							
								T = Na2S2O3							
								Others/Specify:							
								M = Metal							
								P = Plastic							
								C = Can							

White = Laboratory Copy

Yellow = Customer's Copy

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 8/1/2018 Workorder: N031503  
 Rep sample Temp (Deg C): 2.9 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |   |  |   |
|---|---|--|---|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>                                  |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                       |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                       |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 11. All samples received within holding time?   | Yes <input type="checkbox"/>  | No <input checked="" type="checkbox"/>                     |   |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>                                |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input checked="" type="checkbox"/><br>Yes <input type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input type="checkbox"/><br>NA <input checked="" type="checkbox"/> |

Comments: Samples for pH were past holding time upon receipt.

Checklist Completed By: YR  8/2/2018

Reviewed By:  LG 080718

Subject: Topock Sample ID Corection Request - Batch N031503

From: Tina Rice <Tina.Rice@critigen.com>

Date: 8/15/2018 1:20 PM

To: Nancy Sibucao <nancy@assetlaboratories.com>

CC: "Madsen, Laura" <Laura.Madsen@arcadis.com>

Hi Nancy,

You may have already been asked to do this but looks like the sample IDs for batch N031503 need to be updated per below:

WorkOrder	ClientSampID	New ClientSampID	DateCollected
N031503	PE-01-0718	PE-01-0818	8/1/2018
N031503	TW-03D-0718	TW-03D-0818	8/1/2018

Tina

**Tina Rice**  
**Database Analyst**

**CRITIGEN**

[Tina.Rice@critigen.com](mailto:Tina.Rice@critigen.com)

1 360 600 3562 Direct

1 360 600 3562 Mobile

[critigen.com](http://critigen.com)

[critigen.co.uk](http://critigen.co.uk)

# ASSET Laboratories

## WORK ORDER Summary

16-Aug-18

WorkOrder: N031503

Client ID: ARCUS02

Project: PG&E Topock - PMP

QC Level: Level IV

Date Received: 8/1/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N031503-001A	PE-01-0818	8/1/2018 11:55:00 AM	8/15/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031503-001B			8/15/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031503-001C			8/15/2018		SM 1030F1	Cation-Anion Balance Calculation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031503-001D			8/15/2018		EPA 200.7	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		EPA 200.8	DISSOLVED METALS BY ICMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		EPA 200.8	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031503-002A	TW-03D-0818	8/1/2018 12:10:00 PM	8/15/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031503-002B			8/15/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

16-Aug-18

**WorkOrder:** N031503

**Client ID:** ARCUS02

**Project:** PG&E Topock - PMP

**QC Level:** Level IV

**Date Received:** 8/1/2018

**Comments:**

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N031503-002B	TW-03D-0818	8/1/2018 12:10:00 PM	8/15/2018	Groundwater	EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		SM 1030F1	Cation-Anion Balance Calculation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031503-002C			8/15/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031503-002D			8/15/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		EPA 200.7	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		EPA 200.8	DISSOLVED METALS BY ICPMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			8/15/2018		EPA 200.8	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031503-003A	FOLDER	8/15/2018	8/15/2018		EDD	Client specific project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			8/15/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			8/15/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB



## List of Analysts

### ASSET Laboratories Work Order: N031503

NAME	TEST METHOD
Quennie Manimtim	SM 4500-NO3F
Claire Ignacio	EPA 200.7_Dissolved, EPA 200.8_Dissolved
Ria Abes	EPA 218.6, EPA 300.0
Lilia Ramit	EPA 120.1, SM 4500-H+B, SM 2540C, SM 2320 B



# EPA 120.1



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R126660 Analyst: LSR

ASSET #:      N031503 Date Analyzed: 2-Aug

Method: EPA 120.1

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
<b>Sample Information</b>						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X			/		
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.			X			/
11. LCS compounds within control limits.			X			/
12. MS/MSD, RPD's are within control limits	X			/		
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			/
14. Runlog complete and included in package.	X			/		
15. Spectrophotometer tape included (Spec work only)			X			/
16. Digestion log complete and included in package (if applicable)			X			/
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X			/		
19. Is the QC summary report present and complete?	X			/		

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct	/		
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)	/		
5. Is first level review correct and complete?			

1st Level Reviewer Jilia Ramit

Date: 8/7/2018

2nd Level Reviewer Manny 8/16/2018

Date:

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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**Conductivity Logbook**

Date: 8/21/18 1035  
 Analyst: LR

Standard	Std ID	Reading	Comments
9.70 $\mu\text{S}/\text{cm}$	CIN - 180417A	9.81 @ 26.8°C	% Rec: (90-110%)
1413	180515C	1414 @ 26.8°C	
10020	180417C	10030 @ 26.9°C	
99931	180515D	99300 @ 26.9°C	
Sample ID	Matrix	Reading	Comments
1 NO3/502-001A	flw	7120 @ 25.6°C	
2   ADVP		7090 @ 25.8°C	
3   2B		7050 @ 25.4°C	
4 NO3/503-001B	↓	1805 @ 25.8°C	
5   2B	↓	7160 @ 25.6°C	
6			
7			Julia Ramit 8/7/2018
8 1413 $\mu\text{S}/\text{cm}$	CIN - 180417B	1421 @ 26.6°C	
9 10000	180108C	10080 @ 26.8°C	
10 99601	180521B	99400 @ 26.8°C	2% 8/21/18 LR
Dup			Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Date: 8/21/18 092X  
 Analyst: LR

Standard	Std ID	Reading	Comments
9.70 $\mu\text{S}/\text{cm}$	CIN - 180417A	9.72 @ 26.4°C	% Rec: (90-110%)
1413	180515C	1413 @ 26.2°C	
10020	180417C	9920 @ 26.5°C	
99931	180515D	99500 @ 26.2°C	
Sample ID	Matrix	Reading	Comments
1 NO3/512-001A	flw	4760 @ 25.8°C	
2   ADVP		4770 @ 25.7°C	
3   2A		4490 @ 25.8°C	
4   3A		3610 @ 25.8°C	
5			
6			
7			
8 1413 $\mu\text{S}/\text{cm}$	CIN - 180417B	1427 @ 26.0°C	
9 10000	180108C	10030 @ 26.1°C	
10 99601	180521B	10050 @ 26.1°C	2% 8/21/18 LR
Dup			Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Logbook # 6



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 ORFI AD/NELAP Cert 4044

# SM 4500-H+B



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**pH Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

pH ARCUS  
 REV 0  
 101215

**FIRST LEVEL REVIEW:**

QC Batch Number: R126661

Instrument ID: pH meter

ASSET #: N031503

Analyst: LSR

Date Analyzed: 8/2/2018

Method: EPA 150.1

pH Meter Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Was the meter calibrated using 3 buffers (4,7 and 10)?	X					
2. Was a closing buffer used at the end of analysis?	X					
3. Was the meter checked every 10 samples?			X			
<b>Sample Information</b>						
4. Are all samples analyzed within hold time.		X				
<b>QC Items</b>						
5. Was a duplicate sample analyzed?	X					
<b>Raw Data and Miscellaneous Information</b>						
6. Are Non-Conformances documented			X			
7. Runlog complete and included in package.	X					
<b>Preliminary Report</b>						
8. Does the raw data match the preliminary report?	X					
9. Are analytical results correct?	X					
10. Is the QC summary report present and complete?	X					

Comments:

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer *Silia Ramit*

Date: 8/3/2018

2nd Level Reviewer *Nancy* 8/16/2018

Date: \_\_\_\_\_

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA





pH Logbook

Date: 8/1/18 1025

Analyst: WR

Standard	Std ID	pH	Comments
Buffer 7	CIM-180575B	7.02 @ 25.0C	
Buffer 4	180575A	4.03 @ 25.0C	
Buffer 10	180131B	10.02 @ 25.0C	
Slope		99.2%	Acceptance Criteria: 95%-105%

Sample ID	Matrix	pH	Comments
1 N031482-001C	H <sub>2</sub> O	7.85 @ 25.0C	
2   1CBUP		7.87 @ 25.0C	
3			
4			
5			
6			
7			
8			
9			
10			
Dup			Accept: 10% water, 20% soil
Buffer <u>7</u> , 4, 10 (Circle one)	CIM-180320C	7.02 @ 25.0C	Accept: <sup>0.05</sup> +/- 0.4 pH units from expected value

WR 8/1/18

Date: 8/2/18 1025

Analyst: WR

Standard	Std ID	pH	Comments
Buffer 7	CIM-180575B	7.01 @ 25.0C	
Buffer 4	180575A	4.01 @ 25.0C	
Buffer 10	180131B	10.01 @ 25.0C	
Slope		98.9%	Acceptance Criteria: 95%-105%

Sample ID	Matrix	pH	Comments
1 N031503-001B	H <sub>2</sub> O	7.44 @ 25.0C	
2   1BDUP		7.46 @ 25.0C	
3   2B		7.24 @ 25.0C	
4			
5			
6			
7			
8			
9			
10			
Dup			Accept: 10% water, 20% soil
Buffer <u>7</u> , 4, 10 (Circle one)	CIM-180320C	6.99 @ 25.0C	Accept: <sup>0.05</sup> +/- 0.4 pH units from expected value

Jula Ramit 8/3/2018

WR 8/2/18

# SM 2540C



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: 70088 Analyst: LSR  
 ASSET #:        N031503 Date Analyzed: 2-Aug

Method: **EPA 160.1**

Initial Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
Continuing Calibration						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
Sample Information						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
QC Items						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
Preliminary Report						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer       Silvia Ramit      

Date: 8/7/2018

2nd Level Reviewer       Nancy 8/16/2018      

Date:       \_\_\_\_\_

# SAMPLE CALCULATION



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## SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B)*1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For N031503-001B, TDS concentration in mg/L is calculated as follows:

$$\begin{aligned}\text{TDS, mg/L} &= \frac{(59.9309-59.8401)*1000000}{75} \\ &= 1210.6667 \text{ mg/L}\end{aligned}$$

Reporting result in two significant figures,

$$\text{TDS} = 1200 \text{ mg/L}$$

*Jilia Ramit* 8/7/2018

# SAMPLE PREPARATION LOG



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ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 8/2/2018 12:51:53 P

Reviewed/ Date: 8/16/2018

Page: 1 of 1

Prep End Date: 8/3/2018 10:10:00 A

Initials/ Date: Lilia Ramit 8/6/2018 Prep Factor Units Temp. (°C):

Prep Batch 70088 Prep Code: 160.1\_W\_PRE Technician: Lilia Ramit mL / mL 180

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70088	Water		100	<input type="checkbox"/>	0	0	100	1.000		
MB-70088	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N031405-010B	Water		2	<input type="checkbox"/>	0	0	100	50.000		
N031472-002C	Water		30	<input type="checkbox"/>	0	0	100	3.333		
N031482-001C	Groundwater		40	<input type="checkbox"/>	0	0	100	2.500		
N031502-001A	Water		20	<input type="checkbox"/>	0	0	100	5.000		
N031502-002B	Water		20	<input type="checkbox"/>	0	0	100	5.000		
N031503-001B	Groundwater		75	<input type="checkbox"/>	0	0	100	1.333		
N031503-002B	Groundwater		20	<input type="checkbox"/>	0	0	100	5.000		
N031503-002B-DU	Groundwater		20	<input type="checkbox"/>	0	0	100	5.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name	Spk ID	Spike Name	SampType	AmtAdd
10079	Glass Fiber Filter, 47mm	IWST180730A	1000 ppm NaCl	LCS	100

ASSET Laboratories

PREP BATCH REPORT

Page: 1 of 1

Prep Start Date: 8/2/2018 12:51:53 P

Reviewed/ Date:

Prep End Date:

*Lilia Ramit* 8/6/2018

Prep Batch 70088

Prep Code: 160.1\_W\_PRE

Initials/ Date:

Prep Factor Units

Technician: Lilia Ramit

mL / mL

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70088	Water	<i>10911807300p</i>	100	<input type="checkbox"/>	0	0	100	1.000		
MB-70088	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N031405-010B	Water	<i>56200</i>	<i>100 / 2</i>	<input type="checkbox"/>	0	0	100	1.000		
N031472-002C	Water	<i>4180</i>	<i>100 / 30</i>	<input type="checkbox"/>	0	0	100	1.000		
N031482-001C	Groundwater	<i>3200</i>	<i>100 / 40</i>	<input type="checkbox"/>	0	0	100	1.000		
N031502-001A	Water	<i>7120</i>	<i>100 / 20</i>	<input type="checkbox"/>	0	0	100	1.000		
N031502-002B	Water	<i>7030</i>	<i>100 / 20</i>	<input type="checkbox"/>	0	0	100	1.000		
N031503-001B	Groundwater	<i>1885</i>	<i>100 / 75</i>	<input type="checkbox"/>	0	0	100	1.000		
N031503-002B	Groundwater	<i>7160</i>	<i>100 / 20</i>	<input type="checkbox"/>	0	0	100	1.000		
N031503-002B-DU	Groundwater	<i>1</i>	<i>100 / 20</i>	<input type="checkbox"/>	0	0	100	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

*10079*



# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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SOLIDS RAW DATA

TEST: TSS/ TDS/ TS

Date	Sample ID	Sample Vol. (ml)	Crucible + Filter (TSS) Crucible (TDS, TS) Tare Wt. (g)	Crucible + Filter+Sample (TSS) Crucible + Sample (TDS, TS) Tare Wt. (g)	Comments
8/2/18 1251 GG	MB 70088	100	67.5272 67.8275	67.8278 67.8278	
EE	LCS 70088	100	68.3089 68.3092	68.4068 68.4066	
V	N031405-010 B	2	48.8789 48.8782	49.0124 49.0121	
IF	N031472-002C	30	60.6300 60.6303	60.7589 60.7591	
XX	N031472-001C	40	49.3237 49.3241	49.4005 49.4002	
A	N031502-001A	20	62.3894 62.3897	62.4763 62.4759	
T	2B	20	46.0486 46.0490	46.1334 46.1333	
IE	N031503-001B	75	59.8397 59.8401	59.9309 59.9309	
W	2B	20	76.5807 76.5803	76.6698 76.6660	
KA	2B DUP	20	68.3558 68.3562	68.4450 68.4448	

Closing wt: 49.9996 @ 1010 ASSET Laboratories  
8/3/18 WJ

Julia Ramit 8/6/2018 Logbook#12



# TOTAL DISSOLVED SOLIDS, TDS

TDS, mg/L =

$$(A-B) \times 10000 \times PF$$

where:

- A = weight in grams of dish + residue after drying
- B = weight of dish in grams
- PF = 100/volume of sample used in mL

	vol of sample (mL)	weight of dish in grams (B)	weight in grams of dish + residue after drying (A)	(A-B)*10000	prep fact (PF)	TDS, mg/L	CONDUCTIVITY	RATIO	Sample Type
Date Finished:									
8/3/2018									
MB-70088	100	67.8275	67.8278	3	1	3			MBLK
LCS-70088	100	68.3092	68.4066	974	1	974			LCS
N031405-010B	2	48.8786	49.0121	1335	50	66750	56200	1.188	SAMP
N031472-002C	30	60.6303	60.7591	1288	3.33333333	4293.33333	4180	1.027	SAMP
N031482-001C	40	49.3241	49.4002	761	2.5	1902.5	3200	0.595	SAMP
N031502-001A	20	62.3897	62.4759	862	5	4310	7120	0.605	SAMP
N031502-002B	20	46.049	46.1333	843	5	4215	7030	0.600	SAMP
N031503-001B	75	59.8401	59.9309	908	1.33333333	1210.66667	1885	0.642	SAMP
N031503-002B	20	76.5803	76.666	857	5	4285	7160	0.598	SAMP
N031503-002BDUP	20	68.3562	68.4448	886	5	4430	7160	0.619	DUP

*Silia Ramit*

8/6/2018

# EPA 200.7 Dissolved



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P: 562.219.7435 F: 562.219.7436

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**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70171  
 ASSET #: N031503

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 8/9/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)			X			X
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			<del>X</del>		X
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			<del>X</del>		X
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.		X		X	<del>X</del>	
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits	X			X		
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented			X			X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

Dilution test failed for Mg. However, PS passed criteria.

Na only

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer 8/16/2018

Date: 8/16/18  
 Date: \_\_\_\_\_



**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70171  
 ASSET #: N031503

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 8/14/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? (r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)			X			X
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits		X			X	
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X			X	X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

%Rec of Ca in N031503-002EMS/MSD/PS failed. However, LCS passed criteria.

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	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer [Signature] 8/16/2018

Date: 8/16/18  
 Date: —

# SAMPLE CALCULATION



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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P: 702.307.2659 F: 702.307.2691

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## SAMPLE CALCULATION

**METHOD:** EPA 6010B  
**TEST NAME:** Heavy Metals by ICP  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Iron concentration, in ug/L, in the original sample as follows:

$$\text{Iron, ug/L} = A * DF * PF * CF$$

where:

A = mg/L, calculated concentration

DF = Dilution Factor

PF = Final Volume of Digestate, mL / Amount of Sample, mL

CF= Conversion Factor from mg/L to ug/L, 1000

For Sample **N031503-001D**, the concentration in ug/L is calculated as follows:

$$\text{Iron, ug/L} = 0.09279 * 1 * (25/25) * 1000$$

$$\text{Iron, ug/L} = 92.79$$

Reporting results in two significant figures,

$$\text{Iron, ug/L} = \mathbf{93}$$



# % RSD SUMMARY



**ASSET LABORATORIES**  
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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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**RSD SUMMARY: 180809B**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Na	0	10.27	15	PASS
Standard1	ICAL	1	Na	0.1	2.65	15	PASS
Standard2	ICAL	1	Na	1	0.084	15	PASS
Standard3	ICAL	1	Na	5	0.19	15	PASS
Standard4	ICAL	1	Na	10	0.2	15	PASS
Standard5	ICAL	1	Na	20	0.25	15	PASS
Standard6	ICAL	1	Na	40	0.28	15	PASS
ICV	ICV	1	Na	9.82	0.031	15	PASS
ICB	ICB	1	Na	-0.044	4.54	15	PASS
ICSA1	ICSA	1	Na	-0.051	6.31	15	PASS
ICSAB1	ICSAB	1	Na	9.84	0.2	15	PASS
CCV1	CCV	1	Na	9.96	0.17	15	PASS
CCB1	CCB	1	Na	-0.045	1.89	15	PASS
MB-70171	MBLK	1	Na	-0.048	7.023	15	PASS
LCS2-70171	LCS	1	Na	19.5	0.094	15	PASS
N031503-001D	SAMP	50	Na	5.75	0.082	15	PASS
CCV1	CCV	1	Na	9.91	0.2	15	PASS
CCB1	CCB	1	Na	-0.061	7.42	15	PASS
N031503-002D	SAMP	50	Na	28.3	0.25	15	PASS
N031503-001D	SAMP	25	Na	11.44	0.28	15	PASS
N031503-001D	SAMP	125	Na	2.28	0.084	15	PASS
N031503-001D-PS	PS	25	Na	12.14	0.35	15	PASS
N031503-001D-M2	MS	25	Na	12.36	0.081	15	PASS
N031503-001D-MS2	MSD	25	Na	12.4	0.16	15	PASS
CCV2	CCV	1	Na	9.82	0.11	15	PASS
CCB2	CCB	1	Na	-0.078	4.81	15	PASS
ICSA2	ICSA	1	Na	-0.079	3.98	15	PASS
ICSAB2	ICSAB	1	Na	9.78	0.18	15	PASS

**RSD SUMMARY: 180814A**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Ca	0	8.099	15	PASS
Standard1	ICAL	1	Ca	0.2	6.33	15	PASS
Standard2	ICAL	1	Ca	1	2.23	15	PASS
Standard3	ICAL	1	Ca	2	0.84	15	PASS
Standard4	ICAL	1	Ca	5	0.42	15	PASS
Standard5	ICAL	1	Ca	7.5	0.82	15	PASS
Standard6	ICAL	1	Ca	10	0.93	15	PASS
Standard7	ICAL	1	Ca	20	0.86	15	PASS
ICV	ICV	1	Ca	9.89	1.23	15	PASS
ICB	ICB	1	Ca	0.019	127.16	15	<PQL
LLICV	CCV1	1	Ca	0.2	5.97	20	PASS
ICSA1	ICSA	1	Ca	460.65	0.1	15	PASS
ICSAB1	ICSAB	1	Ca	525.41	0.16	15	PASS
MB-70171	MBLK	1	Ca	0.0076	418.17	15	<PQL
LCS1-70171	LCS	1	Ca	4.89	0.99	15	PASS
N031502-002E	SAMP	1	Ca	109.39	0.6	15	PASS
N031502-002E	SAMP	5	Ca	23.12	0.69	15	PASS
N031502-002E-PS	PS	1	Ca	117.33	0.37	15	PASS
N031502-002E-MS1	MS	1	Ca	118.09	0.91	15	PASS
N031502-002E-MSD1	MSD	1	Ca	117.97	0.074	15	PASS
N031503-001D	SAMP	1	Ca	119.16	0.72	15	PASS
N031503-002D	SAMP	1	Ca	200.64	0.42	15	PASS
LCS1-70171	LCS	1	Ca	4.23	0.87	15	PASS
CCV1	CCV	1	Ca	9.83	0.39	15	PASS
CCB1	CCB	1	Ca	0.0037	582.2	15	<PQL
ICSA2	ICSA	1	Ca	457.66	0.074	15	PASS
ICSAB2	ICSAB	1	Ca	521.35	0.2	15	PASS
CalBlk	IBLK	1	Fe	0	4.57	15	PASS
Standard1	ICAL	1	Fe	0.02	3.9	15	PASS
Standard2	ICAL	1	Fe	0.05	0.54	15	PASS
Standard3	ICAL	1	Fe	2	0.34	15	PASS
Standard4	ICAL	1	Fe	5	0.35	15	PASS
Standard5	ICAL	1	Fe	7.5	0.38	15	PASS
Standard6	ICAL	1	Fe	10	0.15	15	PASS
Standard7	ICAL	1	Fe	20	0.11	15	PASS
ICV	ICV	1	Fe	9.99	0.04	15	PASS
ICB	ICB	1	Fe	0.00056	83.043	15	<PQL
LLICV	CCV1	1	Fe	0.02	0.47	20	PASS
ICSA1	ICSA	1	Fe	185.19	0.18	15	PASS
ICSAB1	ICSAB	1	Fe	180.93	0.11	15	PASS
MB-70171	MBLK	1	Fe	0.0073	16.82	15	<PQL
LCS1-70171	LCS	1	Fe	0.11	0.51	15	PASS

**RSD SUMMARY: 180814A**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
N031502-002E	SAMP	1	Fe	0.023	0.68	15	PASS
N031502-002E	SAMP	5	Fe	0.0047	2.53	15	PASS
N031502-002E-PS	PS	1	Fe	0.11	0.44	15	PASS
N031502-002E-MS1	MS	1	Fe	0.12	0.46	15	PASS
N031502-002E-MSD1	MSD	1	Fe	0.12	1.51	15	PASS
N031503-001D	SAMP	1	Fe	0.093	1.15	15	PASS
N031503-002D	SAMP	1	Fe	0.0066	4.67	15	PASS
LCS1-70171	LCS	1	Fe	0.1	0.68	15	PASS
CCV1	CCV	1	Fe	10	0.059	15	PASS
CCB1	CCB	1	Fe	0.00026	156.89	15	<PQL
ICSA2	ICSA	1	Fe	183.56	0.31	15	PASS
ICSAB2	ICSAB	1	Fe	178.81	0.32	15	PASS
CalBlk	IBLK	1	Mg	0	4.9	15	PASS
Standard1	ICAL	1	Mg	0.1	0.95	15	PASS
Standard2	ICAL	1	Mg	1	0.21	15	PASS
Standard3	ICAL	1	Mg	2	0.28	15	PASS
Standard4	ICAL	1	Mg	5	0.39	15	PASS
Standard5	ICAL	1	Mg	7.5	0.48	15	PASS
Standard6	ICAL	1	Mg	10	0.14	15	PASS
Standard7	ICAL	1	Mg	20	0.033	15	PASS
ICV	ICV	1	Mg	9.94	0.11	15	PASS
ICB	ICB	1	Mg	-0.00097	31.45	15	<PQL
LLICV	CCV1	1	Mg	0.092	1.55	20	PASS
ICSA1	ICSA	1	Mg	440.44	0.23	15	PASS
ICSAB1	ICSAB	1	Mg	501.4	0.23	15	PASS
MB-70171	MBLK	1	Mg	0.0017	23.61	15	<PQL
LCS1-70171	LCS	1	Mg	5.0081	0.37	15	PASS
N031502-002E	SAMP	1	Mg	22.96	0.21	15	PASS
N031502-002E	SAMP	5	Mg	5.25	0.94	15	PASS
N031502-002E-PS	PS	1	Mg	27.68	0.3	15	PASS
N031502-002E-MS1	MS	1	Mg	27.8	0.18	15	PASS
N031502-002E-MSD1	MSD	1	Mg	27.81	0.24	15	PASS
N031503-001D	SAMP	1	Mg	29.92	0.14	15	PASS
N031503-002D	SAMP	1	Mg	25.25	0.14	15	PASS
LCS1-70171	LCS	1	Mg	4.38	0.65	15	PASS
CCV1	CCV	1	Mg	9.78	0.099	15	PASS
CCB1	CCB	1	Mg	-0.0021	33.64	15	<PQL
ICSA2	ICSA	1	Mg	432.63	0.24	15	PASS
ICSAB2	ICSAB	1	Mg	491.72	0.33	15	PASS

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**INJECTION LOG: 180809B**

**Instrument ID: ICP-02**

STANDARD CODE	
Standard1	MWST-180601K0.025<50mL
Standard2	MWST-180601K,0.25<50mL
Standard3	MWST-180601K,1.25<50mL
Standard4	MWST-180601K,2.5<50mL
Standard5	MWST-180601K,5<50mL
Standard6	MWST-180601K,10<50mL
ICV	MWST-180615A
CCV	MWST-180601K,2.5<50mL
ICSA/ICSAB	MWST-180420F/ MWST-180601L
Int. Std. (Sc):	MSST-180420B/A
PS Spike	MSST-140120B/ -130329E/ -170116A

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	08/09/2018	11:15:53 AM
26	Standard1	ICAL	1	08/09/2018	11:19:11 AM
27	Standard2	ICAL	1	08/09/2018	11:22:29 AM
28	Standard3	ICAL	1	08/09/2018	11:26:17 AM
29	Standard4	ICAL	1	08/09/2018	11:30:07 AM
30	Standard5	ICAL	1	08/09/2018	11:34:01 AM
31	Standard6	ICAL	1	08/09/2018	11:38:04 AM
32	ICV	ICV	1	08/09/2018	11:40:45 AM
1	ICB	ICB	1	08/09/2018	11:44:40 AM
33	ICSA1	ICSA	1	08/09/2018	11:48:28 AM
34	ICSAB1	ICSAB	1	08/09/2018	11:51:46 AM
98	MB-70137	MBLK	1	08/09/2018	11:55:43 AM
99	LCS2-70137	LCS	1	08/09/2018	11:59:03 AM
100	N031512-001H	SAMP	1	08/09/2018	12:03:09 PM
101	N031512-002H	SAMP	1	08/09/2018	12:08:47 PM
102	N031512-003H	SAMP	1	08/09/2018	12:13:56 PM
103	N031512-002H	SAMP	5	08/09/2018	12:19:02 PM
107	N031512-002H	SAMP	25	08/09/2018	12:21:57 PM
108	N031512-002H	SAMP	125	08/09/2018	12:25:47 PM
109	N031512-002H-PS	PS	5	08/09/2018	12:29:07 PM
110	N031512-002H-PS	PS	25	08/09/2018	12:33:03 PM
29	CCV1	CCV	1	08/09/2018	12:36:55 PM
1	CCB1	CCB	1	08/09/2018	12:40:49 PM
111	N031512-002H-MS2	MS	5	08/09/2018	12:44:37 PM
112	N031512-002H-MS2	MS	25	08/09/2018	12:48:33 PM
113	N031512-002H-MSD2	MSD	5	08/09/2018	12:52:25 PM
114	N031512-002H-MSD2	MSD	25	08/09/2018	12:56:23 PM
115	N031512-001H	SAMP	25	08/09/2018	01:00:14 PM
116	N031512-003H	SAMP	25	08/09/2018	01:04:05 PM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
157	N031555-001A	SAMP	1	08/09/2018	01:07:56 PM
117	MB-70171	MBLK	1	08/09/2018	01:12:52 PM
118	LCS2-70171	LCS	1	08/09/2018	01:16:41 PM
119	N031503-001D	SAMP	50	08/09/2018	01:23:14 PM
29	CCV2	CCV	1	08/09/2018	01:26:36 PM
1	CCB2	CCB	1	08/09/2018	01:30:30 PM
120	N031503-002D	SAMP	50	08/09/2018	01:34:18 PM
121	N031503-001D	SAMP	25	08/09/2018	01:38:08 PM
122	N031503-001D	SAMP	125	08/09/2018	01:41:59 PM
123	N031503-001D-PS	PS	25	08/09/2018	01:45:20 PM
124	N031503-001D-M2	MS	25	08/09/2018	01:49:10 PM
125	N031503-001D-MS2	MSD	25	08/09/2018	01:53:02 PM
126	N031555-001A	SAMP	5	08/09/2018	01:56:54 PM
29	CCV3	CCV	1	08/09/2018	02:00:46 PM
1	CCB3	CCB	1	08/09/2018	02:04:39 PM
33	ICSA2	ICSA	1	08/09/2018	02:08:25 PM
34	ICSAB2	ICSAB	1	08/09/2018	02:11:43 PM

**INJECTION LOG: 180814A**

**Instrument ID: ICP-02**

STANDARD CODE	
Standard1	MWST-180420A,0.5<50mL
Standard2	MWST-180601F
Standard3	MWST-180601J,5<50mL
Standard4	MWST-180601J,12.5<50mL
Standard5	MWST-180601J,15<40mL
Standard6	MWST-180601J,25<50mL
Standard7	MWST-180601J
ICV	MWST-180430E
CCV	MWST-180601J,25<50mL
ICSA/ICSAB	MWST-180420F/ -180730A
Int. Std. (Y)	MSST-180420B/A
PS Spike	MWST-180517E/ -180430F/ -180601B

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	08/14/2018	09:11:04 AM
2	Standard1	ICAL	1	08/14/2018	09:16:55 AM
3	Standard2	ICAL	1	08/14/2018	09:23:14 AM
11	Standard3	ICAL	1	08/14/2018	09:29:34 AM
12	Standard4	ICAL	1	08/14/2018	09:35:56 AM
6	Standard5	ICAL	1	08/14/2018	09:45:19 AM
7	Standard6	ICAL	1	08/14/2018	09:54:41 AM
8	Standard7	ICAL	1	08/14/2018	10:03:35 AM
9	ICV	ICV	1	08/14/2018	10:06:37 AM
1	ICB	ICB	1	08/14/2018	10:15:33 AM
2	LLICV	CCV1	1	08/14/2018	10:21:22 AM
4	ICSA1	ICSA	1	08/14/2018	10:27:41 AM
5	ICSAB1	ICSAB	1	08/14/2018	10:37:14 AM
98	MB-70171	MBLK	1	08/14/2018	10:46:18 AM
99	LCS1-70171	LCS	1	08/14/2018	10:52:10 AM
100	N031502-002E	SAMP	1	08/14/2018	11:01:32 AM
101	N031502-002E	SAMP	5	08/14/2018	11:10:54 AM
102	N031502-002E-PS	PS	1	08/14/2018	11:17:16 AM
103	N031502-002E-MS1	MS	1	08/14/2018	11:26:40 AM
104	N031502-002E-MSD1	MSD	1	08/14/2018	11:36:02 AM
105	N031503-001D	SAMP	1	08/14/2018	11:45:26 AM
106	N031503-002D	SAMP	1	08/14/2018	11:54:49 AM
99	LCS1-70171	LCS	1	08/14/2018	12:08:01 PM
7	CCV1	CCV	1	08/14/2018	12:17:23 PM
1	CCB1	CCB	1	08/14/2018	12:26:18 PM
4	ICSA2	ICSA	1	08/14/2018	12:32:36 PM
5	ICSAB2	ICSAB	1	08/14/2018	12:42:09 PM



# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 8/9/2018 8:05:28 A

Reviewed/ Date: *Nancy* 8/16/2018

Page 1 of 1

Prep End Date: 8/9/2018 1:00:00 P

Initials/ Date: \_\_\_\_\_ for \_\_\_\_\_

Prep Factor Units  
mL / mL

Temp. (°C):  
95

Location:  
Db-2-36

Prep Batch 70171 Prep Code: 200.7\_PR

Technician: Mark Gesmundo

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS1-70171	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
LCS2-70171	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70171	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N031502-002E	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031502-002E-MS	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031502-002E-MS	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031503-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031503-001D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031503-001D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031503-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
10015	HYDROCHLORIC ACID
10128	NITRIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MSST-130329D	Sodium	LCS,MS,MSD	0.05
MSST-130329E	Potassium	LCS,MS,MSD	0.05
MWST-180430F	ICP Solution B	LCS,MS,MSD	0.5
MWST-180517E	ICP Solution A	LCS,MS,MSD	0.5
MWST-180601B	ICP Solution C	LCS,MS,MSD	0.5

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR CONSTRUCTION AND INFRASTRUCTURE

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**INITIAL CALIBRATION SUMMARY: 180809B**

**Instrument ID: ICP-02**

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
<b>Sodium</b>								
CalBlk	08/09/2018	11:15:53 AM	Na	589.594	387	0.00	mg/L	
Standard1	08/09/2018	11:19:11 AM	Na	589.594	366	0.1000	mg/L	
Standard2	08/09/2018	11:22:29 AM	Na	589.594	3220	1.000	mg/L	
Standard3	08/09/2018	11:26:17 AM	Na	589.594	16430	5.000	mg/L	
Standard4	08/09/2018	11:30:07 AM	Na	589.594	32657	10.000	mg/L	
Standard5	08/09/2018	11:34:01 AM	Na	589.594	65038	20.000	mg/L	
Standard6	08/09/2018	11:38:04 AM	Na	589.594	132280	40.000	mg/L	1.0000

**INITIAL CALIBRATION SUMMARY: 180814A**

**Instrument ID: ICP-02**

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
<b>Magnesium</b>								
CalBlk	08/14/2018	09:11:04 AM	Mg	279.079	266	0.00	mg/L	
Standard1	08/14/2018	09:16:55 AM	Mg	279.079	1477	0.1000	mg/L	
Standard2	08/14/2018	09:23:14 AM	Mg	279.079	15862	1.000	mg/L	
Standard3	08/14/2018	09:29:34 AM	Mg	279.079	31804	2.000	mg/L	
Standard4	08/14/2018	09:35:56 AM	Mg	279.079	79823	5.000	mg/L	
Standard5	08/14/2018	09:45:19 AM	Mg	279.079	119401	7.500	mg/L	
Standard6	08/14/2018	09:54:41 AM	Mg	279.079	153632	10.000	mg/L	
Standard7	08/14/2018	10:03:35 AM	Mg	279.079	305811	20.000	mg/L	0.9999
<b>Calcium</b>								
CalBlk	08/14/2018	09:11:04 AM	Ca	227.546	-85	0.00	mg/L	
Standard1	08/14/2018	09:16:55 AM	Ca	227.546	68	0.2000	mg/L	
Standard2	08/14/2018	09:23:14 AM	Ca	227.546	373	1.000	mg/L	
Standard3	08/14/2018	09:29:34 AM	Ca	227.546	755	2.000	mg/L	
Standard4	08/14/2018	09:35:56 AM	Ca	227.546	1889	5.000	mg/L	
Standard5	08/14/2018	09:45:19 AM	Ca	227.546	2892	7.500	mg/L	
Standard6	08/14/2018	09:54:41 AM	Ca	227.546	3725	10.000	mg/L	
Standard7	08/14/2018	10:03:35 AM	Ca	227.546	7504	20.000	mg/L	1.0000
<b>Iron</b>								
CalBlk	08/14/2018	09:11:04 AM	Fe	273.953	-284	0.00	mg/L	
Standard1	08/14/2018	09:16:55 AM	Fe	273.953	575	0.0200	mg/L	
Standard2	08/14/2018	09:23:14 AM	Fe	273.953	1977	0.050	mg/L	
Standard3	08/14/2018	09:29:34 AM	Fe	273.953	59379	2.000	mg/L	
Standard4	08/14/2018	09:35:56 AM	Fe	273.953	149475	5.000	mg/L	
Standard5	08/14/2018	09:45:19 AM	Fe	273.953	224561	7.500	mg/L	
Standard6	08/14/2018	09:54:41 AM	Fe	273.953	289450	10.000	mg/L	
Standard7	08/14/2018	10:03:35 AM	Fe	273.953	575006	20.000	mg/L	0.9999

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126820</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R126820</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105528</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9817.415	500	10000	0	98.2	90	110				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126820</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126820</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105542</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9961.862	500	10000	0	99.6	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126820</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126820</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105554</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9913.893	500	10000	0	99.1	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126820</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126820</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105563</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9817.257	500	10000	0	98.2	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126913</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R126913</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108032</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9893.257	500	10000	0	98.9	90	110				
Iron	9987.732	20	10000	0	99.9	90	110				
Magnesium	9938.208	100	10000	0	99.4	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126913</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126913</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108034</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	202.615	500	200.0	0	101	80	120				
Iron	20.366	20	20.00	0	102	80	120				
Magnesium	92.432	100	100.0	0	92.4	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126913</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126913</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108047</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9826.935	500	10000	0	98.3	90	110				
Iron	9997.796	20	10000	0	100	90	110				
Magnesium	9775.441	100	10000	0	97.8	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126820</b>
Client ID: <b>ICB</b>	Batch ID: <b>R126820</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105529</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sodium	-44.486503	500			

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126820</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126820</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105543</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sodium	-45.204889	500			

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126820</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126820</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105555</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sodium	-60.702209	500			

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126820</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126820</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105564</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Sodium	-77.59461	500			

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126913</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R126913</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108033</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	18.611	500									
Iron	0.560	20									
Magnesium	-0.970629	100									

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126913</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126913</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108048</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	3.673	500									
Iron	0.261	20									
Magnesium	-2.07513	100									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126820</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126820</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105530</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	-50.716229	500									

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126820</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126820</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105531</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9838.097	500	10000	0	98.4	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126820</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126820</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105565</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	-79.280164	500									

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126820</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126820</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105566</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9777.567	500	10000	0	97.8	80	120				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126913</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126913</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108035</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	473000.066	50	500000	0	94.6	80	120				
Calcium	460650.881	500	500000	0	92.1	80	120				
Iron	185194.497	20	200000	0	92.6	80	120				
Magnesium	440435.749	100	500000	0	88.1	80	120				

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126913</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R126913</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108036</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	541217.422	50	500000	0	108	80	120				
Calcium	525410.992	500	500000	0	105	80	120				
Iron	180926.317	20	200000	0	90.5	80	120				
Magnesium	501396.374	100	500000	0	100	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126913</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126913</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108049</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	474550.333	50	500000	0	94.9	80	120				
Calcium	457657.637	500	500000	0	91.5	80	120				
Iron	183563.062	20	200000	0	91.8	80	120				
Magnesium	432633.069	100	500000	0	86.5	80	120				

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126913</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R126913</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108050</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	542571.332	50	500000	0	109	80	120				
Calcium	521347.129	500	500000	0	104	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID	ICSAB2	SampType:	ICSAB	TestCode:	200.7_WDPG	Units:	µg/L	Prep Date:		RunNo:	126913												
Client ID:	ICSAB	Batch ID:	R126913	TestNo:	EPA 200.7			Analysis Date:	8/14/2018	SeqNo:	3108050												
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual	
Iron		178811.530		20		200000		0		89.4		80		120									
Magnesium		491722.198		100		500000		0		98.3		80		120									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INTERNAL STANDARD: 180809B**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Scandium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
CalBlk	IBLK	1	1	100	65-125	PASS
Standard1	ICAL	1	1	99.68	65-125	PASS
Standard2	ICAL	1	1.0046	100.46	65-125	PASS
Standard3	ICAL	1	0.99	99.088	65-125	PASS
Standard4	ICAL	1	0.98	97.65	65-125	PASS
Standard5	ICAL	1	0.98	97.96	65-125	PASS
Standard6	ICAL	1	0.95	94.85	65-125	PASS
ICV	ICV	1	0.98	97.84	65-125	PASS
ICB	ICB	1	1.0087	100.87	65-125	PASS
ICSA1	ICSA	1	1.0033	100.33	65-125	PASS
ICSAB1	ICSAB	1	0.99	98.79	65-125	PASS
CCV1	CCV	1	1.068	106.81	65-125	PASS
CCB1	CCB	1	1.085	108.5	65-125	PASS
MB-70171	MBLK	1	1.04	104.03	65-125	PASS
LCS2-70171	LCS	1	1.11	110.86	65-125	PASS
N031503-001D	SAMP	50	1.056	105.65	65-125	PASS
CCV2	CCV	1	1.017	101.66	65-125	PASS
CCB2	CCB	1	1.043	104.29	65-125	PASS
N031503-002D	SAMP	50	1.04	103.98	65-125	PASS
N031503-001D	SAMP	25	1.05	105.02	65-125	PASS
N031503-001D	SAMP	125	1.047	104.68	65-125	PASS
N031503-001D-PS	PS	25	1.053	105.32	65-125	PASS
N031503-001D-M2	MS	25	1.033	103.32	65-125	PASS
N031503-001D-MS2	MSD	25	1.035	103.47	65-125	PASS
CCV3	CCV	1	1.03	102.95	65-125	PASS
CCB3	CCB	1	1.045	104.46	65-125	PASS
ICSA2	ICSA	1	1.044	104.43	65-125	PASS
ICSAB2	ICSAB	1	1.028	102.76	65-125	PASS

INTERNAL STANDARD: 180814A

Instrument ID: ICP-02

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
CalBlk	IBLK	1	1	100	65-125	PASS
Standard1	ICAL	1	1	99.74	65-125	PASS
Standard2	ICAL	1	1.03	103	65-125	PASS
Standard3	ICAL	1	0.99	98.73	65-125	PASS
Standard4	ICAL	1	0.98	98.48	65-125	PASS
Standard5	ICAL	1	1	99.54	65-125	PASS
Standard6	ICAL	1	0.99	98.97	65-125	PASS
Standard7	ICAL	1	0.97	97.4	65-125	PASS
ICV	ICV	1	0.99	99.4	65-125	PASS
ICB	ICB	1	1	99.95	65-125	PASS
LLICV	CCV1	1	1.0036	100.36	65-125	PASS
ICSA1	ICSA	1	1.011	101.1	65-125	PASS
ICSAB1	ICSAB	1	0.86	86.48	65-125	PASS
MB-70171	MBLK	1	1.0043	100.43	65-125	PASS
LCS1-70171	LCS	1	0.93	92.86	65-125	PASS
N031502-002E	SAMP	1	0.9	90.31	65-125	PASS
N031502-002E	SAMP	5	0.94	94.13	65-125	PASS
N031502-002E-PS	PS	1	0.9	90.21	65-125	PASS
N031502-002E-MS1	MS	1	0.9	89.92	65-125	PASS
N031502-002E-MSD1	MSD	1	0.9	90.005	65-125	PASS
N031503-001D	SAMP	1	0.98	97.5	65-125	PASS
N031503-002D	SAMP	1	0.89	89.46	65-125	PASS
LCS1-70171	LCS	1	0.93	92.99	65-125	PASS
CCV1	CCV	1	1.015	101.47	65-125	PASS
CCB1	CCB	1	1.025	102.54	65-125	PASS
ICSA2	ICSA	1	1.04	103.97	65-125	PASS
ICSAB2	ICSAB	1	0.9	89.76	65-125	PASS

# SERIAL DILUTION/ POST DIGESTION SPIKE



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-Metals in Water**

Work Order No.: N031503  
Test Method: EPA 200.7  
Analysis Date: 8/14/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70171

Instrument ID: ICP-02  
Instrument Description: Perkin Elmer Optima DV Series

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test failed for Mg. However, PS passed criteria.

metals

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N031503-002E DT 5X	Calcium	ug/L	115624.7	PASS	109392	5.70%	10
N031503-002E DT 5X	Iron	ug/L	0	NA	22.59473	100.00%	10
N031503-002E DT 5X	Magnesium	ug/L	26257.36	FAIL	22960.35	14.36%	10

Note: NA - Not applicable

**ASSET Laboratories**

**ICP-Metals in Water**

Work Order No.: N031503  
Test Method: EPA 200.7  
Analysis Date: 8/9/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70171

Instrument ID: ICP-02  
Instrument Description: Perkin Elmer Optima DV Series

Comments:

Analyzed By: Mary Claire Ignacio

metals

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N031503-001D DT 125X	Sodium	ug/L	284536.3	PASS	286058.6	0.53%	10

Note: NA - Not applicable

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>N031503-001D-PS</b>	SampType: <b>PS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126820</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/9/2018</b>	SeqNo: <b>3105559</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	303461.760	12000	20000	286100	87.0	80	120				

Sample ID <b>N031502-002E-PS</b>	SampType: <b>PS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126913</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70171</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>8/14/2018</b>	SeqNo: <b>3108041</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	117329.069	500	5000	109400	159	80	120				S
Iron	112.869	20	100.0	22.59	90.3	80	120				
Magnesium	27682.004	100	5000	22960	94.4	80	120				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Metals by ICP**  
 Method Number: EPA 200.7/ 6010  
 Analysis Date(s): 10/6, 10/7,11/10/17  
 Analyst: Mary Claire Ignacio

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **ICP-02**

Acceptance Criteria: MDL < spike < 10XMDL

Analyte	Wavelength	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	MDL	PQL
Ag	328.069	0.0033	0.0031	0.0033	0.0033	0.0031	0.0030	0.0047	0.003	0.00061604	<b>0.001936</b>	0.003
Al	237.312	0.0664	0.0603	0.0656	0.0650	0.0658	0.0660	0.0946	0.050	0.01254823	<b>0.039439</b>	0.050
As	188.983	0.0131	0.0089	0.0120	0.0089	0.0060	0.0102	0.0080	0.010	0.00223806	<b>0.007034</b>	0.010
B	249.679	0.1491	0.1267	0.1281	0.1467	0.1261	0.1195	0.1015	0.100	0.01801843	<b>0.056632</b>	0.100
Ba	233.529	0.0033	0.0031	0.0033	0.0031	0.0032	0.0030	0.0024	0.003	0.00033070	<b>0.001039</b>	0.003
Be	313.104	0.0012	0.0011	0.0012	0.0012	0.0011	0.0011	0.0011	0.001	0.00006873	<b>0.000216</b>	0.001
Ca	227.546	0.2381	0.2231	0.2559	0.2299	0.2194	0.2473	0.2691	0.200	0.02202408	<b>0.069222</b>	0.200
Cd	214.437	0.0031	0.0029	0.0031	0.0032	0.0031	0.0031	0.0025	0.003	0.00027049	<b>0.000850</b>	0.003
Co	228.614	0.0030	0.0028	0.0030	0.0031	0.0031	0.0031	0.0027	0.003	0.00014491	<b>0.000455</b>	0.003
Cr	267.719	0.0009	0.0008	0.0009	0.0012	0.0012	0.0013	0.0009	0.001	0.00017120	<b>0.000538</b>	0.001
Fe	273.953	0.0255	0.0226	0.0242	0.0255	0.0252	0.0248	0.0387	0.020	0.00552308	<b>0.017359</b>	0.020
Mg	279.079	0.1124	0.1052	0.1129	0.1315	0.1305	0.1314	0.1435	0.100	0.01532024	<b>0.048152</b>	0.100
Mn	257.607	0.0119	0.0111	0.0120	0.0122	0.0121	0.0122	0.0099	0.010	0.00098403	<b>0.003093</b>	0.010
Mo	202.03	0.0079	0.0068	0.0067	0.0065	0.0065	0.0062	0.0057	0.005	0.00083918	<b>0.002638</b>	0.005
Ni	231.604	0.0061	0.0056	0.0062	0.0060	0.0060	0.0062	0.0045	0.005	0.00062690	<b>0.001970</b>	0.005
Pb	220.351	0.0124	0.0117	0.0127	0.0115	0.0120	0.0118	0.0090	0.010	0.00126325	<b>0.003970</b>	0.010
Sb	206.836	0.0102	0.0095	0.0104	0.0112	0.0117	0.0111	0.0080	0.010	0.00117407	<b>0.003690</b>	0.010
Se	196.025	0.0102	0.0087	0.0114	0.0136	0.0144	0.0136	0.0075	0.010	0.00251341	<b>0.007900</b>	0.010
Sn	189.927	0.0095	0.0084	0.0090	0.0124	0.0126	0.0129	0.0099	0.010	0.00175765	<b>0.005524</b>	0.010
Ti	334.943	0.0114	0.0106	0.0115	0.0115	0.0115	0.0115	0.0098	0.010	0.00074093	<b>0.002329</b>	0.010
Tl	190.794	0.0170	0.0150	0.0165	0.0171	0.0180	0.0168	0.0151	0.015	0.00116288	<b>0.003655</b>	0.015
V	292.404	0.0025	0.0024	0.0025	0.0032	0.0032	0.0032	0.0027	0.003	0.00038496	<b>0.001210</b>	0.003
Zn	206.201	0.0109	0.0100	0.0107	0.0125	0.0124	0.0124	0.0095	0.010	0.00123731	<b>0.003889</b>	0.010



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ANALYTICAL SERVICES

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 ELAP Cert 2921

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
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# METHOD DETECTION LIMIT 2017

Method Name: **Metals by ICP**  
 Method Number: EPA 200.7/ 6010  
 Analysis Date(s): 10/6, 10/7, 11/10/17  
 Analyst: Mary Claire Ignacio

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **ICP-02**

Analyte	ICP-02 MDL	MDL Blank	Higher MDL	LOD	PQL
Ag	0.001936	0.002362	0.002362	0.002	0.003
Al	0.039439	0.039859	0.039859	0.04	0.5
As	0.007034	0.007672	0.007672	0.0075	0.01
B	0.056632	0.074419	0.074419	0.075	0.1
Ba	0.001039	0.000433	0.001039	0.001	0.003
Be	0.000216	0.000311	0.000311	0.0005	0.003
Ca	0.069222	0.084832	0.084832	0.1	0.5
Cd	0.000850	0.000592	0.000850	0.001	0.003
Co	0.000455	0.001902	0.001902	0.001	0.003
Cr	0.000538	0.000527	0.000538	0.001	0.003
Fe	0.017359	0.017751	0.017751	0.018	0.1
Mg	0.048152	0.043017	0.048152	0.05	0.1
Mn	0.003093	0.000782	0.003093	0.005	0.5
Mo	0.002638	0.002482	0.002638	0.0025	0.005
Ni	0.001970	0.000822	0.001970	0.0025	0.005
Pb	0.003970	0.002762	0.003970	0.005	0.005
Sb	0.003690	0.004504	0.004504	0.005	0.01
Se	0.007900	0.008549	0.008549	0.008	0.01
Sn	0.005524	0.003415	0.005524	0.0075	0.05
Ti	0.002329	0.001493	0.002329	0.005	0.05
Tl	0.003655	0.005987	0.005987	0.005	0.015
V	0.001210	0.000749	0.001210	0.002	0.003
Zn	0.003889	0.007683	0.007683	0.008	0.01



**Method Detection Limit**

**Analytical Method:** EPA 6010B / 200.7  
**Digestion Method:** EPA 200.7  
**Date of Analysis:** 4/26/2018,4/27/18, 4/28/18  
**Instrument Name:** ICP2  
**Analysts:** MEI

**Matrix:** Water  
**Amount of Sample:** 25 mL  
**Units:** mg/L

Analyte	1	2	3	4	5	6	7	SD	Ave	AMT SPIKED	MDL	PQL
Potassium	0.52047	0.51468	0.50982	0.46507	0.46016	0.45873	0.49093	0.02710	0.48855	0.5000	0.08509	0.5
Sodium	0.55314	0.5464	0.5354	0.4861	0.49466	0.48423	0.49053	0.03061	0.51292	0.5000	0.09611	0.5
Strontium	0.0543	0.05418	0.05429	0.05295	0.05353	0.05251	0.05341	0.00070	0.05360	0.0250	0.00220	0.05

MBLK

Analyte	1	2	3	4	5	6	7	SD	Ave	MDL
Potassium	0.046	0.02365	0.01213	-0.00541	-0.0022	-0.00535	0.03047	0.02002	0.01418	0.0771
Sodium	0.04731	0.03661	0.02294	-0.0006	-0.00135	-0.00646	-0.00911	0.02270	0.01276	0.0841
Strontium	0.00006	-0.0006	-0.0002	0.00003	-0.00002	0.00001	0.00035	0.00029	-0.00005	0.0009

Note: MDL spike is used since its value is greater than the MDL blank.

### LOD & PQL VERIFICATION

Analytical Method: EPA 6010B / 200.7  
Date of Analysis: 4/30/2018  
Instrument Name: ICP2  
Analyst: MI

Matrix: Water  
Units: mg/L

Compound	MDL	LOD		PQL		
		Spike	Recovered	Spike	Recovered	% Recovery
Potassium	0.08509	0.250	0.304	0.500	0.544	108.9
Sodium	0.09611	0.250	0.274	0.500	0.521	104.1
Strontium	0.00220	0.025	0.027	0.050	0.054	108.0



# EPA 200.8 Dissolved



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70123  
 ASSET #: N031503

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 8/7/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X			X		
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?	X			X		
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits	X			X		
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X			X	
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

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	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer: CEI  
 2nd Level Reviewer: [Signature] 8/15/2018

Date: 8/15/18  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## SAMPLE CALCULATION

**METHOD:** EPA 6020  
**TEST NAME:** Heavy Metals by ICP-MS  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Chromium concentration, in ug/L in the original sample as follows:

$$\text{Chromium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration  
DF = Dilution Factor  
PF = Final Volume of Digestate, mL / Amount of Sample, mL

For Sample **N031503-.002D**, the concentration in ug/L is calculated as follows:

$$\text{Chromium, ug/L} = 96.371 * 5 * (25/25)$$

$$\text{Chromium, ug/L} = 481.855$$

Reporting results in two significant figures,

$$\text{Chromium, ug/L} = 480$$

# % RSD SUMMARY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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PERCENT RSD SUMMARY: 180807C

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.094	15.54	15	<PQL	0.085	18.94	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.51	4.65	15	PASS	0.49	7.19	15	PASS
Std3-5/50 ppb	ICAL	1	5.078	0.9	15	PASS	5.089	1.57	15	PASS
Std4-10/100 ppb	ICAL	1	10.24	1.82	15	PASS	10.23	2.72	15	PASS
Std5-20/200 ppb	ICAL	1	20.31	0.6	15	PASS	20.5	1.33	15	PASS
Std6-40/400 ppb	ICAL	1	40.52	0.99	15	PASS	40.24	0.43	15	PASS
Std7-100/1000 ppb	ICAL	1	101.38	1.88	15	PASS	101.18	2.07	15	PASS
Std8-200/2000 ppb	ICAL	1	199.16	0.88	15	PASS	199.3	0.86	15	PASS
ICV	ICV	1	9.99	1.4	15	PASS	97.97	0.46	15	PASS
ICB	ICB	1	<0.000	N/A	15	<PQL	0.035	60.73	15	<PQL
LLICV	CCV1	1	0.99	1.6	20	PASS	0.55	1.68	20	PASS
ICSA1	ICSA	1	0.033	54.85	15	<PQL	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	20.43	0.5	15	PASS	20.3	1.6	15	PASS
LLICV	CCV1	1	0.96	2.99	20	PASS	0.5	6.72	20	PASS
MB-70123	MBLK	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LCS-70123	LCS	1	9.71	1.6	15	PASS	98.64	1.92	15	PASS
N031502-001C	SAMP	1	479.96	1.44	15	PASS	10.58	1.17	15	PASS
N031502-001C	SAMP	5	97.36	1.26	15	PASS	2.29	3	15	PASS
N031502-001C	SAMP	25	20.049	1.3	15	PASS	0.41	2.82	15	PASS
N031502-002E	SAMP	1	0.19	6.48	15	PASS	3.5	3.72	15	PASS
N031502-002E	SAMP	5	0.19	9.97	15	PASS	0.76	4.52	15	PASS
N031502-002E	SAMP	25	0.017	212.83	15	<PQL	0.17	3.83	15	PASS
N031503-001D	SAMP	1	0.065	23.41	15	<PQL	348.36	0.57	15	PASS
N031503-001D	SAMP	5	0.055	31.85	15	<PQL	73.23	1.72	15	PASS
CCV1	CCV	1	20.25	0.76	15	PASS	20.63	1.067	15	PASS
CCB1	CCB	1	0.0088	126.37	15	<PQL	0.033	76.29	15	<PQL
N031503-002D	SAMP	1	475.33	1.77	15	PASS	12.93	0.71	15	PASS
N031503-002D	SAMP	5	96.37	0.91	15	PASS	2.68	2.78	15	PASS
N031512-001H	SAMP	1	0.57	11.86	15	PASS	66.37	2.59	15	PASS
N031512-001H	SAMP	5	0.14	7.61	15	PASS	13.75	3.46	15	PASS
N031512-001H	SAMP	25	0.039	62.29	15	<PQL	2.81	2.57	15	PASS
N031512-001H-PS	PS	1	10.049	0.28	15	PASS	157.6	0.37	15	PASS
N031512-001H-PS	PS	5	2.1	5.34	15	PASS	33.68	1.88	15	PASS
N031512-001H-MS	MS	1	9.97	0.96	15	PASS	160.87	1.57	15	PASS
N031512-001H-MS	MS	5	2.12	1.84	15	PASS	34.2	0.64	15	PASS
N031512-001H-MSD	MSD	1	10.086	1.2	15	PASS	156.66	1.14	15	PASS
CCV2	CCV	1	21.002	3.075	15	PASS	20.057	1.4	15	PASS
CCB2	CCB	1	0.018	77.99	15	<PQL	0.082	38.15	15	<PQL
N031512-001H-MSD	MSD	5	2.096	4.73	15	PASS	33.72	1.77	15	PASS
N031512-002H	SAMP	1	0.051	13.22	15	PASS	<0.000	N/A	15	<PQL

PERCENT RSD SUMMARY: 180807C

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N031512-002H	SAMP	5	0.019	32.52	15	<PQL	<0.000	N/A	15	<PQL
N031512-003H	SAMP	1	0.31	12.67	15	PASS	38.89	0.92	15	PASS
N031512-003H	SAMP	5	0.075	14.88	15	PASS	8.22	5.13	15	PASS
N031512-001I	SAMP	1	0.13	30.57	15	<PQL	52.27	0.71	15	PASS
N031512-001I	SAMP	5	0.04	68.43	15	<PQL	11.1	1.46	15	PASS
N031512-002I	SAMP	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
N031512-002I	SAMP	5	0.045	72.05	15	<PQL	<0.000	N/A	15	<PQL
N031512-003II	SAMP	1	0.43	16.66	15	<PQL	39.11	0.99	15	PASS
CCV3	CCV	1	20.7	1.18	15	PASS	20.88	2.89	15	PASS
CCB3	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
N031512-003II	SAMP	5	0.03	83.33	15	<PQL	8.24	5.9	15	PASS
CCV4	CCV	1	21.3	0.62	15	PASS	21.14	1.11	15	PASS
CCB4	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
ICSA2	ICSA	1	0.05	27.85	15	<PQL	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	20.29	1.027	15	PASS	20.13	1.23	15	PASS

# ANALYSIS RUN LOG



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INJECTION LOG: 180807C**

**Instrument ID: ICPMS-02**

Data File	Sample Name	Type	DF	Acq. Date-Time
C0807001.D	RINSE	RINSE	1	08/07/18 10:43 PM
C0807002.D	Cal Blank	IBLK	1	08/07/18 10:48 PM
C0807003.D	Std1-0.1/1 ppb	ICAL	1	08/07/18 10:54 PM
C0807004.D	Std2-0.5/5 ppb	ICAL	1	08/07/18 11:00 PM
C0807005.D	Std3-5/50 ppb	ICAL	1	08/07/18 11:05 PM
C0807006.D	Std4-10/100 ppb	ICAL	1	08/07/18 11:11 PM
C0807007.D	Std5-20/200 ppb	ICAL	1	08/07/18 11:16 PM
C0807008.D	Std6-40/400 ppb	ICAL	1	08/07/18 11:22 PM
C0807009.D	Std7-100/1000 ppb	ICAL	1	08/07/18 11:28 PM
C0807010.D	Std8-200/2000 ppb	ICAL	1	08/07/18 11:33 PM
C0807011.D	ICV	ICV	1	08/07/18 11:39 PM
C0807012.D	ICB	ICB	1	08/07/18 11:44 PM
C0807013.D	LLICV	CCV1	1	08/07/18 11:50 PM
C0807014.D	ICSA1	ICSA	1	08/07/18 11:55 PM
C0807015.D	ICSAB1	ICSAB	1	08/08/18 12:01 AM
C0807016.D	LLICV	CCV1	1	08/08/18 12:07 AM
C0807017.D	MB-70123	MBLK	1	08/08/18 12:12 AM
C0807018.D	LCS-70123	LCS	1	08/08/18 12:18 AM
C0807019.D	N031502-001C	SAMP	1	08/08/18 12:23 AM
C0807020.D	N031502-001C	SAMP	5	08/08/18 12:29 AM
C0807021.D	N031502-001C	SAMP	25	08/08/18 12:34 AM
C0807022.D	N031502-002E	SAMP	1	08/08/18 12:40 AM
C0807023.D	N031502-002E	SAMP	5	08/08/18 12:46 AM
C0807024.D	N031502-002E	SAMP	25	08/08/18 12:51 AM
C0807025.D	N031503-001D	SAMP	1	08/08/18 12:57 AM
C0807026.D	N031503-001D	SAMP	5	08/08/18 1:02 AM
C0807027.D	CCV1	CCV	1	08/08/18 1:08 AM
C0807028.D	CCB1	CCB	1	08/08/18 1:13 AM
C0807029.D	N031503-002D	SAMP	1	08/08/18 1:19 AM
C0807030.D	N031503-002D	SAMP	5	08/08/18 1:25 AM
C0807031.D	N031512-001H	SAMP	1	08/08/18 1:30 AM
C0807032.D	N031512-001H	SAMP	5	08/08/18 1:36 AM
C0807033.D	N031512-001H	SAMP	25	08/08/18 1:41 AM
C0807034.D	N031512-001H-PS	PS	1	08/08/18 1:47 AM
C0807035.D	N031512-001H-PS	PS	5	08/08/18 1:53 AM
C0807036.D	N031512-001H-MS	MS	1	08/08/18 1:58 AM
C0807037.D	N031512-001H-MS	MS	5	08/08/18 2:04 AM
C0807038.D	N031512-001H-MSD	MSD	1	08/08/18 2:09 AM
C0807039.D	CCV2	CCV	1	08/08/18 2:15 AM
C0807040.D	CCB2	CCB	1	08/08/18 2:20 AM
C0807041.D	N031512-001H-MSD	MSD	5	08/08/18 2:26 AM
C0807042.D	N031512-002H	SAMP	1	08/08/18 2:32 AM

**INJECTION LOG: 180807C****Instrument ID: ICPMS-02**

<b>Data File</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq. Date-Time</b>
C0807043.D	N031512-002H	SAMP	5	08/08/18 2:37 AM
C0807044.D	N031512-003H	SAMP	1	08/08/18 2:43 AM
C0807045.D	N031512-003H	SAMP	5	08/08/18 2:48 AM
C0807046.D	N031512-001I	SAMP	1	08/08/18 2:54 AM
C0807047.D	N031512-001I	SAMP	5	08/08/18 3:00 AM
C0807048.D	N031512-002I	SAMP	1	08/08/18 3:05 AM
C0807049.D	N031512-002I	SAMP	5	08/08/18 3:11 AM
C0807050.D	N031512-003II	SAMP	1	08/08/18 3:16 AM
C0807051.D	CCV3	CCV	1	08/08/18 3:22 AM
C0807052.D	CCB3	CCB	1	08/08/18 3:28 AM
C0807053.D	N031512-003II	SAMP	5	08/08/18 3:33 AM
C0807054.D	CCV4	CCV	1	08/08/18 3:39 AM
C0807055.D	CCB4	CCB	1	08/08/18 3:45 AM
C0807056.D	ICSA2	ICSA	1	08/08/18 3:50 AM
C0807057.D	ICSAB2	ICSAB	1	08/08/18 3:56 AM

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 8/6/2018 8:49:28 A

Reviewed/ Date: *Nancy* 8/15/2018

Page 1 of 1

Prep End Date: 8/6/2018 1:00:00 P

Initials/ Date: *[Signature]* 8/15/2018

Prep Factor Units  
mL / mL

Temp. (°C):  
94.7

Location:  
02-1

Prep Batch 70123 Prep Code: 200.8\_PR

Technician: Claire Ignacio

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70123	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70123	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N031502-001C	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031502-002E	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031503-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031503-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031512-001H	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031512-001H-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031512-001H-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031512-001I	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031512-002H	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031512-002I	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031512-003H	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031512-003I	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

# INSTRUMENT TUNING CHECK



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 7 Aug 2018 08:46:17 am  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	46862.80	0.00	
24 Mg	519360.00	0.00	
25 Mg	66807.90	0.00	
26 Mg	75915.10	0.00	
59 Co	265442.00	0.00	
115 In	314729.00	0.00	
206 Pb	127527.00	0.00	
207 Pb	111833.00	0.00	
208 Pb	274427.00	0.00	

## RSD (%)

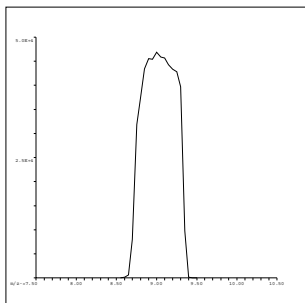
Element	Actual	Required	Flag
9 Be	1.29	5.00	
24 Mg	1.57	5.00	
25 Mg	2.03	5.00	
26 Mg	2.03	5.00	
59 Co	0.79	5.00	
115 In	1.34	5.00	
206 Pb	0.55	5.00	
207 Pb	0.88	5.00	
208 Pb	0.82	5.00	

## Ion Ratio

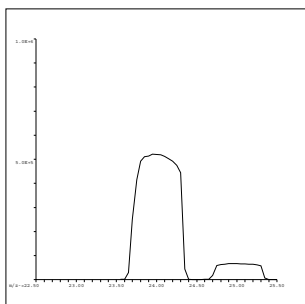
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

## Maximum Bkg. Count (CPS)

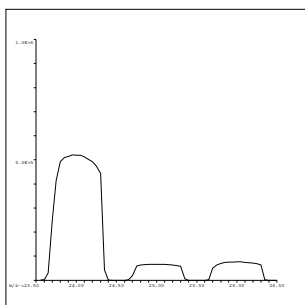
Element	Actual	Required	Flag
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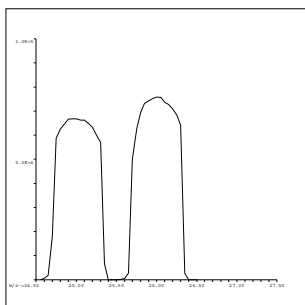
9 Be  
Mass Calib.  
Actual: 9.00  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



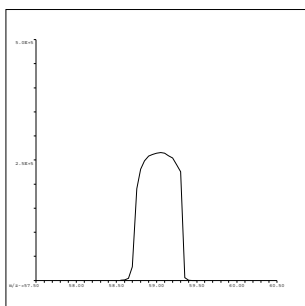
24 Mg  
Mass Calib.  
Actual: 24.00  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.70  
Required: 0.75  
Flag:



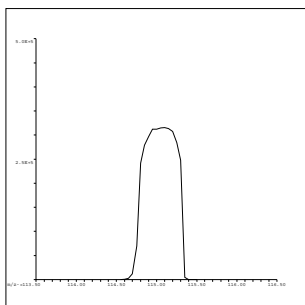
25 Mg  
Mass Calib.  
Actual: 25.00  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



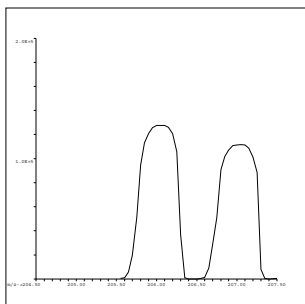
26 Mg  
Mass Calib.  
Actual: 26.00  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



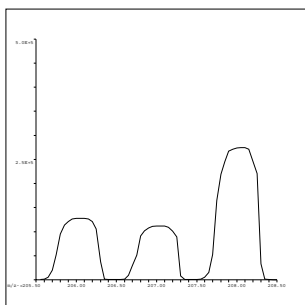
59 Co  
Mass Calib.  
Actual: 59.05  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



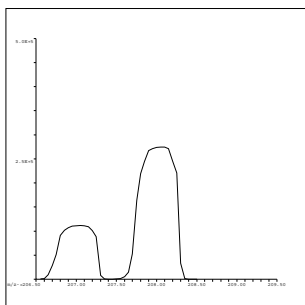
115 In  
Mass Calib.  
Actual: 115.05  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.55  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.05  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.05  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 208.05  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

QC Tune Result:Pass

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

INITIAL CALIBRATION SUMMARY: 180807C

Instrument ID: ICPMS-02

Analyte	Data File	C0807002.D	C0807004.D	C0807005.D	C0807006.D	C0807007.D	C0807008.D	C0807009.D	C0807010.D	
	Acq. Date-Time	08/07/2018 10:48 PM	08/07/2018 11:00 PM	08/07/2018 11:05 PM	08/07/2018 11:11 PM	08/07/2018 11:16 PM	08/07/2018 11:22 PM	08/07/2018 11:28 PM	08/07/2018 11:33 PM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L	R	
45 Sc ( ISTD ) [ 2 ]	CPS	41933.7	41263	42598.6	42251.1	42620.9	42402.4	41939	42281.1	
55 Mn [ 2 ]	CPS	129.2	887.4	8356.7	16520.6	33285.6	64871.2	161116.9	319869.8	1.0000
52 Cr [ 2 ]	CPS	193.2	1760.1	16193.7	32201.5	64203.8	127263.5	314564.4	622941.6	1.0000

Standard Code
ICAL: 2MSST-170620B
ICAL: 2MSST-170620C
ICAL: 2MWST-180409H
IS Mix: 2MWST-180409F

Calibration Acceptance Criteria: > 0.995 Correlation

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/7/2018</b>	SeqNo: <b>3104190</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	97.969	0.50	100.0	0	98.0	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/7/2018</b>	SeqNo: <b>3104192</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.554	0.50	0.5000	0	111	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104206</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.633	0.50	20.00	0	103	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104218</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.057	0.50	20.00	0	100	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104230</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.884	0.50	20.00	0	104	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8\_WDISS**

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104233</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	21.139	0.50	20.00	0	106	90	110				

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
DO Surrogate Diluted Out

E Value above quantitation range  
R RPD outside accepted recovery limits  
Calculations are based on raw values

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/7/2018</b>	SeqNo: <b>3104143</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.987	1.0	10.00	0	99.9	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/7/2018</b>	SeqNo: <b>3104143</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.989	1.0	1.000	0	98.9	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104159</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.247	1.0	20.00	0	101	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104171</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	21.002	1.0	20.00	0	105	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104183</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.704	1.0	20.00	0	104	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104186</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	21.295	1.0	20.00	0	106	90	110				

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
DO Surrogate Diluted Out

E Value above quantitation range  
R RPD outside accepted recovery limits  
Calculations are based on raw values

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>
Client ID: <b>ICB</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/7/2018</b>	SeqNo: <b>3104191</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104207</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104219</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104231</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104234</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>
Client ID: <b>ICB</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/7/2018</b>	SeqNo: <b>3104144</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104160</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104172</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104184</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104187</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/7/2018</b>	SeqNo: <b>3104193</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese ND 0.50

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104194</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese 20.297 0.50 20.00 0 101 80 120

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104235</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese ND 0.50

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104235</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese 20.134 0.50 20.00 0 101 80 120

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/7/2018</b>	SeqNo: <b>3104146</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104147</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	20.425	1.0	20.00	0	102	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104188</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R126792</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104189</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	20.289	1.0	20.00	0	101	80	120				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |



# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## INTERNAL STANDARD: 180807C

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	41933.7	41933.7	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	41330.9	41933.7	98.56	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	41263	41933.7	98.4	PASS	70-125
Std3-5/50 ppb	ICAL	1	42598.6	41933.7	101.59	PASS	70-125
Std4-10/100 ppb	ICAL	1	42251.1	41933.7	100.76	PASS	70-125
Std5-20/200 ppb	ICAL	1	42620.9	41933.7	101.64	PASS	70-125
Std6-40/400 ppb	ICAL	1	42402.4	41933.7	101.12	PASS	70-125
Std7-100/1000 ppb	ICAL	1	41939	41933.7	100.01	PASS	70-125
Std8-200/2000 ppb	ICAL	1	42281.1	41933.7	100.83	PASS	70-125
ICV	ICV	1	41615	41933.7	99.24	PASS	70-125
ICB	ICB	1	40787.5	41933.7	97.27	PASS	70-125
LLICV	CCV1	1	47119.7	41933.7	112.37	PASS	70-125
ICSA1	ICSA	1	43259.3	41933.7	103.16	PASS	70-125
ICSAB1	ICSAB	1	43838.5	41933.7	104.54	PASS	70-125
LLICV	CCV1	1	51488	41933.7	122.78	PASS	70-125
MB-70123	MBLK	1	43868.4	41933.7	104.61	PASS	70-125
LCS-70123	LCS	1	45867.2	41933.7	109.38	PASS	70-125
N031502-001C	SAMP	1	40216.1	41933.7	95.9	PASS	70-125
N031502-001C	SAMP	5	42667.6	41933.7	101.75	PASS	70-125
N031502-001C	SAMP	25	43272.6	41933.7	103.19	PASS	70-125
N031502-002E	SAMP	1	39725.8	41933.7	94.73	PASS	70-125
N031502-002E	SAMP	5	43483.1	41933.7	103.69	PASS	70-125
N031502-002E	SAMP	25	44006.6	41933.7	104.94	PASS	70-125
N031503-001D	SAMP	1	43895.3	41933.7	104.68	PASS	70-125
N031503-001D	SAMP	5	44753	41933.7	106.72	PASS	70-125
CCV1	CCV	1	42931.8	41933.7	102.38	PASS	70-125
CCB1	CCB	1	41583.8	41933.7	99.17	PASS	70-125
N031503-002D	SAMP	1	41131.5	41933.7	98.087	PASS	70-125
N031503-002D	SAMP	5	43847.3	41933.7	104.56	PASS	70-125
N031512-001H	SAMP	1	41015.8	41933.7	97.81	PASS	70-125
N031512-001H	SAMP	5	41845.7	41933.7	99.79	PASS	70-125
N031512-001H	SAMP	25	43273.7	41933.7	103.2	PASS	70-125
N031512-001H-PS	PS	1	41760.7	41933.7	99.59	PASS	70-125
N031512-001H-PS	PS	5	43711.5	41933.7	104.24	PASS	70-125
N031512-001H-MS	MS	1	39797.3	41933.7	94.91	PASS	70-125
N031512-001H-MS	MS	5	41345.5	41933.7	98.6	PASS	70-125
N031512-001H-MSD	MSD	1	37686.7	41933.7	89.87	PASS	70-125
CCV2	CCV	1	37246.9	41933.7	88.82	PASS	70-125
CCB2	CCB	1	35693.5	41933.7	85.12	PASS	70-125
N031512-001H-MSD	MSD	5	37695.7	41933.7	89.89	PASS	70-125
N031512-002H	SAMP	1	34968.6	41933.7	83.39	PASS	70-125

INTERNAL STANDARD: 180807C

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria
N031512-002H	SAMP	5	35154.5	41933.7	83.83	PASS	70-125
N031512-003H	SAMP	1	31790	41933.7	75.81	PASS	70-125
N031512-003H	SAMP	5	33364.3	41933.7	79.56	PASS	70-125
N031512-001I	SAMP	1	29111.8	41933.7	69.42	NR!	70-125
N031512-001I	SAMP	5	30820.5	41933.7	73.5	PASS	70-125
N031512-002I	SAMP	1	27152.9	41933.7	64.75	NR!	70-125
N031512-002I	SAMP	5	27486.7	41933.7	65.55	NR!	70-125
N031512-003II	SAMP	1	25370	41933.7	60.5	NR!	70-125
CCV3	CCV	1	45470.6	41933.7	108.43	PASS	70-125
CCB3	CCB	1	45966.4	41933.7	109.62	PASS	70-125
N031512-003II	SAMP	5	27073.8	41933.7	64.56	NR!	70-125
CCV4	CCV	1	43016.4	41933.7	102.58	PASS	70-125
CCB4	CCB	1	43476.3	41933.7	103.68	PASS	70-125
ICSA2	ICSA	1	43469.7	41933.7	103.66	PASS	70-125
ICSAB2	ICSAB	1	46871	41933.7	111.77	PASS	70-125

# SERIAL DILUTION/ POST DIGESTION SPIKE



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N031503  
Test Method: EPA 6020  
Analysis Date: 8/7/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70123

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cr. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N031512-001H DT 5X	Chromium	ug/L	0.69726	NA	0.56771	22.82%	10
N031512-001H DT 5X	Manganese	ug/L	68.76793	PASS	66.37242	3.61%	10

Note: NA - Not applicable

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>N031512-001H-PS</b>	SampType: <b>PS</b>	TestCode: <b>200.8_WDISS</b> Units: <b>µg/L</b>				Prep Date:	RunNo: <b>126792</b>				
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>				Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104213</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	157.602	0.50	100.0	66.37	91.2	80	120				

not reported

Sample ID <b>N031512-001H-PS</b>	SampType: <b>PS</b>	TestCode: <b>200.8_WDISS</b> Units: <b>µg/L</b>				Prep Date:	RunNo: <b>126793</b>				
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>				Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104272</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.049	1.0	10.00	0.5677	94.8	80	120				
Manganese	157.602	0.50	100.0	66.37	91.2	80	120				

*Manny* 8/15/2018

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- DO Surrogate Diluted Out
- E Value above quantitation range
- R RPD outside accepted recovery limits
- Calculations are based on raw values
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>N031512-001H-PS</b>	SampType: <b>PS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126792</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70123</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>8/8/2018</b>	SeqNo: <b>3104166</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.049	1.0	10.00	0.5677	94.8	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
| DO Surrogate Diluted Out                          | Calculations are based on raw values   |  |

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Amount of Sample:** 25 mL  
**Units:** ug/L

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	LOD	PQL
ANTIMONY	0.50	0.525	0.514	0.473	0.500	0.492	0.486	0.530	0.0210	0.0660	0.100	0.50
ARSENIC	0.10	0.099	0.104	0.087	0.048	0.060	0.069	0.120	0.0259	0.0813	0.080	0.10
BARIUM	1.00	1.041	1.059	1.052	1.011	0.967	0.957	1.023	0.0403	0.1264	0.250	1.00
BERYLLIUM	0.50	0.469	0.476	0.473	0.495	0.480	0.488	0.507	0.0135	0.0424	0.100	0.50
CADMIUM	0.50	0.515	0.513	0.492	0.534	0.499	0.483	0.508	0.0168	0.0527	0.100	0.50
CHROMIUM	1.00	0.979	0.986	0.940	0.990	0.946	0.978	0.977	0.0197	0.0618	0.250	1.00
COBALT	0.50	0.499	0.489	0.486	0.488	0.465	0.502	0.505	0.0135	0.0424	0.100	0.50
COPPER	1.00	1.110	0.667	1.039	1.060	1.006	1.099	1.075	0.1544	0.4850	0.500	1.00
IRON	10.00	10.873	10.802	10.142	9.991	9.846	9.852	10.596	0.4463	1.4014	2.500	10.00
LEAD	1.00	0.928	0.931	0.899	0.996	0.990	0.987	0.997	0.0406	0.1274	0.250	1.00
MANGANESE	0.50	0.577	0.588	0.561	0.566	0.517	0.541	0.520	0.0276	0.0866	0.100	0.50
MOLYBDENUM	0.50	0.514	0.504	0.467	0.478	0.456	0.433	0.527	0.0338	0.1061	0.250	0.50
NICKEL	1.00	0.961	0.965	0.977	0.907	0.914	0.962	1.075	0.0551	0.1731	0.250	1.00
SELENIUM	0.50	0.450	0.478	0.419	0.693	0.707	0.495	0.555	0.1155	0.3628	0.400	0.50
SILVER	0.50	0.558	0.511	0.490	0.542	0.458	0.490	0.684	0.0745	0.2340	0.250	0.50
THALLIUM	0.50	0.437	0.428	0.408	0.538	0.446	0.438	0.525	0.0504	0.1583	0.250	0.50
URANIUM	0.50	0.478	0.467	0.461	0.517	0.510	0.521	0.521	0.0267	0.0838	0.100	0.50
VANADIUM	1.00	0.950	0.969	0.900	0.844	0.829	0.848	1.053	0.0820	0.2574	0.500	1.00
ZINC	10.00	11.259	11.279	10.915	9.620	9.849	9.745	10.241	0.7235	2.2717	2.500	10.00



**ASSET LABORATORIES**  
ANALYTICAL SERVICES

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 ELAP Cert 2921

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
 ELAP Cert 2676 | NV Cert NV00922 | ORELAP/NELAP 4046

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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Units:** ug/L

Analyte	MDLs	MDLb	MDL	LOD	PQL
ANTIMONY	0.0660	0.1564	0.1564	0.300	0.50
ARSENIC	0.0813	0.0387	0.0813	0.080	0.10
BARIUM	0.1264	0.1497	0.1497	0.300	1.00
BERYLLIUM	0.0424	0.0153	0.0424	0.100	0.50
CADMIUM	0.0527	0.0060	0.0527	0.100	0.50
CHROMIUM	0.0618	0.1298	0.1298	0.300	1.00
COBALT	0.0424	0.0339	0.0424	0.100	0.50
COPPER	0.4850	0.5459	0.5459	0.600	1.00
IRON	1.4014	4.3484	4.3484	5.000	10.00
LEAD	0.1274	0.1008	0.1274	0.300	1.00
MANGANESE	0.0866	0.2552	0.2552	0.300	0.50
MOLYBDENUM	0.1061	0.2149	0.2149	0.300	0.50
NICKEL	0.1731	0.2606	0.2606	0.300	1.00
SELENIUM	0.3628	0.0953	0.3628	0.400	0.50
SILVER	0.2340	0.2023	0.2340	0.250	0.50
THALLIUM	0.1583	0.1924	0.1924	0.300	0.50
URANIUM	0.0838	0.0020	0.0838	0.100	0.50
VANADIUM	0.2574	0.2768	0.2768	0.600	1.00
ZINC	2.2717	0.4511	2.2717	3.000	10.00



# EPA 218.6



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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IC Technical Batch Review Checklist (ARCUS02)  
ASSET LABORATORIES - LAS VEGAS

IC ARCUS  
REV 2.0  
011416

QC Batch Number: R126742  
ASSET #: N031503

Instrument ID: IC-07  
Analyst: RBA  
Date Analyzed: 8/3/2018

Method:

EPA 300.0  
 EPA 7199

EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration and Initial Calibration Verification</b>						
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)	X					
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?	X					
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?	X					
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)	X					
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X					
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?	X					
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)	X					
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X					
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments:

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer *rba*

Date: 8/12/2018

2nd Level Reviewer *Nancy* 8/16/2018

Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 218.6  
**TEST NAME:** HEXAVALENT CHROMIUM BY IC  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Hexavalent Chromium concentration, in  $\mu\text{g/L}$ , in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

A =  $\mu\text{g/L}$ , IC Cr+6 calculated concentration

DF = dilution factor

For Sample **N031503-002A**, the concentration in  $\mu\text{g/L}$  is calculated as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = 4.7617 * 100$$

$$\text{Cr}^{+6}, \mu\text{g/L} = 476.1700$$

Reporting results in two significant figures,

$$\text{Cr}^{+6}, \mu\text{g/L} = 480$$

*rba* 8/12/2018

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**INJECTION LOG: 180731A**

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/31/18 10:12 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	07/31/18 10:23 AM	Not Reported
3	iBLANK	iBLANK	1	Hexavalent Chromium	07/31/18 10:32 AM	Reported
4	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/31/18 10:48 AM	Reported
5	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 10:59 AM	Reported
6	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 11:09 AM	Reported
7	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 11:18 AM	Reported
8	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 11:28 AM	Reported
9	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 11:37 AM	Reported
10	ICV	ICV	1	Hexavalent Chromium	07/31/18 11:56 AM	Reported
11	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/31/18 12:17 PM	Reported
12	ICB	ICB	1	Hexavalent Chromium	07/31/18 1:41 PM	Reported



## Injection Log Summary

## Sequence Details

Name:	IC-07_180731A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	31/Jul/18 17:18:37
No. of Injections:	15	Updated By:	ics 5000

## Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		07/31/2018 10:12	Finished	BLANK
2	BLANK	2	1000	Unknown		07/31/2018 10:23	Finished	BLANK
3	iBLANK	3	1000	Unknown		07/31/2018 10:32	Finished	INSTRUMENT BLANK
4	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/31/2018 10:48	Finished	0.2 ppb, IWST-180622A
5	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/31/2018 10:59	Finished	1.0 ppb, IWST-180622A
6	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/31/2018 11:09	Finished	5.0 ppb, IWST-180622A
7	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/31/2018 11:18	Finished	10 ppb, IWST-180622A
8	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/31/2018 11:28	Finished	15 ppb, IWST-180622A
9	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/31/2018 11:37	Finished	20 ppb, IWST-180622A
10	ICV.ICV,1,	12	1000	Unknown		07/31/2018 11:56	Finished	ICV @5ppb, IWST-180622B
11	PQL@0.2ppb.CCV2,	13	1000	Unknown		07/31/2018 12:17	Finished	PQL @ 0.2ppb
12	ICB.ICB,1,	16	1000	Unknown		07/31/2018 13:41	Finished	CCB R180712C
13	SHUTDOWN	18	1000	Unknown		07/31/2018 15:12	Finished	
14	Eluent: R180730A	19	1000	Unknown		n.a.	Finished	Eluent
15	PCR: R180730B	20	1000	Unknown		n.a.	Finished	Post-Column Reagent

**INJECTION LOG: 180803A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/31/18 10:12 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	07/31/18 10:23 AM	Not Reported
3	iBLANK	iBLANK	1	Hexavalent Chromium	07/31/18 10:32 AM	Reported
4	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/31/18 10:48 AM	Reported
5	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 10:59 AM	Reported
6	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 11:09 AM	Reported
7	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 11:18 AM	Reported
8	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 11:28 AM	Reported
9	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 11:37 AM	Reported
10	BLANK	BLANK	1	Hexavalent Chromium	08/03/18 9:25 AM	Not Reported
11	BLANK	BLANK	1	Hexavalent Chromium	08/03/18 9:36 AM	Not Reported
12	CCV-1	CCV	1	Hexavalent Chromium	08/03/18 9:45 AM	Reported
13	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	08/03/18 9:55 AM	Reported
14	CCB-1	CCB	1	Hexavalent Chromium	08/03/18 10:04 AM	Reported
15	MB-R126742	MBLK	1	Hexavalent Chromium	08/03/18 10:13 AM	Reported
16	LCS-R126742	LCS	1	Hexavalent Chromium	08/03/18 10:23 AM	Reported
17	N031502-001B	SAMP	100	Hexavalent Chromium	08/03/18 10:43 AM	Reported
18	N031502-001BMS	MS	100	Hexavalent Chromium	08/03/18 10:54 AM	Reported
19	N031502-001BMSD	MSD	100	Hexavalent Chromium	08/03/18 11:03 AM	Reported
20	N031502-002C	SAMP	1	Hexavalent Chromium	08/03/18 11:13 AM	Not Reported
21	N031502-002CMS	MS	1	Hexavalent Chromium	08/03/18 11:22 AM	Not Reported
22	N031503-002A	SAMP	100	Hexavalent Chromium	08/03/18 11:32 AM	Reported
23	N031503-002AMS	MS	100	Hexavalent Chromium	08/03/18 11:41 AM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	08/03/18 11:51 AM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	08/03/18 12:00 PM	Reported
26	N031503-001A	SAMP	1	Hexavalent Chromium	08/03/18 12:10 PM	Reported
27	N031503-001AMS	MS	1	Hexavalent Chromium	08/03/18 12:19 PM	Reported
28	N031503-002ADUP	DUP	100	Hexavalent Chromium	08/03/18 12:29 PM	Reported
29	N031502-002C	SAMP	5	Hexavalent Chromium	08/03/18 12:38 PM	Reported
30	N031502-002CMS	MS	5	Hexavalent Chromium	08/03/18 12:48 PM	Reported
31	N031383-004A	SAMP	1	Hexavalent Chromium	08/03/18 12:57 PM	Not Reported
32	N031383-004AMS	MS	1	Hexavalent Chromium	08/03/18 1:06 PM	Not Reported
33	N031383-010A	SAMP	1	Hexavalent Chromium	08/03/18 1:16 PM	Not Reported
34	N031383-010AMS	MS	1	Hexavalent Chromium	08/03/18 1:25 PM	Not Reported
35	CCV-3	CCV	1	Hexavalent Chromium	08/03/18 1:35 PM	Reported
36	CCB-3	CCB	1	Hexavalent Chromium	08/03/18 1:44 PM	Reported
37	N031383-012A	SAMP	1	Hexavalent Chromium	08/03/18 1:54 PM	Not Reported
38	N031383-012AMS	MS	1	Hexavalent Chromium	08/03/18 2:03 PM	Not Reported
39	N031384-005A	SAMP	1	Hexavalent Chromium	08/03/18 2:13 PM	Not Reported
40	N031384-005AMS	MS	1	Hexavalent Chromium	08/03/18 2:22 PM	Not Reported
41	N031384-006A	SAMP	1	Hexavalent Chromium	08/03/18 2:32 PM	Not Reported
42	N031384-006AMS	MS	1	Hexavalent Chromium	08/03/18 2:41 PM	Not Reported

**INJECTION LOG: 180803A**

**Instrument ID: IC-07**

<b>Sample No</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Peak Name</b>	<b>Injection Date/Time</b>	<b>Comments</b>
43	N031384-011A	SAMP	10	Hexavalent Chromium	08/03/18 2:51 PM	Not Reported
44	N031384-011AMS	MS	10	Hexavalent Chromium	08/03/18 3:00 PM	Not Reported
45	CCV-4	CCV1	1	Hexavalent Chromium	08/03/18 3:09 PM	Reported
46	CCB-4	CCB	1	Hexavalent Chromium	08/03/18 3:19 PM	Reported

### Injection Log Summary

**Sequence Details**

Name:	IC-07_180803A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	06/Aug/18 17:41:41
No. of Injections:	49	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		07/31/2018 10:12	Finished	BLANK
2	BLANK	2	1000	Unknown		07/31/2018 10:23	Finished	BLANK
3	iBLANK	3	1000	Unknown		07/31/2018 10:32	Finished	INSTRUMENT BLANK
4	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/31/2018 10:48	Finished	0.2 ppb, IWST-180622A
5	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/31/2018 10:59	Finished	1.0 ppb, IWST-180622A
6	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/31/2018 11:09	Finished	5.0 ppb, IWST-180622A
7	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/31/2018 11:18	Finished	10 ppb, IWST-180622A
8	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/31/2018 11:28	Finished	15 ppb, IWST-180622A
9	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/31/2018 11:37	Finished	20 ppb, IWST-180622A
10	BLANK	1	1000	Unknown		08/03/2018 09:25	Finished	BLANK
11	BLANK	2	1000	Unknown		08/03/2018 09:36	Finished	BLANK
12	CCV-1,CCV,1,	3	1000	Unknown		08/03/2018 09:45	Finished	CCV @5ppb, IWST-180622A
13	PQL@0.2ppb,CCV2,	4	1000	Unknown		08/03/2018 09:55	Finished	PQL @ 0.2ppb
14	CCB-1,CCB,1,	5	1000	Unknown		08/03/2018 10:04	Finished	CCB R180712C
15	MB-H2O,MBLK,1,	6	1000	Unknown		08/03/2018 10:13	Finished	MB R180712C
16	LCS-H2O,LCS,1,	7	1000	Unknown		08/03/2018 10:23	Finished	LCS, IWST-180622B
17	N031502-001B,SAMF	9	1000	Unknown		08/03/2018 10:43	Finished	SAMP,0.1>10mL
18	N031502-001BMS,MS	10	1000	Unknown		08/03/2018 10:54	Finished	MS (5ppb), IWST-180622B,0.1
19	N031502-001BMSD,N	11	1000	Unknown		08/03/2018 11:03	Finished	MSD (5ppb), IWST-180622B,0.
20	N031502-002C,SAMF	12	1000	Unknown		08/03/2018 11:13	Finished	SAMP,10mL
21	N031502-002CMS,MS	13	1000	Unknown		08/03/2018 11:22	Finished	MS (1ppb), IWST-180622B,10
22	N031503-002A,SAMF	14	1000	Unknown		08/03/2018 11:32	Finished	SAMP,0.1>10mL
23	N031503-002AMS,MS	15	1000	Unknown		08/03/2018 11:41	Finished	MS (5ppb), IWST-180622B,0.1
24	CCV-2,CCV1,1,	16	1000	Unknown		08/03/2018 11:51	Finished	CCV @10ppb, IWST-180622A
25	CCB-2,CCB,1,	17	1000	Unknown		08/03/2018 12:00	Finished	CCB R180712C
26	N031503-001A,SAMF	18	1000	Unknown		08/03/2018 12:10	Finished	SAMP,10mL
27	N031503-001AMS,MS	19	1000	Unknown		08/03/2018 12:19	Finished	MS (1ppb), IWST-180622B,10
28	N031503-002ADUP,D	20	1000	Unknown		08/03/2018 12:29	Finished	DUP,0.1>10mL
29	N031502-002C,SAMF	21	1000	Unknown		08/03/2018 12:38	Finished	SAMP,2>10mL
30	N031502-002CMS,MS	22	1000	Unknown		08/03/2018 12:48	Finished	MS (1ppb), IWST-180622B,2>1
31	N031383-004A,SAMF	23	1000	Unknown		08/03/2018 12:57	Finished	SAMP,10mL
32	N031383-004AMS,MS	24	1000	Unknown		08/03/2018 13:06	Finished	MS (1ppb), IWST-180622B,10
33	N031383-010A,SAMF	25	1000	Unknown		08/03/2018 13:16	Finished	SAMP,10mL
34	N031383-010AMS,MS	26	1000	Unknown		08/03/2018 13:25	Finished	MS (1ppb), IWST-180622B,10
35	CCV-3,CCV,1,	27	1000	Unknown		08/03/2018 13:35	Finished	CCV @5ppb, IWST-180622A
36	CCB-3,CCB,1,	28	1000	Unknown		08/03/2018 13:44	Finished	CCB R180712C
37	N031383-012A,SAMF	29	1000	Unknown		08/03/2018 13:54	Finished	SAMP,10mL
38	N031383-012AMS,MS	30	1000	Unknown		08/03/2018 14:03	Finished	MS (1ppb), IWST-180622B,10
39	N031384-005A,SAMF	31	1000	Unknown		08/03/2018 14:13	Finished	SAMP,10mL
40	N031384-005AMS,MS	32	1000	Unknown		08/03/2018 14:22	Finished	MS (1ppb), IWST-180622B,10
41	N031384-006A,SAMF	33	1000	Unknown		08/03/2018 14:32	Finished	SAMP,10mL
42	N031384-006AMS,MS	34	1000	Unknown		08/03/2018 14:41	Finished	MS (1ppb), IWST-180622B,10
43	N031384-011A,SAMF	35	1000	Unknown		08/03/2018 14:51	Finished	SAMP,1>10mL
44	N031384-011AMS,MS	36	1000	Unknown		08/03/2018 15:00	Finished	MS (5ppb), IWST-180622B,1>1
45	CCV-4,CCV1,1,	37	1000	Unknown		08/03/2018 15:09	Finished	CCV @10ppb, IWST-180622A
46	CCB-4,CCB,1,	38	1000	Unknown		08/03/2018 15:19	Finished	CCB R180712C
47	SHUTDOWN	39	1000	Unknown		08/03/2018 15:28	Finished	
48	Eluent: R180730A	40	1000	Unknown		n.a.	Finished	Eluent
49	PCR: R180730B	41	1000	Unknown		n.a.	Finished	Post-Column Reagent

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## Hexavalent Chromium Preparation and Runlog

### Sample Preparation

Date Prepared: 8/11/18      Slope: 99.2%      Reagent ID: \_\_\_\_\_  
 Time Prepared: 1100H      pH 4: 4.03 @ 25.0°C      Sulfuric Acid: 10125      6N NaOH: \_\_\_\_\_  
 Prepared By: MBA      pH 7: 7.02 @ 25.0°C      Diphenylcarbazide: CINV-180516D      R180709C  
    pH 10: 10.02 @ 25.0°C      NH4OH + NH4SO4 eluent: M80730A  
    LW: 7.02 @ 25.0°C      NH4OH + NH4SO4 buffer: M80531A

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N071482-001B	9.15	9.45	~250µl	~250µl	+ 4 drops 6N NaOH	
2)							
3)							
4)							
5)							
6)							
7)							
8)							
9)							
10)							
11)							
12)							
13)							
14)							
15)							

### Sample Preparation

Date Prepared: 8/2/18      Slope: 98.9%      Reagent ID: \_\_\_\_\_  
 Time Prepared: 1620H      pH 4: 4.01 @ 25.0°C      Sulfuric Acid: 10125      6N NaOH: \_\_\_\_\_  
 Prepared By: MBA      pH 7: 7.01 @ 25.0°C      Diphenylcarbazide: CINV-180516D      R180709C  
    pH 10: 10.01 @ 25.0°C      NH4OH + NH4SO4 eluent: M80802A  
    LW: 7.01 @ 25.0°C      NH4OH + NH4SO4 buffer: M8072C

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N071502-001B	7.54	9.32	~250µl	~250µl	+ 5 ml M8072C	
2)	1 2C	7.51	9.37			+ 5 ml M8072C	
3)	N071507-1A	8.90	9.56			+ 7 drops NaOH	
4)	1 2A	8.94	9.58			+ 7 " "	
5)							
6)							
7)							
8)							
9)							
10)							
11)							
12)							
13)							
14)							
15)							

Logbook No. 15

*nba* 8/12/2018



**ASSET LABORATORIES**  
ANALYTICAL & TESTING SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA | P: 562.219.7435 F: 562.219.7436  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
ELAP Cert 2921  
ID CA01638

NEVADA | P: 702.307.2659 F: 702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118  
ELAP Cert 2676 | NV Cert 15322  
ORELAP/NELAP Cert 4046

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07  
Date Calibrated: 7/31/2018

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R <sup>2</sup>
Area,mAU*min	0.0570	0.2512	1.2778	2.5743	3.8217	5.0913	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST-170814H	IWST-180622A

Calibration Acceptance Criteria: > 0.999 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.



# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>7/31/2018</b>	SeqNo: <b>3101438</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.098	0.20	5.000	0	102	90	110				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>7/31/2018</b>	SeqNo: <b>3101439</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.225	0.20	0.2000	0	112	80	120				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101441</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.995	0.20	5.000	0	99.9	95	105				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101442</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.215	0.20	0.2000	0	107	80	120				

Sample ID <b>CCV-2</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101451</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	9.924	0.20	10.00	0	99.2	95	105				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101458</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.916	0.20	5.000	0	98.3	95	105				

Sample ID <b>CCV-4</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101460</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.022	0.20	10.00	0	100	95	105				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>
Client ID: <b>ICB</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>7/31/2018</b>	SeqNo: <b>3101440</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101443</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101452</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101459</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>126742</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126742</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3101461</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 8/3/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.148	
CCV-1	4.140	
CCV-2	4.140	
CCV-3	4.140	
CCV-4	4.140	

**Average** 4.140  
**Actual RT Window** 4.060 - 4.220  
**Applied RT Window** 3.940 - 4.340

MB-R126742	N.A.	N.A.
LCS-R126742	4.140	PASS
N031502-001B	4.140	PASS
N031502-001BMS	4.140	PASS
N031502-001BMSD	4.140	PASS
N031502-002C	N.A.	N.A.
N031502-002CMS	4.006	PASS
N031503-002A	4.140	PASS
N031503-002AMS	4.140	PASS
N031503-001A	N.A.	N.A.
N031503-001AMS	4.106	PASS
N031503-002ADUP	4.140	PASS
N031502-002C	N.A.	N.A.
N031502-002CMS	4.115	PASS
N031383-004A	4.115	PASS
N031383-004AMS	4.115	PASS
N031383-010A	N.A.	N.A.
N031383-010AMS	4.131	PASS
N031383-012A	4.131	PASS
N031383-012AMS	4.123	PASS
N031384-005A	N.A.	N.A.
N031384-005AMS	4.123	PASS
N031384-006A	N.A.	N.A.
N031384-006AMS	4.131	PASS
N031384-011A	4.140	PASS

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 8/3/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.148	
CCV-1	4.140	
CCV-2	4.140	
CCV-3	4.140	
CCV-4	4.140	

**Average** 4.140

**Actual RT Window** 4.060 - 4.220

**Applied RT Window** 3.940 - 4.340

N031384-011AMS	4.131	PASS
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# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**  
 Method Number: EPA 218.6  
 Analysis Date(s): 5/5/2017, 5/8/2017, 5/9/2017, 5/10/2017, 5/11/2017, 5/12/2017, 5/15/2017  
 Analyst: Ria Abes

Matrix: **WATER**  
 Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

	Datafile	170505	170508	170509	170510	170511	170512	170515						
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	t <sub>(n-1)</sub> value	MDL	PQL	Remarks	
Hexavalent Chromium	0.1949	0.2135	0.1840	0.1828	0.2011	0.1936	0.1911	0.20	0.0105	3.143	<b>0.0331</b>	<b>0.20</b>	OK,meets criteria	

Students' t Values at 99% CL

#	t <sub>(n-1)</sub>
10	2.821
9	2.896
8	2.998
7	3.143



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL MONITORING

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

## LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Hexavalent Chromium by IC**                      Matrix: **WATER**  
 Method Number: EPA Method 218.6/7199                      Unit:  $\mu\text{g/L}$   
 Analysis Date(s): 3/21/2018  
 Analyst: Ria Abes  
  
 Instrument Name: **IC-07**

Compound	MDL	LOD Spike Conc., $\mu\text{g/L}$	LOD actual Conc., $\mu\text{g/L}$
Hexavalent Chromium	0.0331	0.100	0.116

Compound	PQL	PQL Spike Conc., $\mu\text{g/L}$	PQL actual Conc., $\mu\text{g/L}$	% Recovery
Hexavalent Chromium	0.200	0.200	0.201	<u>100</u>



# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2691 F: 702.307.2691



# INITIAL CALIBRATION



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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INJECTION LOG: 180731A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/31/18 10:12 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	07/31/18 10:23 AM	Not Reported
3	iBLANK	iBLANK	1	Hexavalent Chromium	07/31/18 10:32 AM	Reported
4	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/31/18 10:48 AM	Reported
5	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 10:59 AM	Reported
6	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 11:09 AM	Reported
7	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 11:18 AM	Reported
8	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 11:28 AM	Reported
9	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 11:37 AM	Reported
10	ICV	ICV	1	Hexavalent Chromium	07/31/18 11:56 AM	Reported
11	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	07/31/18 12:17 PM	Reported
12	ICB	ICB	1	Hexavalent Chromium	07/31/18 1:41 PM	Reported

*rba* 8/12/2018

*Nancy* 8/14/2018

IC-07 RBA 8/6/2018 4:54 PM

## Injection Log Summary

## Sequence Details

Name:	IC-07_180731A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	31/Jul/18 17:18:37
No. of Injections:	15	Updated By:	ics 5000

## Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		07/31/2018 10:12	Finished	BLANK
2	BLANK	2	1000	Unknown		07/31/2018 10:23	Finished	BLANK
3	iBLANK	3	1000	Unknown		07/31/2018 10:32	Finished	INSTRUMENT BLANK
4	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/31/2018 10:48	Finished	0.2 ppb, IWST-180622A
5	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/31/2018 10:59	Finished	1.0 ppb, IWST-180622A
6	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/31/2018 11:09	Finished	5.0 ppb, IWST-180622A
7	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/31/2018 11:18	Finished	10 ppb, IWST-180622A
8	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/31/2018 11:28	Finished	15 ppb, IWST-180622A
9	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/31/2018 11:37	Finished	20 ppb, IWST-180622A
10	ICV,ICV,1,	12	1000	Unknown		07/31/2018 11:56	Finished	ICV @5ppb, IWST-180622B
11	PQL@0.2ppb,CCV2,	13	1000	Unknown		07/31/2018 12:17	Finished	PQL @ 0.2ppb
12	ICB,ICB,1,	16	1000	Unknown		07/31/2018 13:41	Finished	CCB R180712C
13	SHUTDOWN	18	1000	Unknown		07/31/2018 15:12	Finished	
14	Eluent: R180730A	19	1000	Unknown		n.a.	Finished	Eluent
15	PCR: R180730B	20	1000	Unknown		n.a.	Finished	Post-Column Reagent

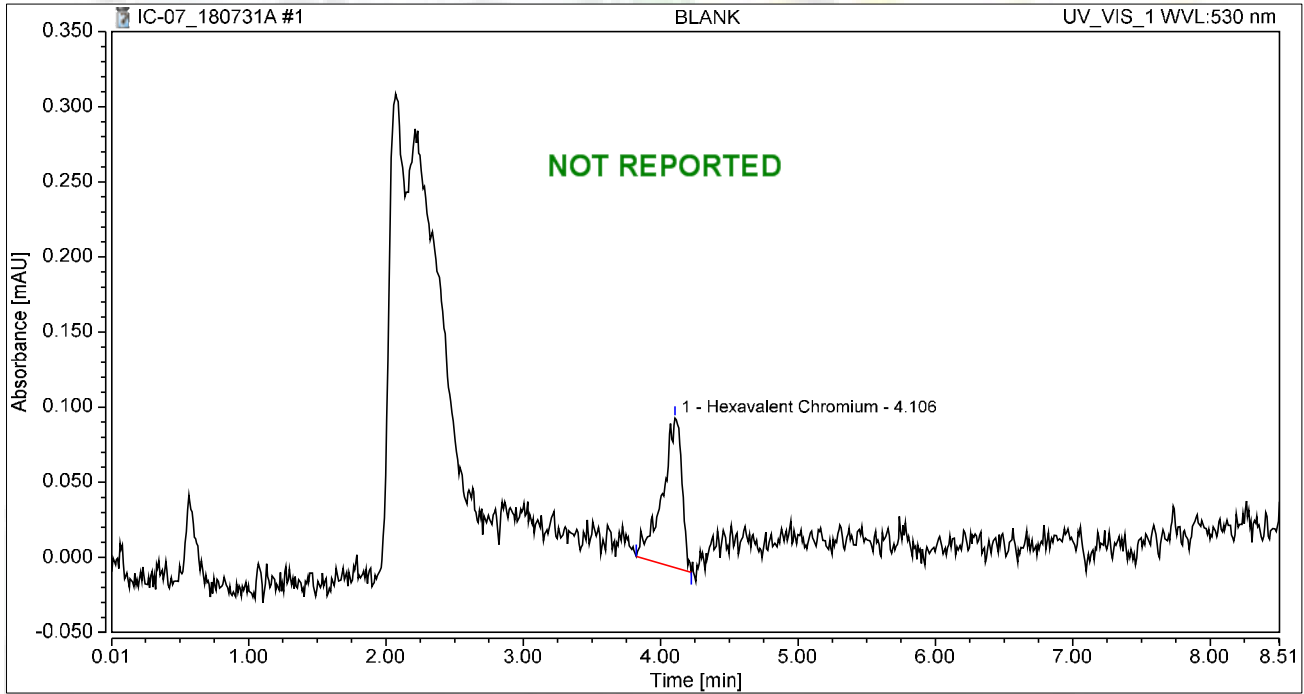
rba 8/12/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	31/Jul/18 10:12	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.016	0.100	100.00	100.00	0.0643
<b>Total:</b>			<b>0.016</b>	<b>0.100</b>	<b>100.00</b>	<b>100.00</b>	

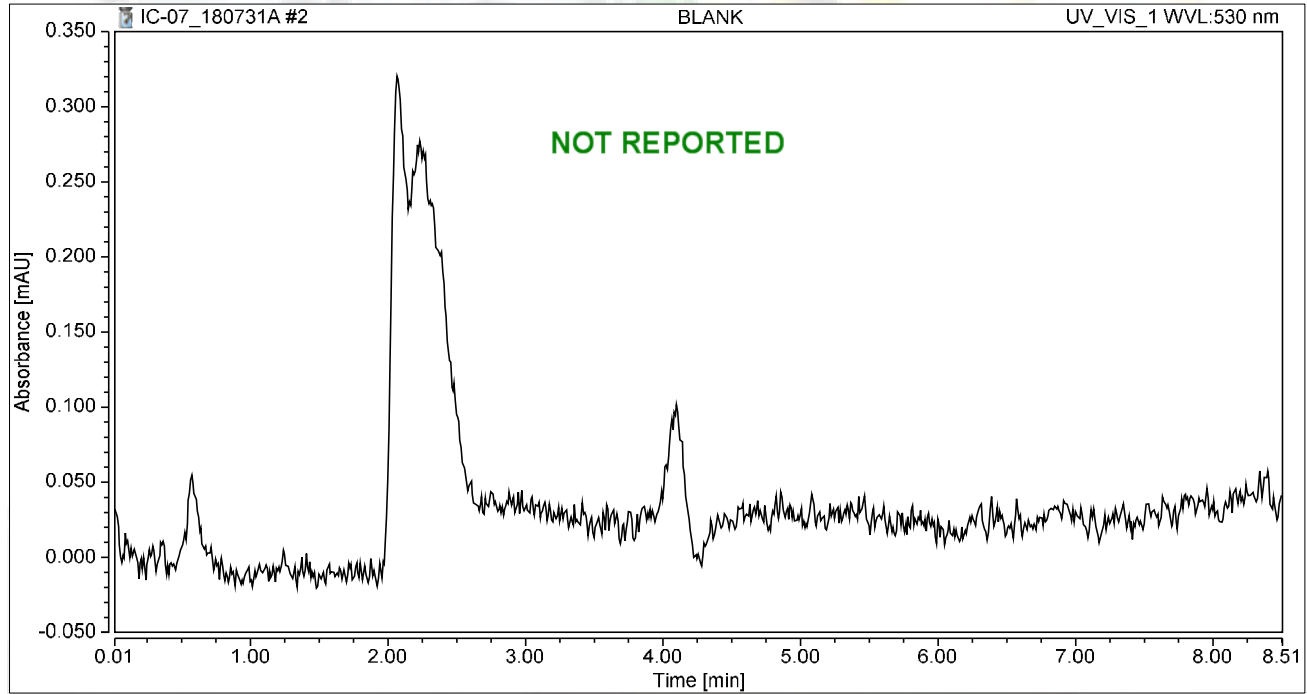


### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.49
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	31/Jul/18 10:23	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

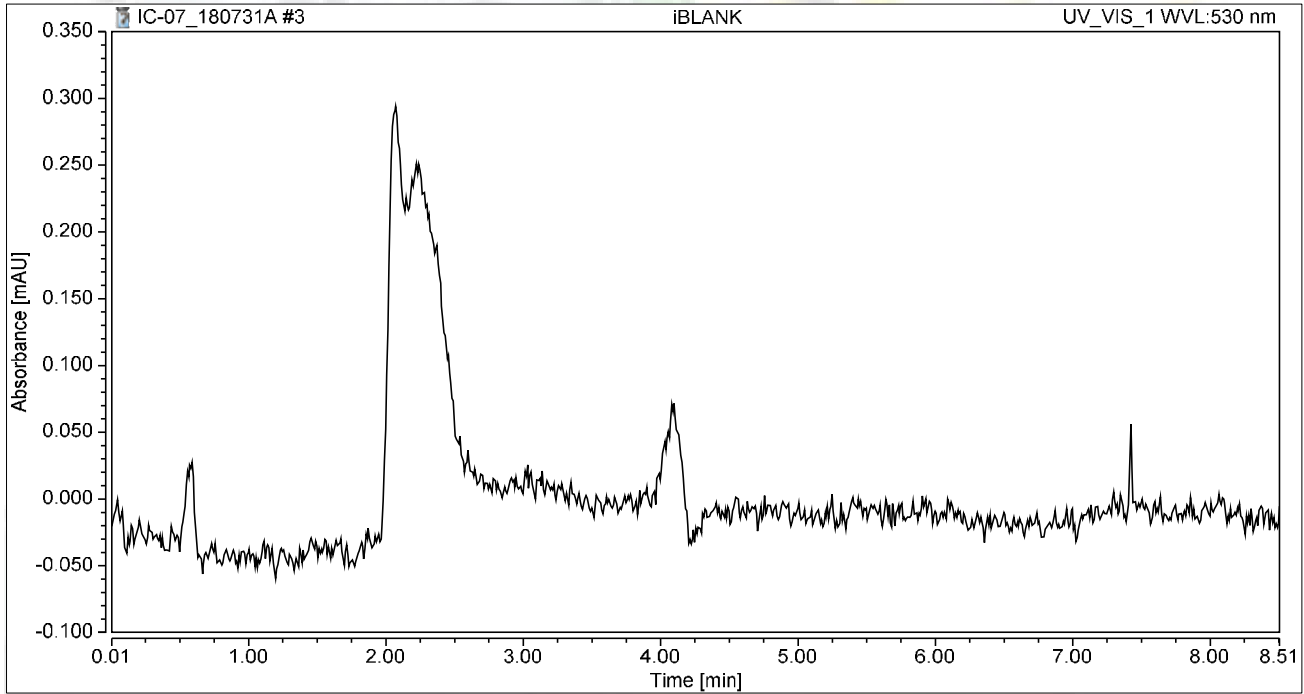
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	iBLANK	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	31/Jul/18 10:32	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

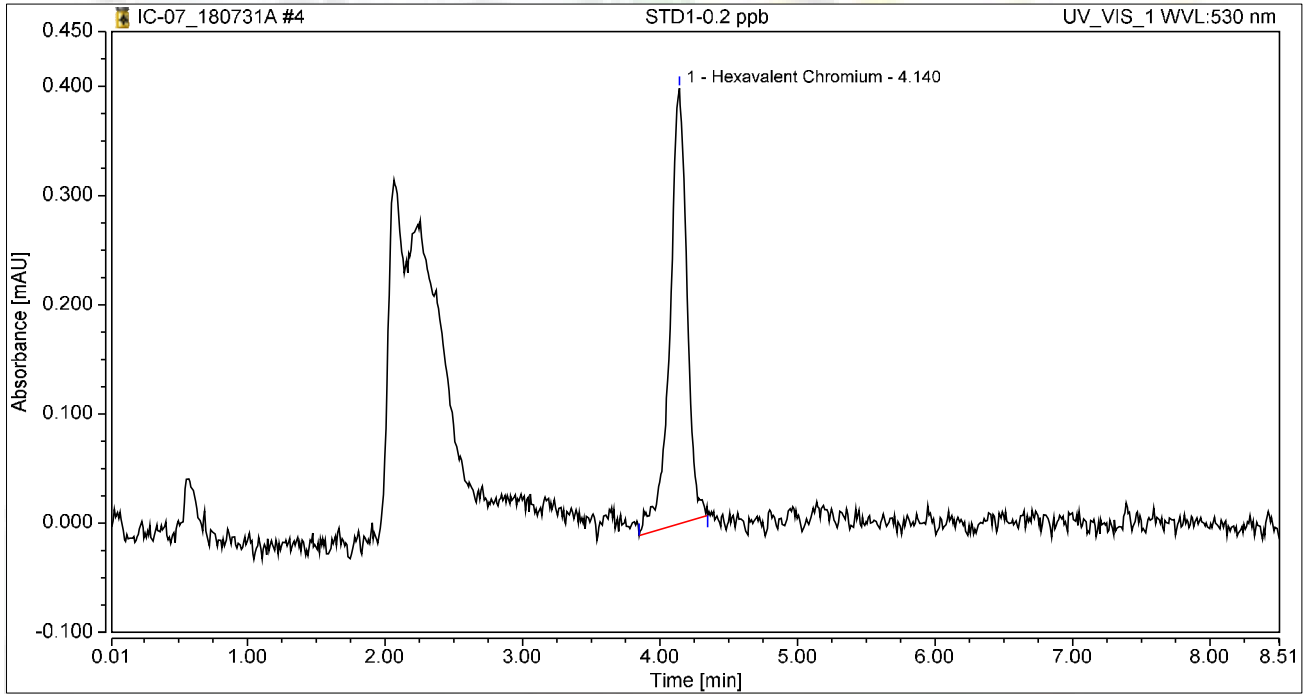
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.49
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	31/Jul/18 10:48	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

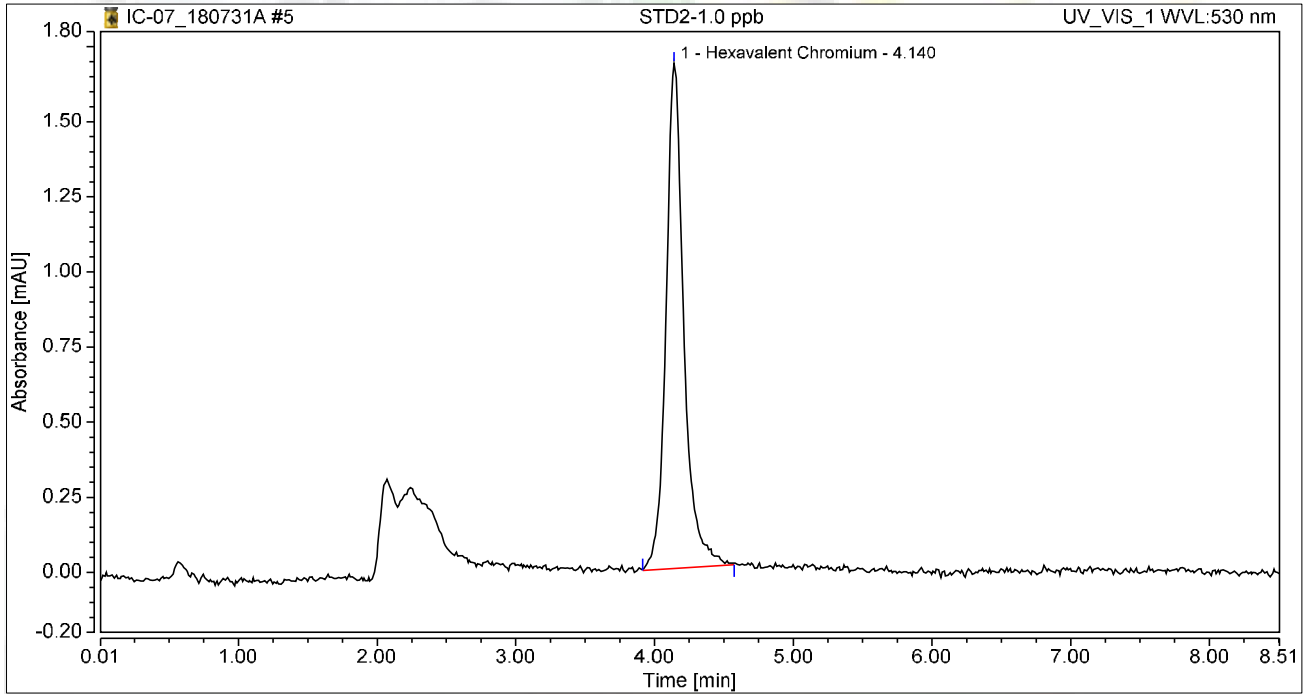
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	0.057	0.399	100.00	100.00	0.2237
<b>Total:</b>			<b>0.057</b>	<b>0.399</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD2-1.0 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	02	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	31/Jul/18 10:59	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

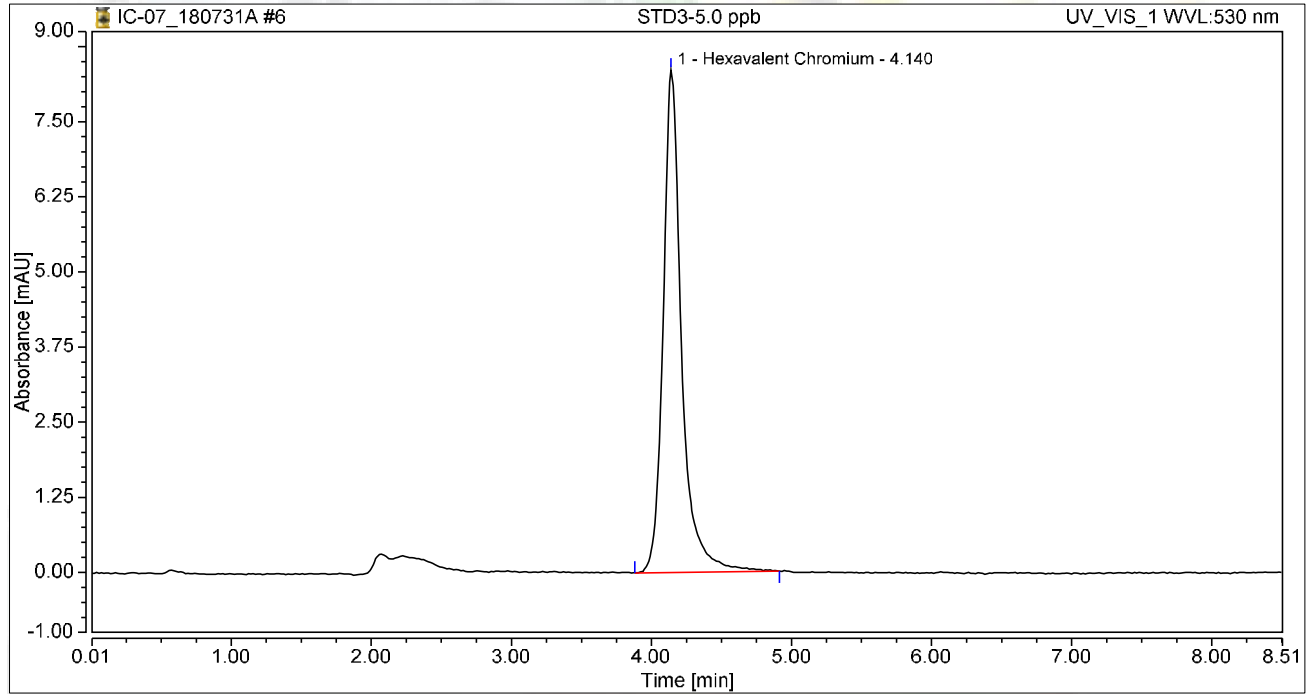
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	0.251	1.680	100.00	100.00	0.9850
<b>Total:</b>			<b>0.251</b>	<b>1.680</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD3-5.0 ppb	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	03	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	31/Jul/18 11:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

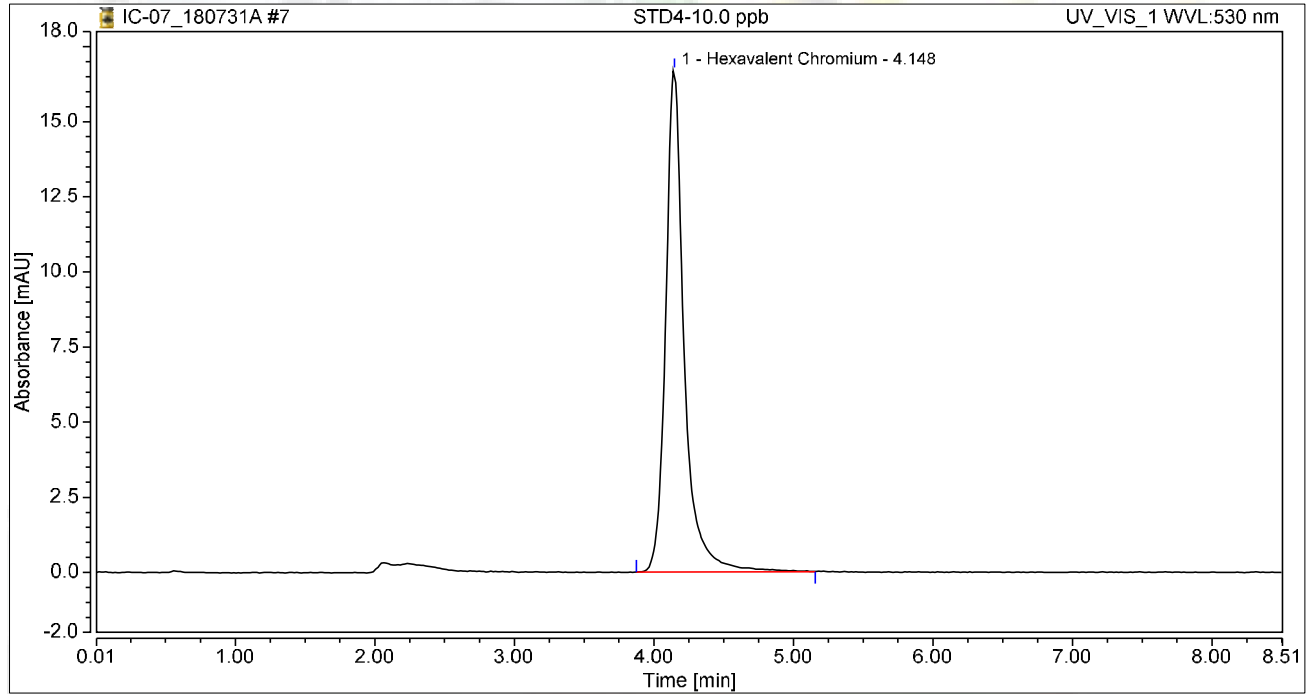
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.278	8.366	100.00	100.00	5.0103
<b>Total:</b>			<b>1.278</b>	<b>8.366</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	31/Jul/18 11:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

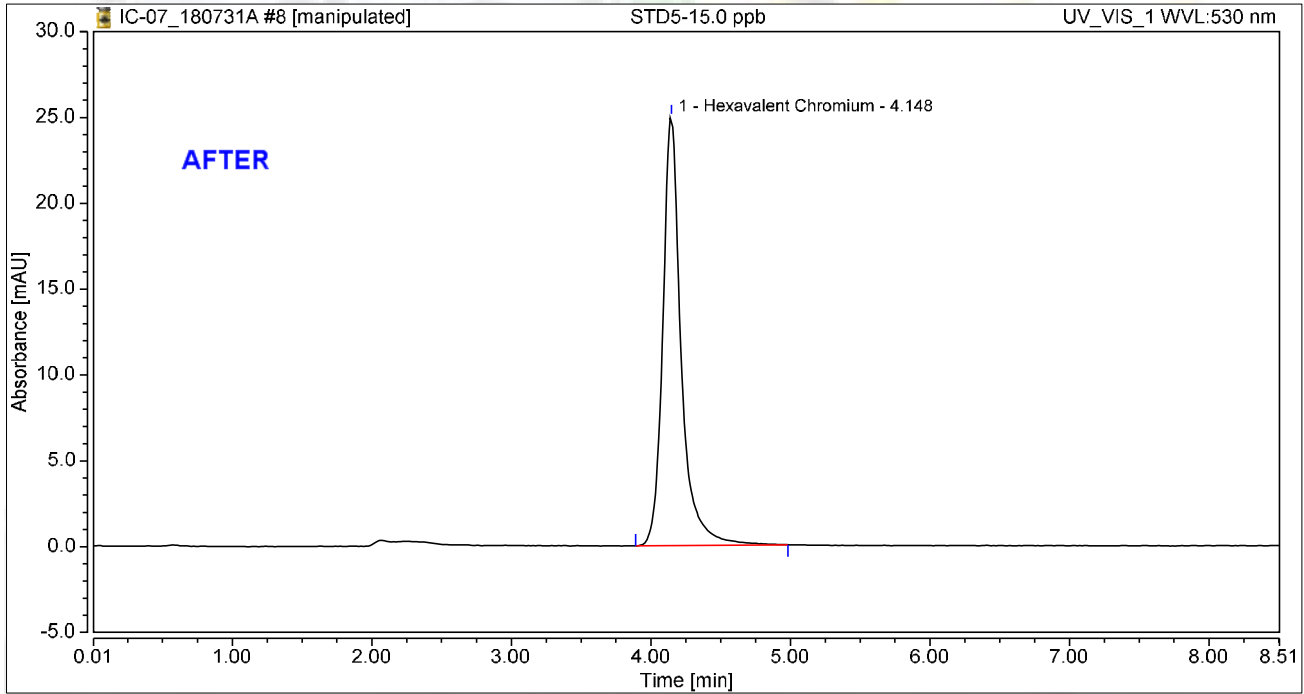
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	2.574	16.701	100.00	100.00	10.0936
<b>Total:</b>			<b>2.574</b>	<b>16.701</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	31/Jul/18 11:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	3.822	24.977	100.00	100.00	14.9846
<b>Total:</b>			<b>3.822</b>	<b>24.977</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 8/12/2018

Reviewed by:  
*Nancy* 8/14/2018

My first report/Integration

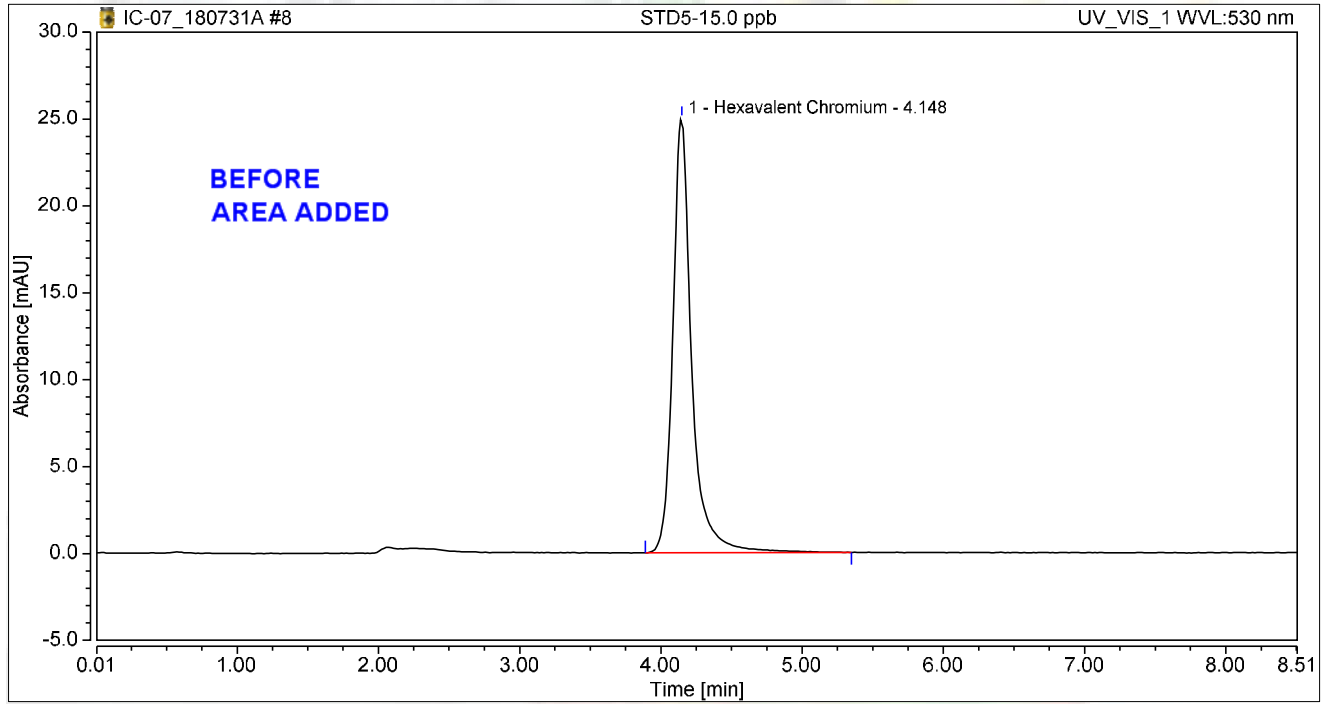
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	31/Jul/18 11:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	3.865	24.991	100.00	100.00	15.0345
<b>Total:</b>			<b>3.865</b>	<b>24.991</b>	<b>100.00</b>	<b>100.00</b>	

rba 8/12/2018

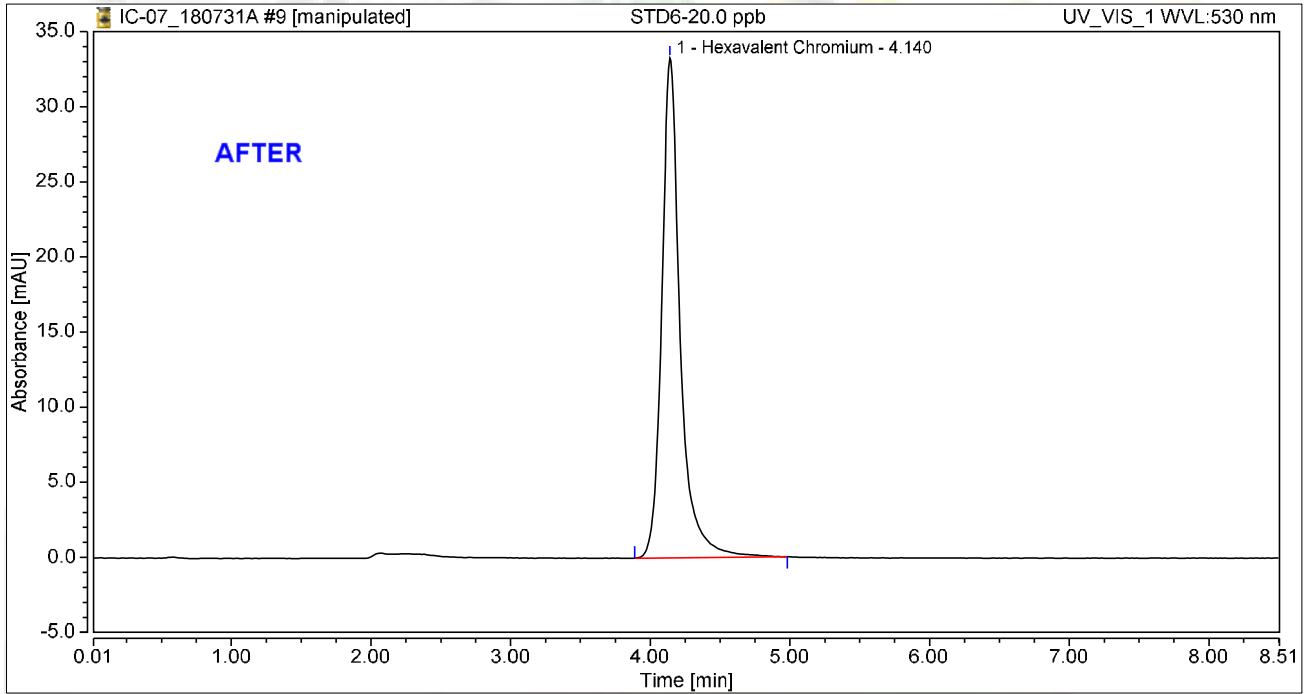


### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.49
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	31/Jul/18 11:37	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	5.091	33.275	100.00	100.00	19.9627
<b>Total:</b>			<b>5.091</b>	<b>33.275</b>	<b>100.00</b>	<b>100.00</b>	

rba 8/12/2018

Reviewed by:

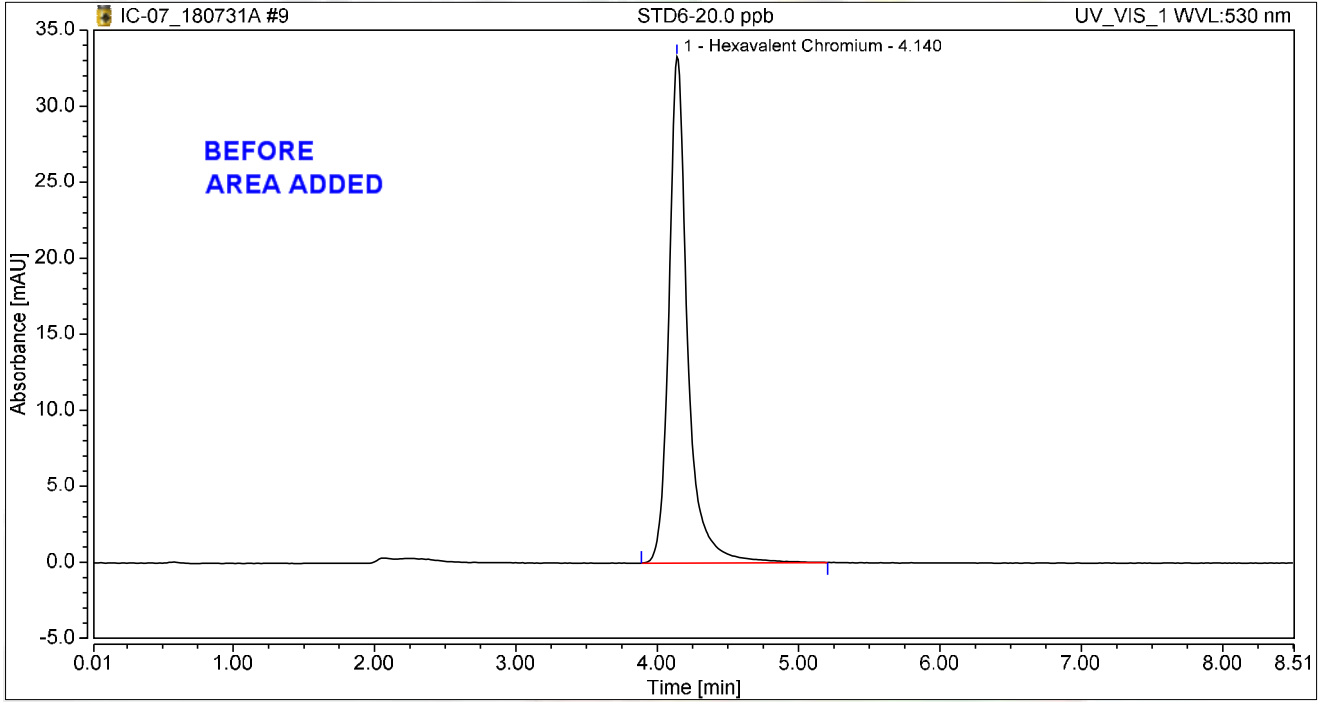
My first report/inserted 8/14/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.49
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	31/Jul/18 11:37	Sample Weight:	1.0000

**Chromatogram**

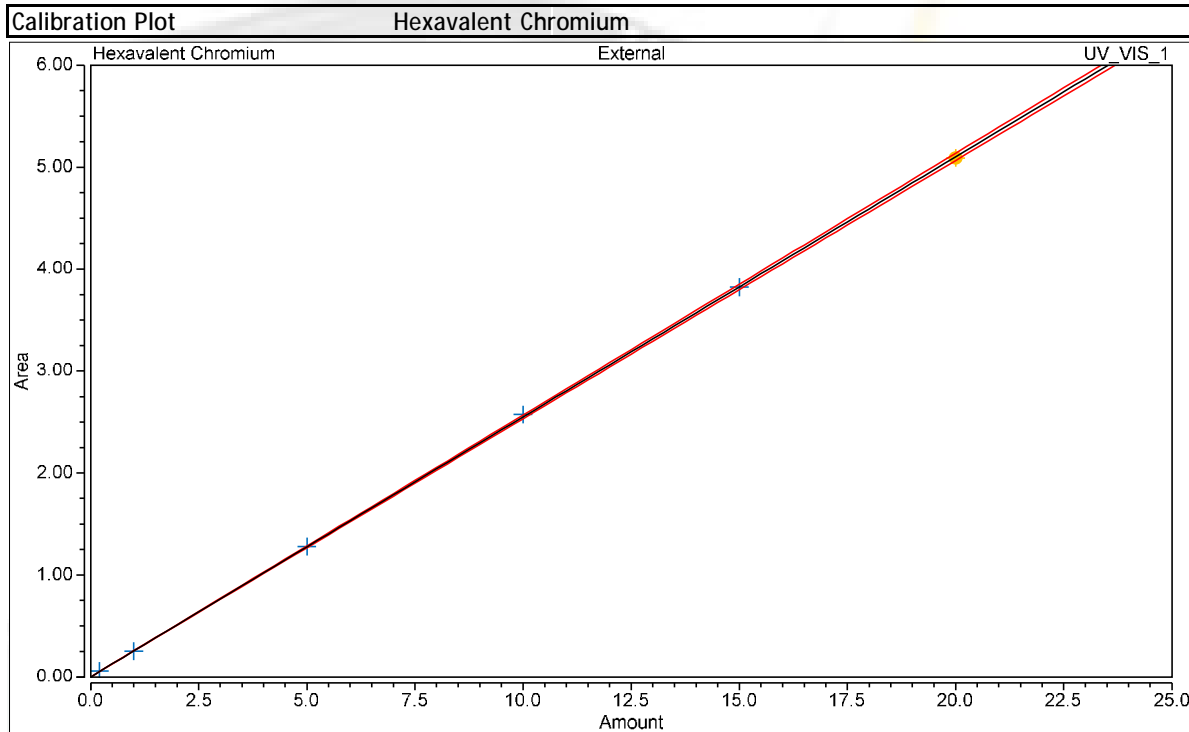


**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	5.135	33.290	100.00	100.00	19.9756
<b>Total:</b>			<b>5.135</b>	<b>33.290</b>	<b>100.00</b>	<b>100.00</b>	

rba 8/12/2018

Initial Calibration Summary			
Calibration Details		Hexavalent Chromium	
Calibration Type	Lin	Offset (C0)	0.0000
Evaluation Type	Area	Slope (C1)	0.2550
Number of Calibration Points	6	Curve (C2)	0.0000
Number of disabled Calibration Points	0	R-Square	0.99996



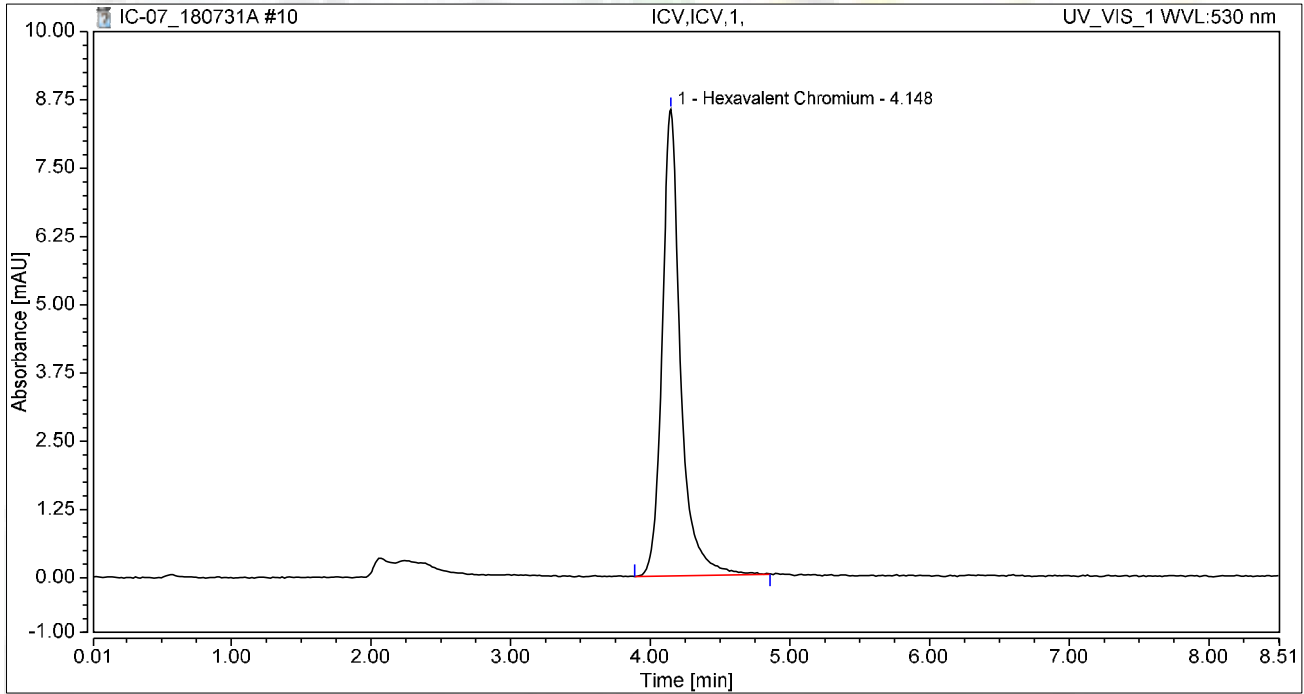
Calibration Results		Hexavalent Chromium				
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
4	STD1-0.2 ppb	01	0.2000	0.0570	0.057	0.399
5	STD2-1.0 ppb	02	1.0000	0.2512	0.251	1.680
6	STD3-5.0 ppb	03	5.0000	1.2778	1.278	8.366
7	STD4-10.0 ppb	04	10.0000	2.5743	2.574	16.701
8	STD5-15.0 ppb	05	15.0000	3.8217	3.822	24.977
9	STD6-20.0 ppb	06	20.0000	5.0913	5.091	33.275

### Chromatogram and Results

**Injection Details**

Injection Name:	ICV,ICV,1,	Run Time (min):	8.49
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	31/Jul/18 11:56	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

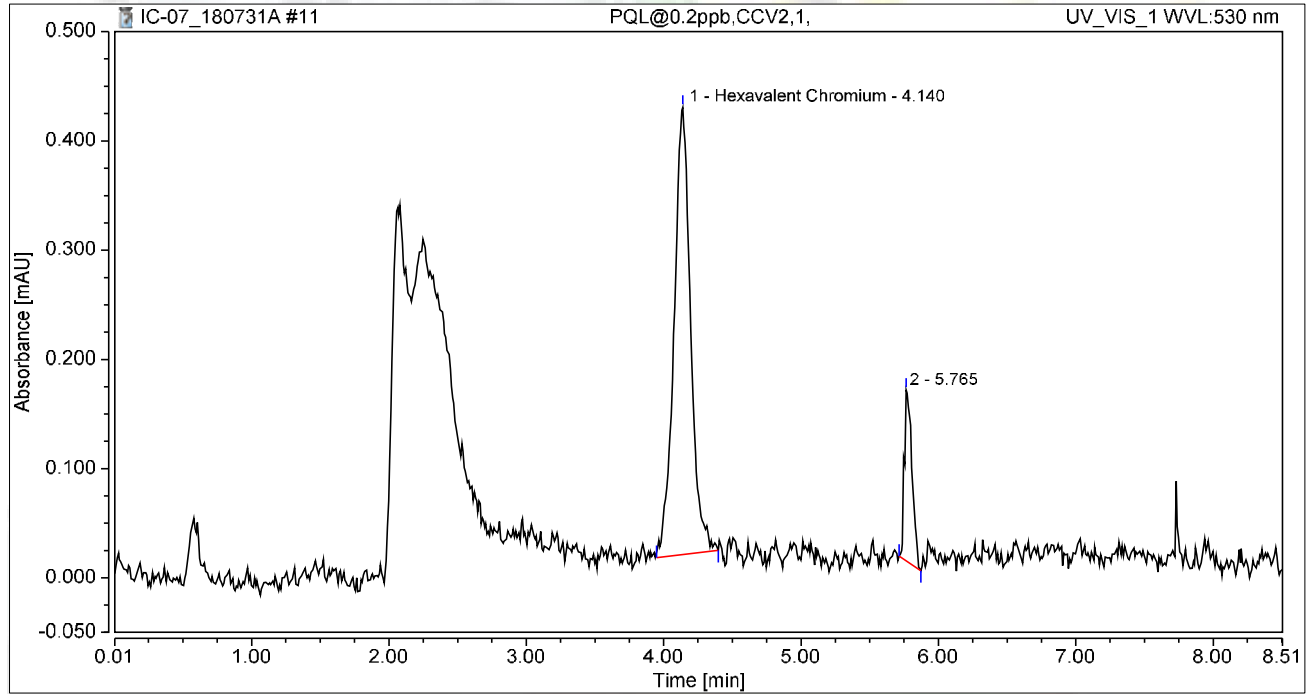
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	1.300	8.540	100.00	100.00	5.0976
<b>Total:</b>			<b>1.300</b>	<b>8.540</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	31/Jul/18 12:17	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

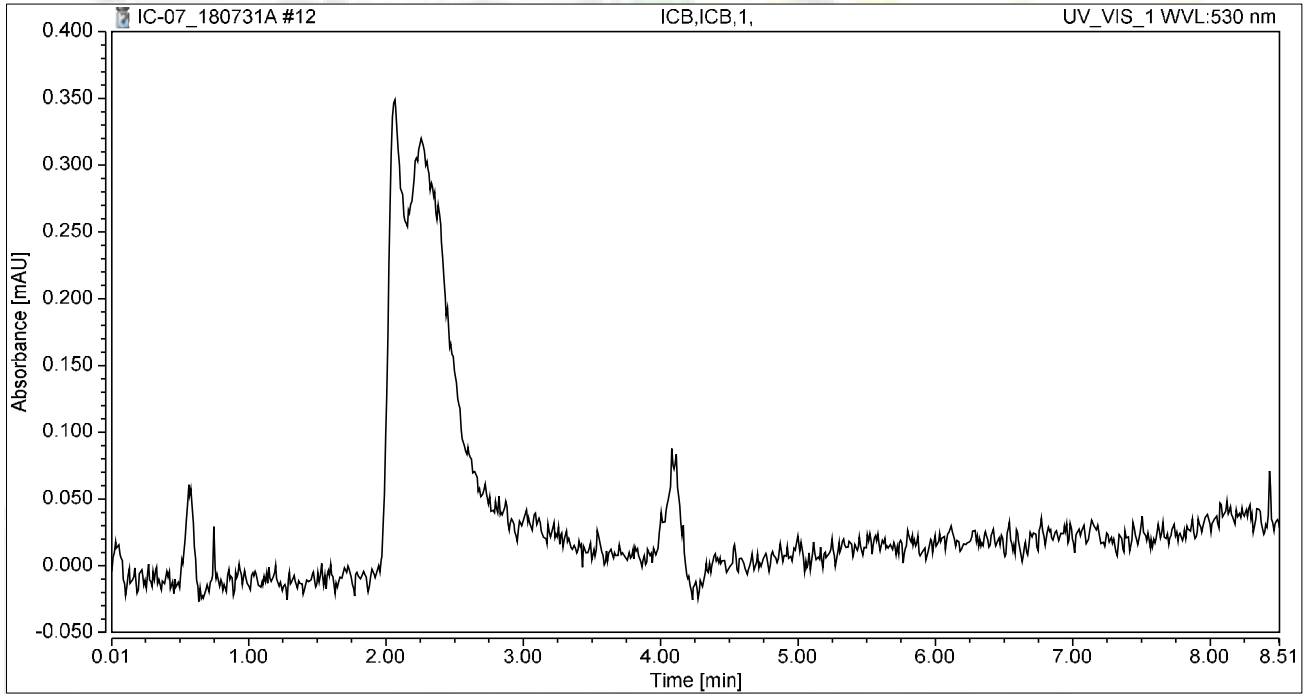
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	0.057	0.409	84.94	72.40	0.2249
2		5.765	0.010	0.156	15.06	27.60	n.a.
<b>Total:</b>			<b>0.068</b>	<b>0.565</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	ICB,ICB,1,	Run Time (min):	8.50
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	31/Jul/18 13:41	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691



*"Serving Clients with Passion and Professionalism"*

**INJECTION LOG: 180803A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	07/31/18 10:12 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	07/31/18 10:23 AM	Not Reported
3	iBLANK	iBLANK	1	Hexavalent Chromium	07/31/18 10:32 AM	Reported
4	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	07/31/18 10:48 AM	Reported
5	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 10:59 AM	Reported
6	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 11:09 AM	Reported
7	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 11:18 AM	Reported
8	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 11:28 AM	Reported
9	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	07/31/18 11:37 AM	Reported
10	BLANK	BLANK	1	Hexavalent Chromium	08/03/18 9:25 AM	Not Reported
11	BLANK	BLANK	1	Hexavalent Chromium	08/03/18 9:36 AM	Not Reported
12	CCV-1	CCV	1	Hexavalent Chromium	08/03/18 9:45 AM	Reported
13	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	08/03/18 9:55 AM	Reported
14	CCB-1	CCB	1	Hexavalent Chromium	08/03/18 10:04 AM	Reported
15	MB-R126742	MBLK	1	Hexavalent Chromium	08/03/18 10:13 AM	Reported
16	LCS-R126742	LCS	1	Hexavalent Chromium	08/03/18 10:23 AM	Reported
17	N031502-001B	SAMP	100	Hexavalent Chromium	08/03/18 10:43 AM	Reported
18	N031502-001BMS	MS	100	Hexavalent Chromium	08/03/18 10:54 AM	Reported
19	N031502-001BMSD	MSD	100	Hexavalent Chromium	08/03/18 11:03 AM	Reported
20	N031502-002C	SAMP	1	Hexavalent Chromium	08/03/18 11:13 AM	Not Reported
21	N031502-002CMS	MS	1	Hexavalent Chromium	08/03/18 11:22 AM	Not Reported
22	N031503-002A	SAMP	100	Hexavalent Chromium	08/03/18 11:32 AM	Reported
23	N031503-002AMS	MS	100	Hexavalent Chromium	08/03/18 11:41 AM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	08/03/18 11:51 AM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	08/03/18 12:00 PM	Reported
26	N031503-001A	SAMP	1	Hexavalent Chromium	08/03/18 12:10 PM	Reported
27	N031503-001AMS	MS	1	Hexavalent Chromium	08/03/18 12:19 PM	Reported
28	N031503-002ADUP	DUP	100	Hexavalent Chromium	08/03/18 12:29 PM	Reported
29	N031502-002C	SAMP	5	Hexavalent Chromium	08/03/18 12:38 PM	Reported
30	N031502-002CMS	MS	5	Hexavalent Chromium	08/03/18 12:48 PM	Reported
31	N031383-004A	SAMP	1	Hexavalent Chromium	08/03/18 12:57 PM	Not Reported
32	N031383-004AMS	MS	1	Hexavalent Chromium	08/03/18 1:06 PM	Not Reported
33	N031383-010A	SAMP	1	Hexavalent Chromium	08/03/18 1:16 PM	Not Reported
34	N031383-010AMS	MS	1	Hexavalent Chromium	08/03/18 1:25 PM	Not Reported
35	CCV-3	CCV	1	Hexavalent Chromium	08/03/18 1:35 PM	Reported
36	CCB-3	CCB	1	Hexavalent Chromium	08/03/18 1:44 PM	Reported
37	N031383-012A	SAMP	1	Hexavalent Chromium	08/03/18 1:54 PM	Not Reported
38	N031383-012AMS	MS	1	Hexavalent Chromium	08/03/18 2:03 PM	Not Reported
39	N031384-005A	SAMP	1	Hexavalent Chromium	08/03/18 2:13 PM	Not Reported
40	N031384-005AMS	MS	1	Hexavalent Chromium	08/03/18 2:22 PM	Not Reported
41	N031384-006A	SAMP	1	Hexavalent Chromium	08/03/18 2:32 PM	Not Reported
42	N031384-006AMS	MS	1	Hexavalent Chromium	08/03/18 2:41 PM	Not Reported

*Nancy* 8/16/2018

IC-07 RBA 8/7/2018 1:08 PM

*nba* 8/12/2018



**INJECTION LOG: 180803A**

**Instrument ID: IC-07**

<b>Sample No</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Peak Name</b>	<b>Injection Date/Time</b>	<b>Comments</b>
43	N031384-011A	SAMP	10	Hexavalent Chromium	08/03/18 2:51 PM	Not Reported
44	N031384-011AMS	MS	10	Hexavalent Chromium	08/03/18 3:00 PM	Not Reported
45	CCV-4	CCV1	1	Hexavalent Chromium	08/03/18 3:09 PM	Reported
46	CCB-4	CCB	1	Hexavalent Chromium	08/03/18 3:19 PM	Reported

### Injection Log Summary

**Sequence Details**

Name:	IC-07_180803A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	06/Aug/18 17:41:41
No. of Injections:	49	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		07/31/2018 10:12	Finished	BLANK
2	BLANK	2	1000	Unknown		07/31/2018 10:23	Finished	BLANK
3	iBLANK	3	1000	Unknown		07/31/2018 10:32	Finished	INSTRUMENT BLANK
4	STD1-0.2 ppb	5	1000	Calibration Standard	01	07/31/2018 10:48	Finished	0.2 ppb, IWST-180622A
5	STD2-1.0 ppb	6	1000	Calibration Standard	02	07/31/2018 10:59	Finished	1.0 ppb, IWST-180622A
6	STD3-5.0 ppb	7	1000	Calibration Standard	03	07/31/2018 11:09	Finished	5.0 ppb, IWST-180622A
7	STD4-10.0 ppb	8	1000	Calibration Standard	04	07/31/2018 11:18	Finished	10 ppb, IWST-180622A
8	STD5-15.0 ppb	9	1000	Calibration Standard	05	07/31/2018 11:28	Finished	15 ppb, IWST-180622A
9	STD6-20.0 ppb	10	1000	Calibration Standard	06	07/31/2018 11:37	Finished	20 ppb, IWST-180622A
10	BLANK	1	1000	Unknown		08/03/2018 09:25	Finished	BLANK
11	BLANK	2	1000	Unknown		08/03/2018 09:36	Finished	BLANK
12	CCV-1,CCV,1,	3	1000	Unknown		08/03/2018 09:45	Finished	CCV @5ppb, IWST-180622A
13	PQL@0.2ppb,CCV2,	4	1000	Unknown		08/03/2018 09:55	Finished	PQL @ 0.2ppb
14	CCB-1,CCB,1,	5	1000	Unknown		08/03/2018 10:04	Finished	CCB R180712C
15	MB-H2O,MBLK,1,	6	1000	Unknown		08/03/2018 10:13	Finished	MB R180712C
16	LCS-H2O,LCS,1,	7	1000	Unknown		08/03/2018 10:23	Finished	LCS, IWST-180622B
17	N031502-001B,SAMF	9	1000	Unknown		08/03/2018 10:43	Finished	SAMP,0.1>10mL
18	N031502-001BMS,MS	10	1000	Unknown		08/03/2018 10:54	Finished	MS (5ppb), IWST-180622B,0.1
19	N031502-001BMSD,N	11	1000	Unknown		08/03/2018 11:03	Finished	MSD (5ppb), IWST-180622B,0.
20	N031502-002C,SAMF	12	1000	Unknown		08/03/2018 11:13	Finished	SAMP,10mL
21	N031502-002CMS,MS	13	1000	Unknown		08/03/2018 11:22	Finished	MS (1ppb), IWST-180622B,10
22	N031503-002A,SAMF	14	1000	Unknown		08/03/2018 11:32	Finished	SAMP,0.1>10mL
23	N031503-002AMS,MS	15	1000	Unknown		08/03/2018 11:41	Finished	MS (5ppb), IWST-180622B,0.1
24	CCV-2,CCV1,1,	16	1000	Unknown		08/03/2018 11:51	Finished	CCV @10ppb, IWST-180622A
25	CCB-2,CCB,1,	17	1000	Unknown		08/03/2018 12:00	Finished	CCB R180712C
26	N031503-001A,SAMF	18	1000	Unknown		08/03/2018 12:10	Finished	SAMP,10mL
27	N031503-001AMS,MS	19	1000	Unknown		08/03/2018 12:19	Finished	MS (1ppb), IWST-180622B,10
28	N031503-002ADUP,D	20	1000	Unknown		08/03/2018 12:29	Finished	DUP,0.1>10mL
29	N031502-002C,SAMF	21	1000	Unknown		08/03/2018 12:38	Finished	SAMP,2>10mL
30	N031502-002CMS,MS	22	1000	Unknown		08/03/2018 12:48	Finished	MS (1ppb), IWST-180622B,2>1
31	N031383-004A,SAMF	23	1000	Unknown		08/03/2018 12:57	Finished	SAMP,10mL
32	N031383-004AMS,MS	24	1000	Unknown		08/03/2018 13:06	Finished	MS (1ppb), IWST-180622B,10
33	N031383-010A,SAMF	25	1000	Unknown		08/03/2018 13:16	Finished	SAMP,10mL
34	N031383-010AMS,MS	26	1000	Unknown		08/03/2018 13:25	Finished	MS (1ppb), IWST-180622B,10
35	CCV-3,CCV,1,	27	1000	Unknown		08/03/2018 13:35	Finished	CCV @5ppb, IWST-180622A
36	CCB-3,CCB,1,	28	1000	Unknown		08/03/2018 13:44	Finished	CCB R180712C
37	N031383-012A,SAMF	29	1000	Unknown		08/03/2018 13:54	Finished	SAMP,10mL
38	N031383-012AMS,MS	30	1000	Unknown		08/03/2018 14:03	Finished	MS (1ppb), IWST-180622B,10
39	N031384-005A,SAMF	31	1000	Unknown		08/03/2018 14:13	Finished	SAMP,10mL
40	N031384-005AMS,MS	32	1000	Unknown		08/03/2018 14:22	Finished	MS (1ppb), IWST-180622B,10
41	N031384-006A,SAMF	33	1000	Unknown		08/03/2018 14:32	Finished	SAMP,10mL
42	N031384-006AMS,MS	34	1000	Unknown		08/03/2018 14:41	Finished	MS (1ppb), IWST-180622B,10
43	N031384-011A,SAMF	35	1000	Unknown		08/03/2018 14:51	Finished	SAMP,1>10mL
44	N031384-011AMS,MS	36	1000	Unknown		08/03/2018 15:00	Finished	MS (5ppb), IWST-180622B,1>1
45	CCV-4,CCV1,1,	37	1000	Unknown		08/03/2018 15:09	Finished	CCV @10ppb, IWST-180622A
46	CCB-4,CCB,1,	38	1000	Unknown		08/03/2018 15:19	Finished	CCB R180712C
47	SHUTDOWN	39	1000	Unknown		08/03/2018 15:28	Finished	
48	Eluent: R180730A	40	1000	Unknown		n.a.	Finished	Eluent
49	PCR: R180730B	41	1000	Unknown		n.a.	Finished	Post-Column Reagent

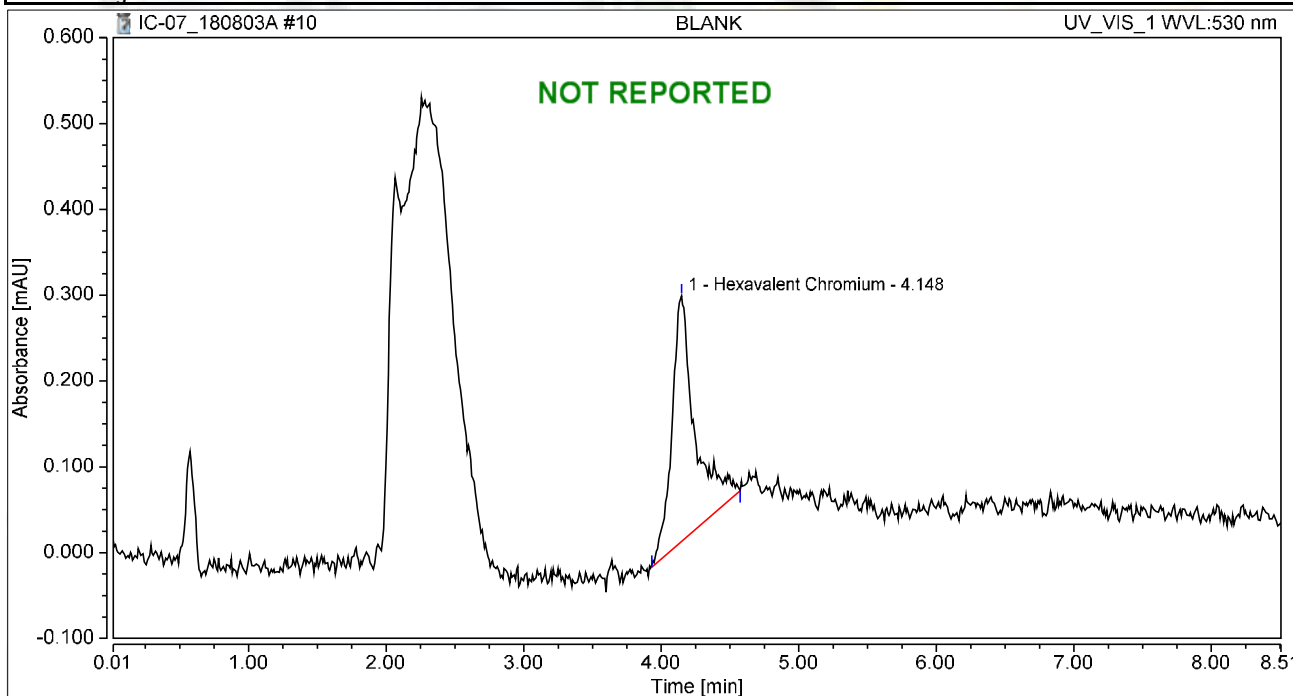
rba 8/12/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.49
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 09:25	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

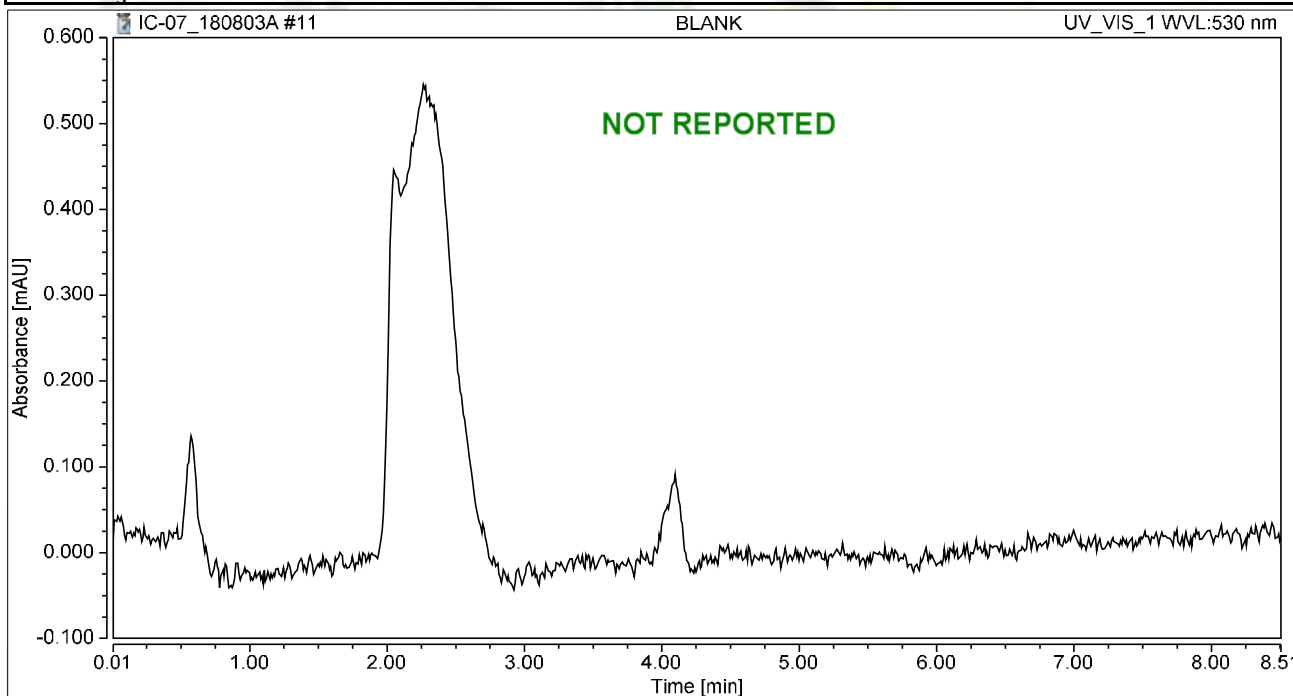
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	0.056	0.286	100.00	100.00	0.2184
<b>Total:</b>			<b>0.056</b>	<b>0.286</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 09:36	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

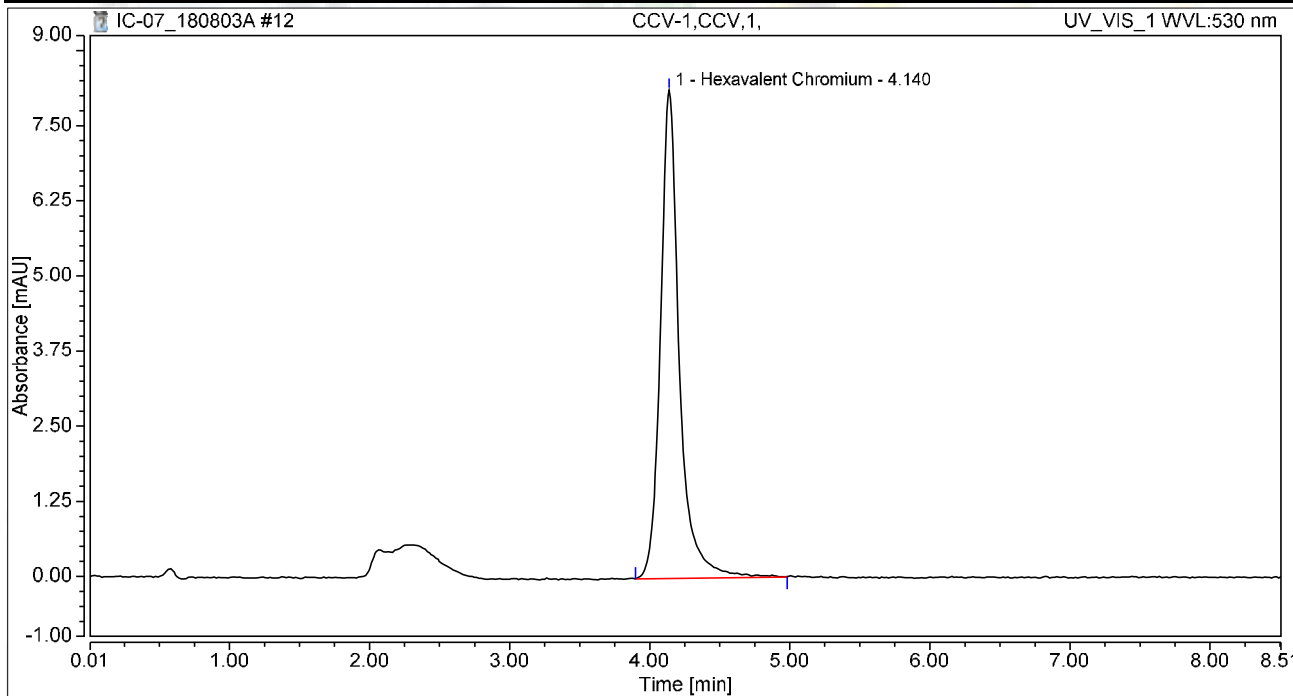
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-1,CCV,1,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 09:45	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

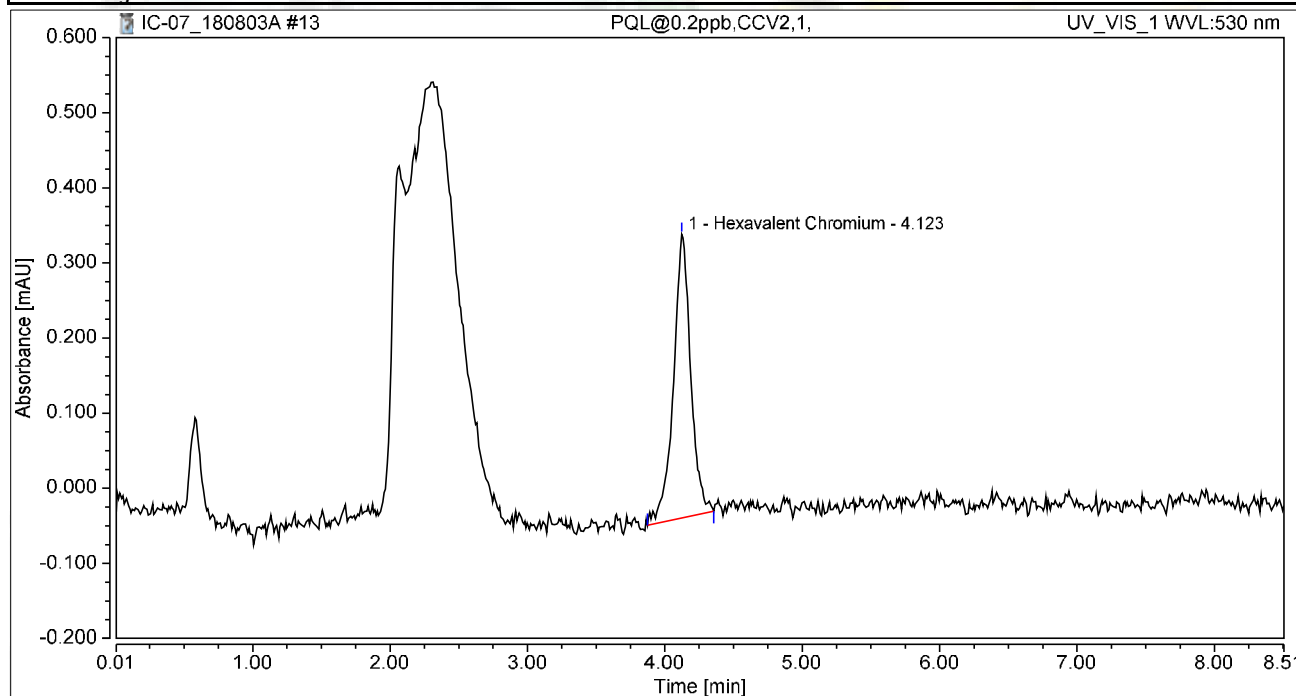
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.274	8.125	100.00	100.00	4.9950
<b>Total:</b>			<b>1.274</b>	<b>8.125</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 09:55	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

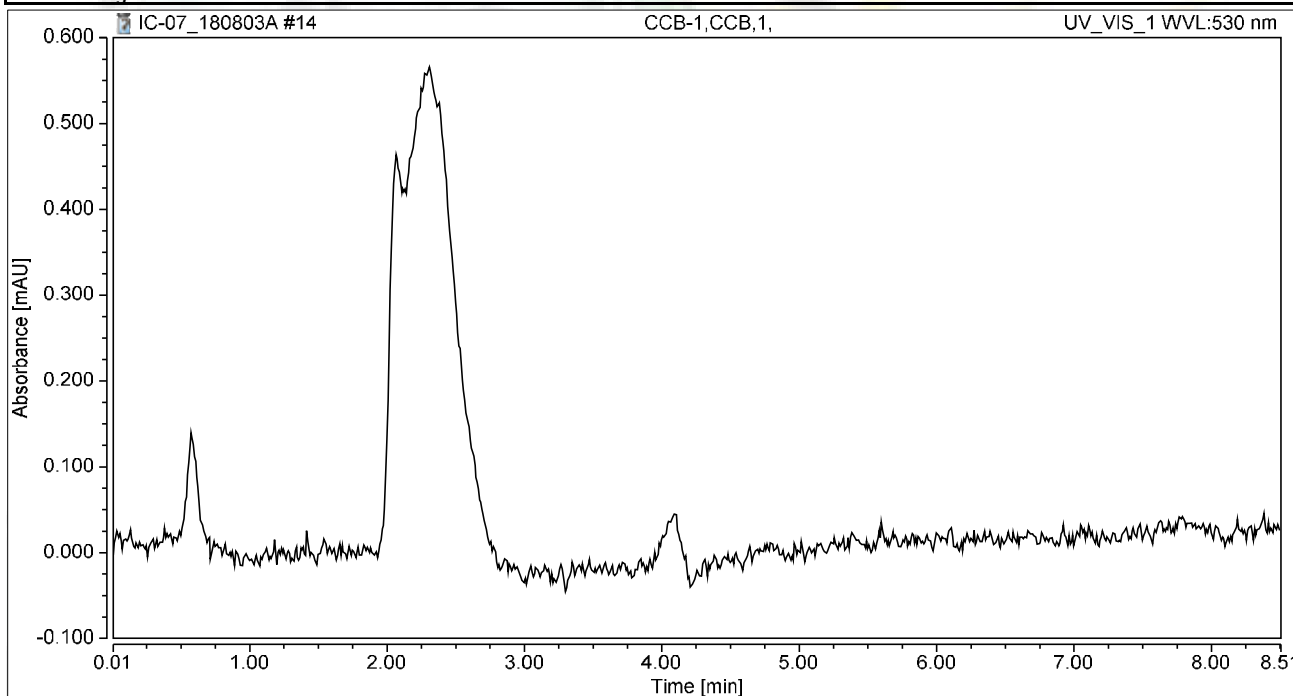
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.055	0.377	100.00	100.00	0.2146
<b>Total:</b>			<b>0.055</b>	<b>0.377</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-1,CCB,1,	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 10:04	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

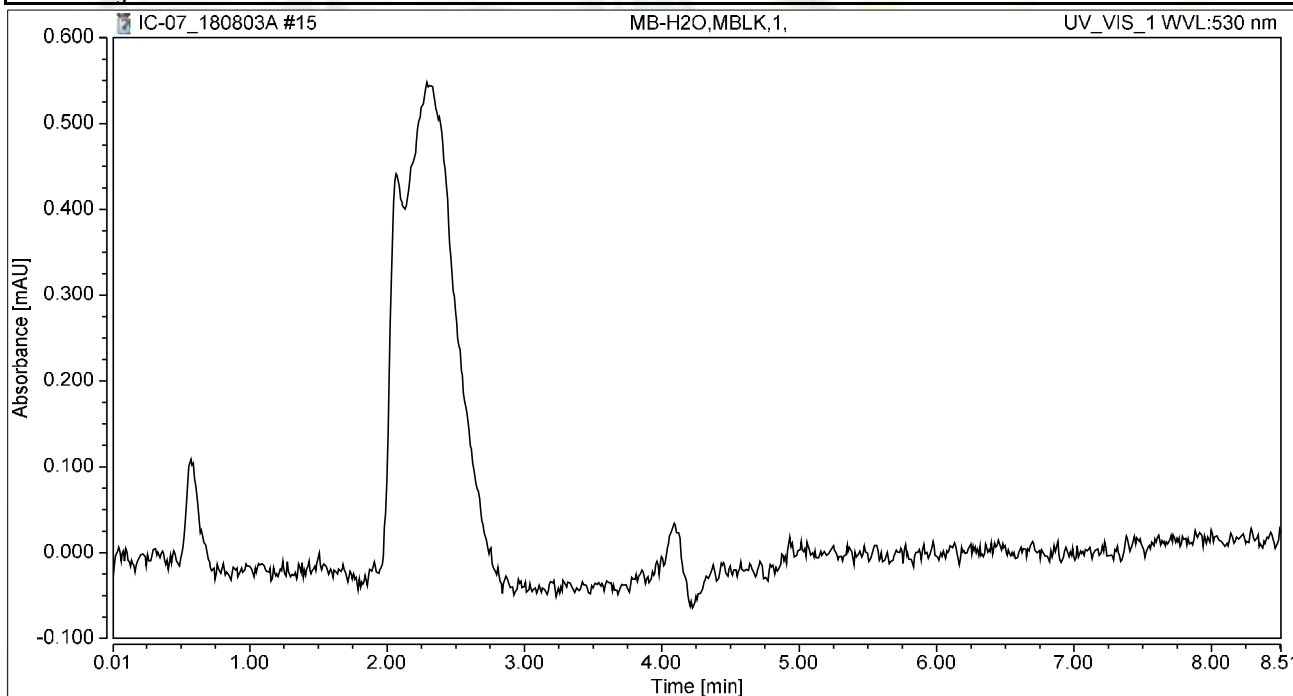
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	MB-H2O,MBLK,1,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 10:13	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

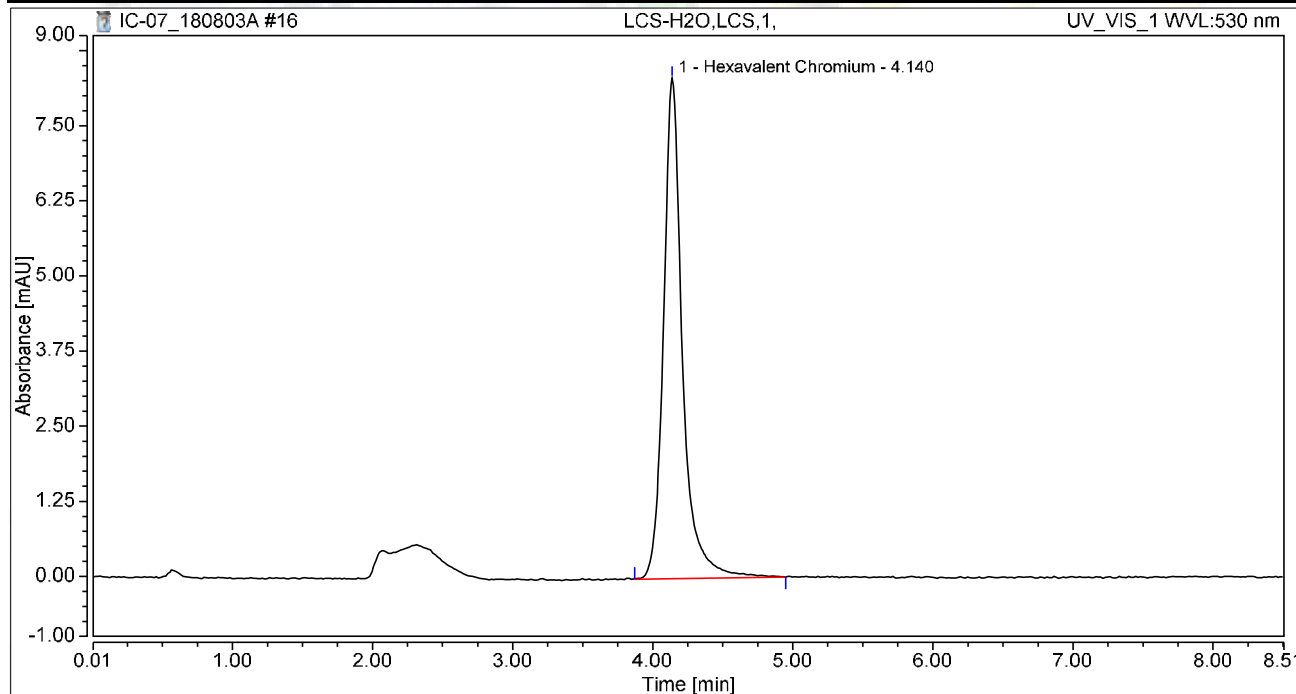


### Chromatogram and Results

**Injection Details**

Injection Name:	LCS-H2O,LCS,1,	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 10:23	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

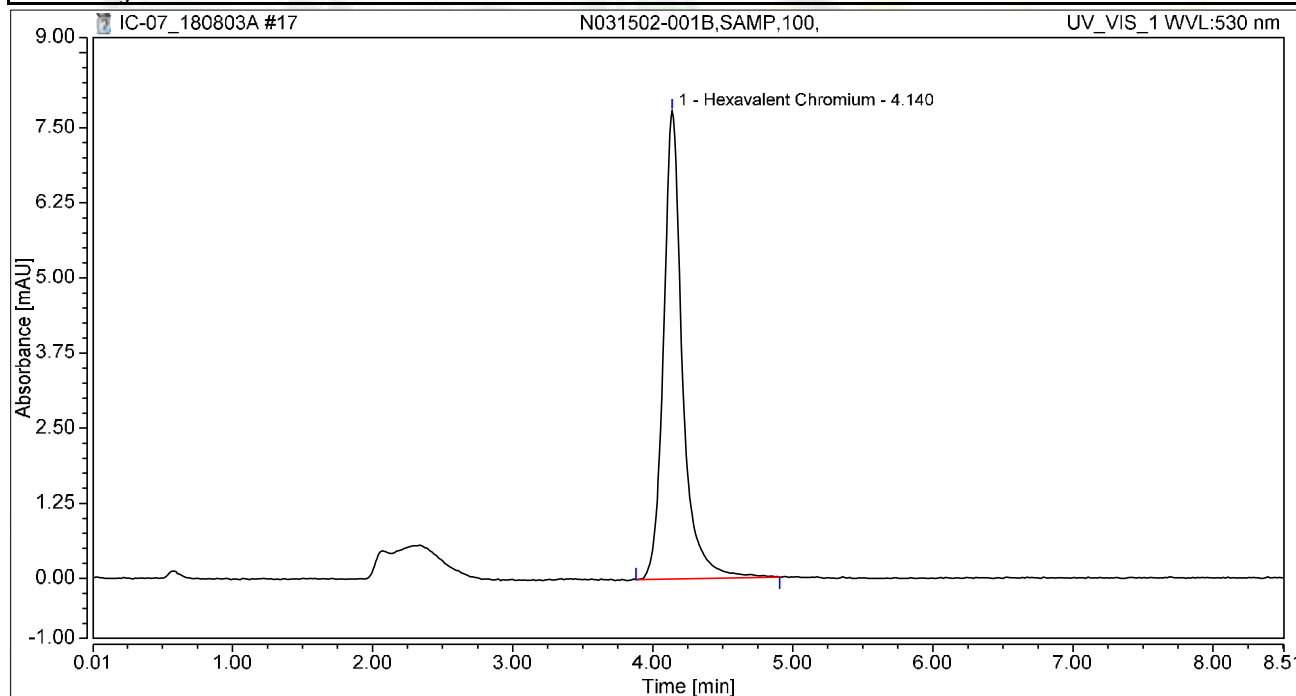
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.308	8.333	100.00	100.00	5.1286
<b>Total:</b>			<b>1.308</b>	<b>8.333</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031502-001B,SAMP,100,	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 10:43	Sample Weight:	1.0000

**Chromatogram**



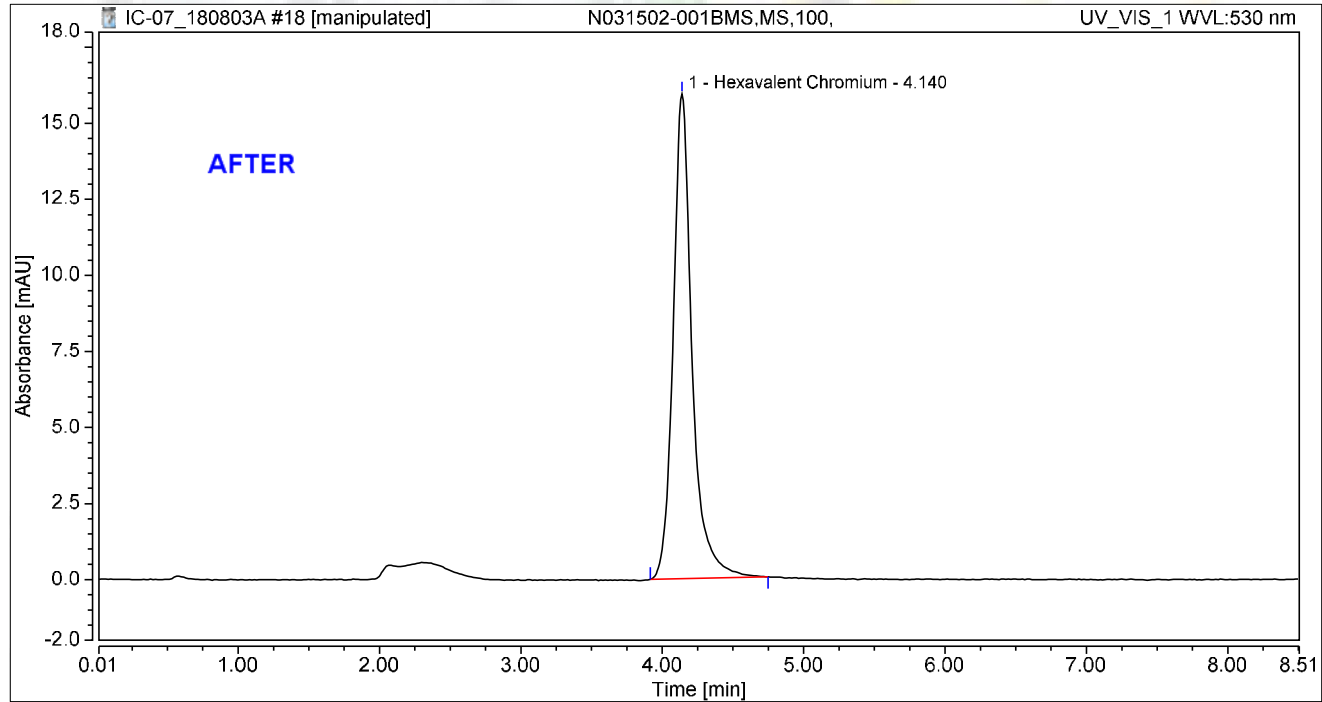
**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.224	7.791	100.00	100.00	4.8009
<b>Total:</b>			<b>1.224</b>	<b>7.791</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

Injection Details		
Injection Name:	N031502-001BMS,MS,100,	Run Time (min): 8.49
Vial Number:	10	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	03/Aug/18 10:54	Sample Weight: 1.0000

### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	2.463	15.930	100.00	100.00	9.6577
<b>Total:</b>			<b>2.463</b>	<b>15.930</b>	<b>100.00</b>	<b>100.00</b>	

jba 8/12/2018

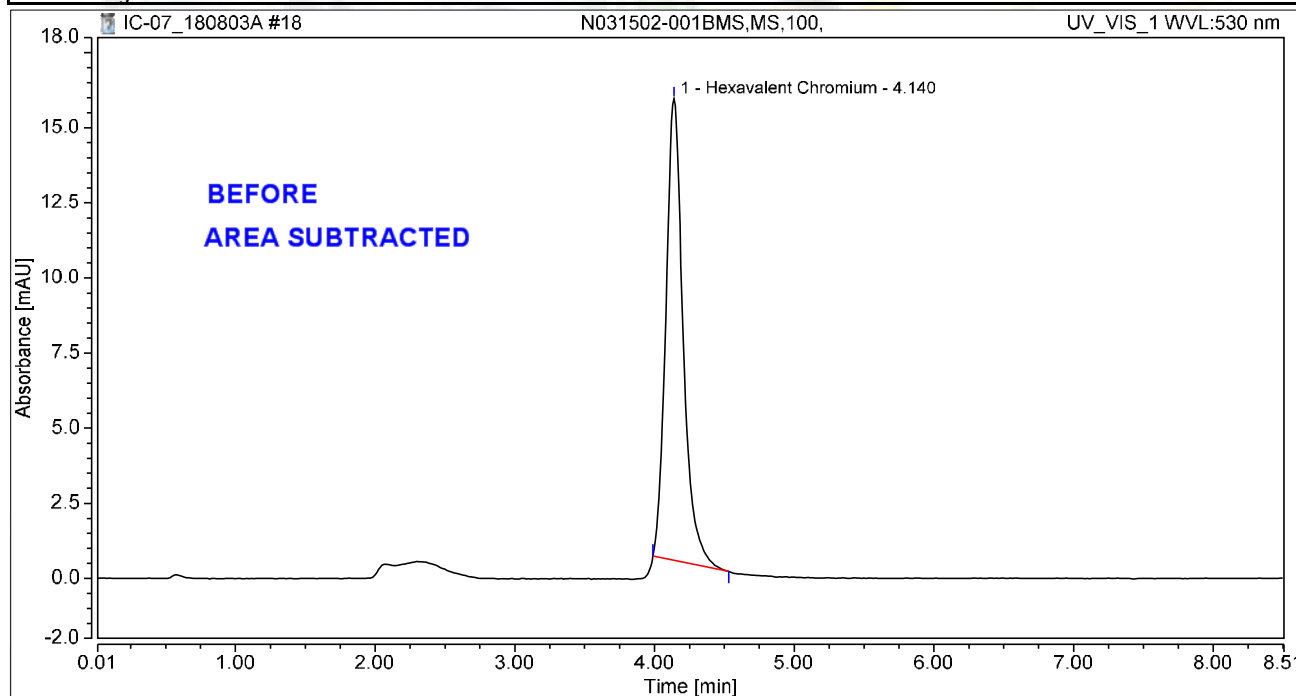
Reviewed by:  
*Donney* 8/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031502-001BMS,MS,100,	Run Time (min):	8.49
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 10:54	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

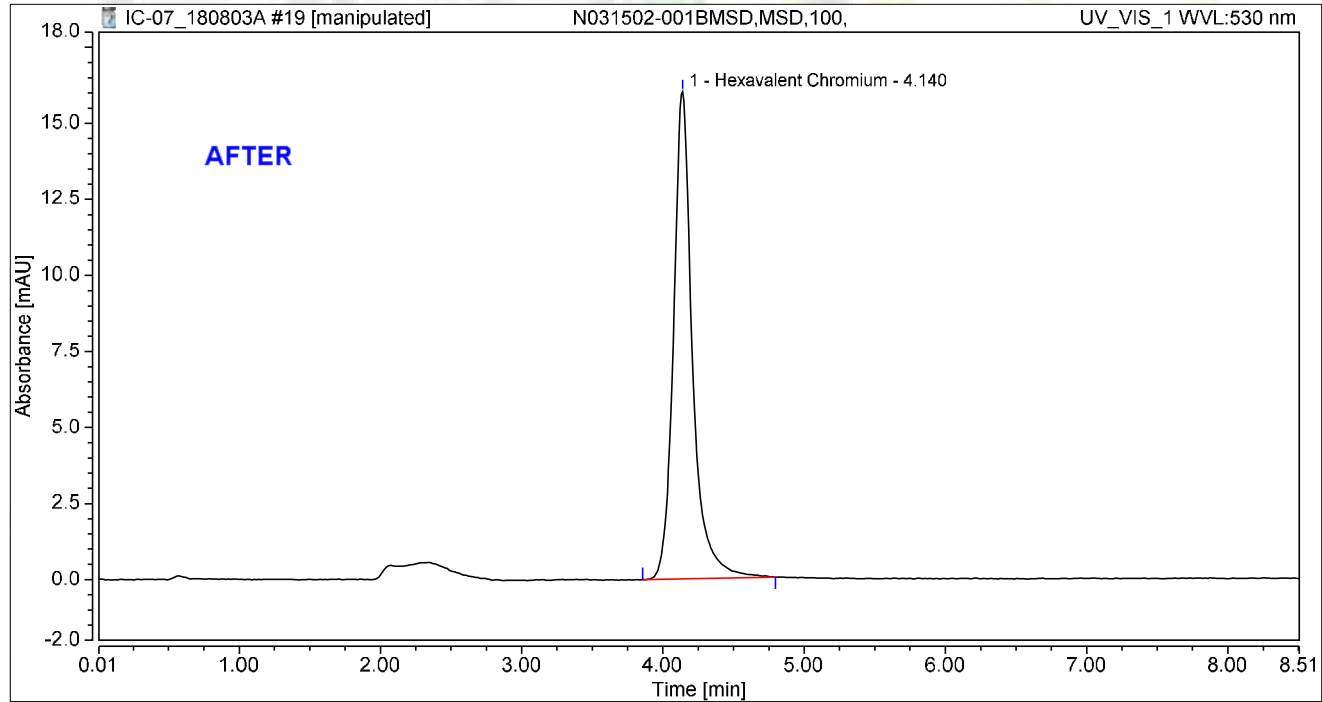
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	2.195	15.364	100.00	100.00	8.6081
<b>Total:</b>			<b>2.195</b>	<b>15.364</b>	<b>100.00</b>	<b>100.00</b>	

rba 8/12/2018

### Chromatogram and Results

Injection Details		
Injection Name:	N031502-001BMSD,MSD,100,	Run Time (min): 8.50
Vial Number:	11	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	03/Aug/18 11:03	Sample Weight: 1.0000

### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	2.494	16.020	100.00	100.00	9.7802
<b>Total:</b>			<b>2.494</b>	<b>16.020</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 8/12/2018

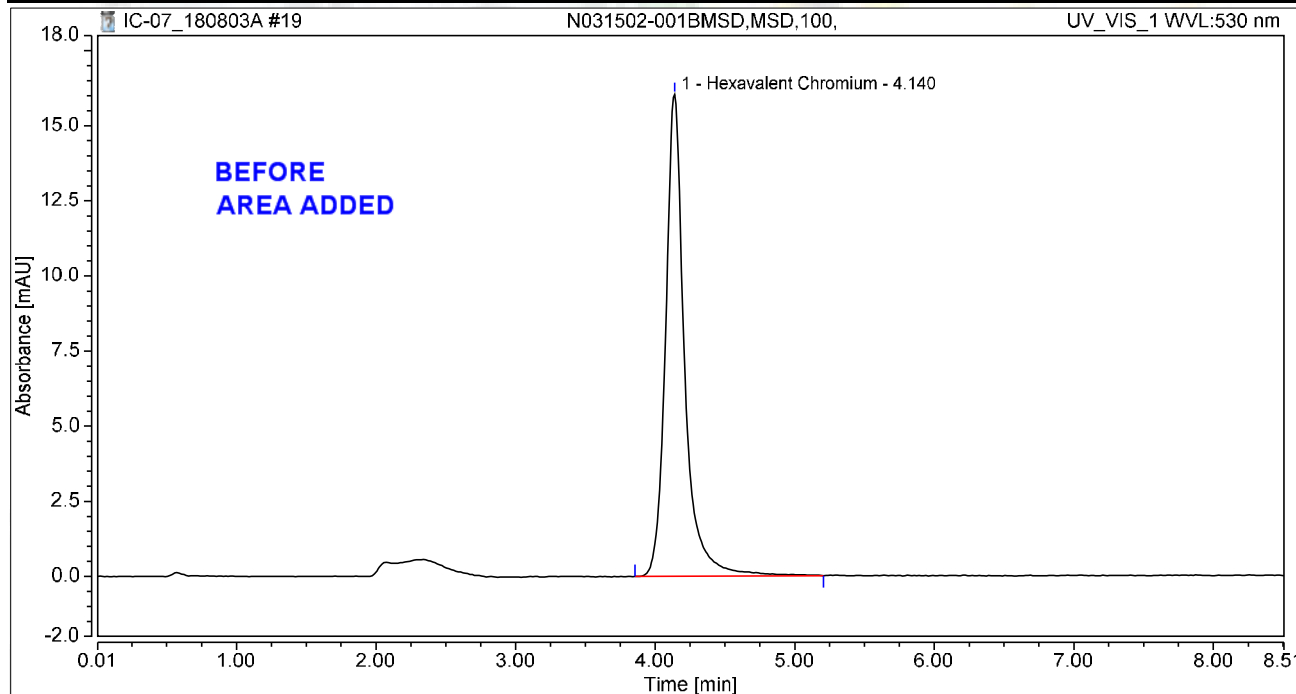
Reviewed by:  
*Nancy* 8/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031502-001BMSD,MSD,100,	Run Time (min):	8.50
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 11:03	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	2.545	16.043	100.00	100.00	9.9774
<b>Total:</b>			<b>2.545</b>	<b>16.043</b>	<b>100.00</b>	<b>100.00</b>	

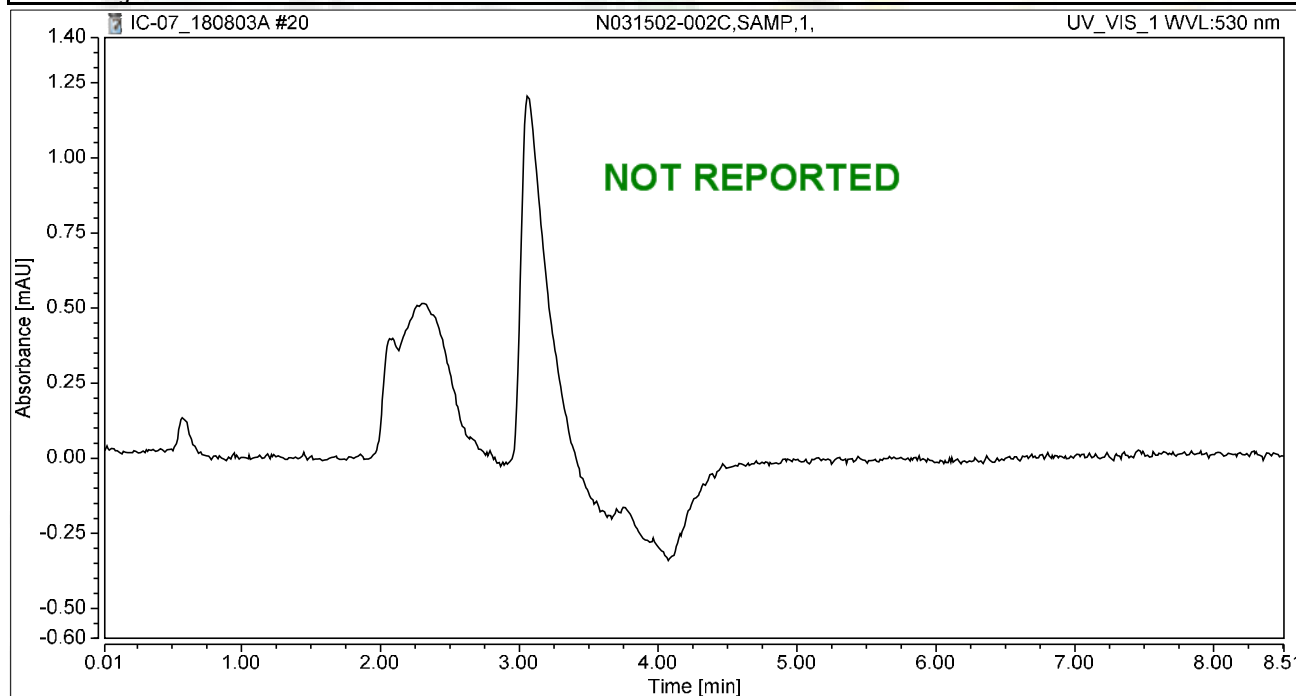
rba 8/12/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031502-002C,SAMP,1,	Run Time (min):	8.49
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 11:13	Sample Weight:	1.0000

**Chromatogram**



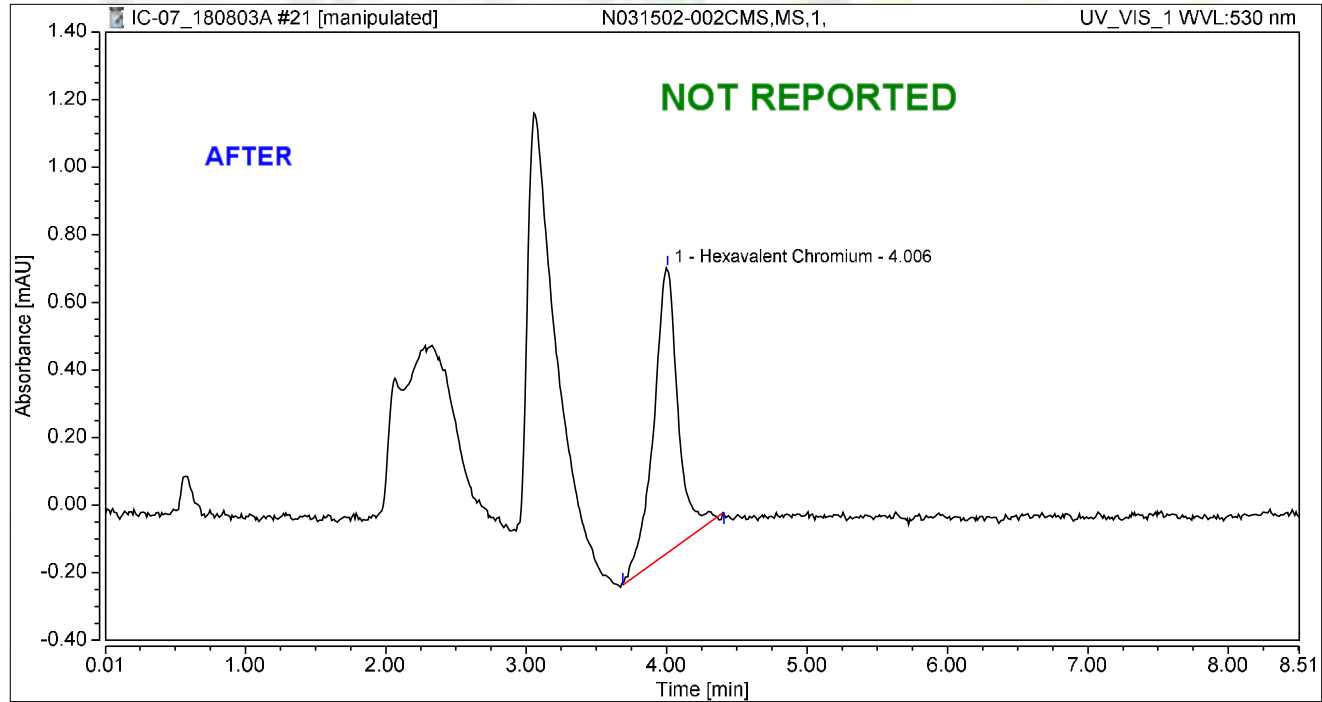
**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

Injection Details		
Injection Name:	N031502-002CMS,MS,1,	Run Time (min): 8.50
Vial Number:	13	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	03/Aug/18 11:22	Sample Weight: 1.0000

### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.006	0.169	0.843	100.00	100.00	0.6623
<b>Total:</b>			<b>0.169</b>	<b>0.843</b>	<b>100.00</b>	<b>100.00</b>	

rba 8/12/2018

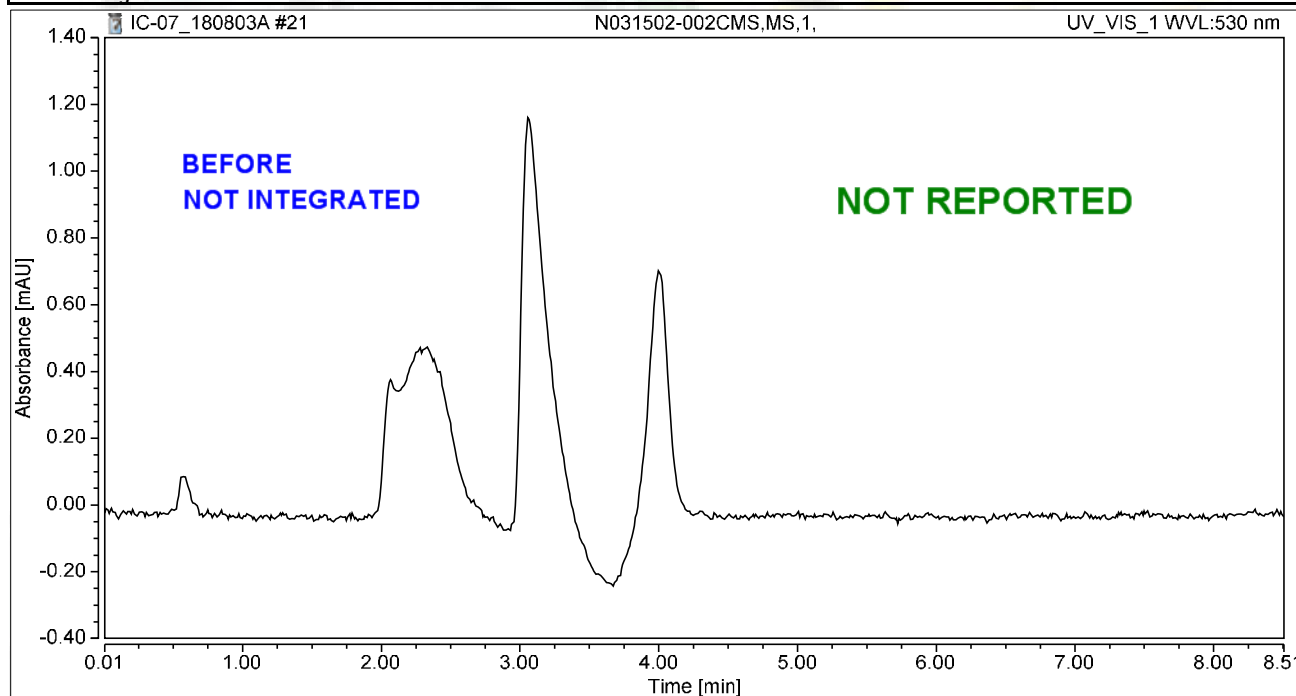


### Chromatogram and Results

#### Injection Details

Injection Name:	N031502-002CMS,MS,1,	Run Time (min):	8.50
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 11:22	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

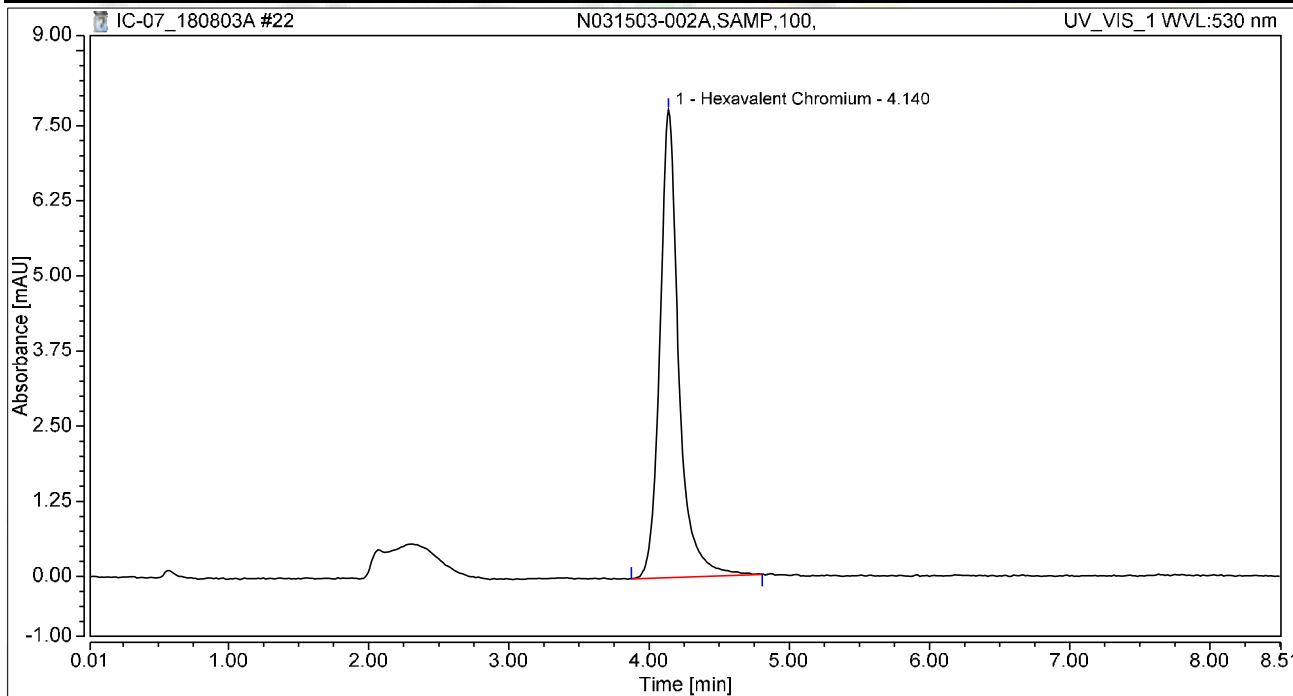
*jba* 8/12/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031503-002A,SAMP,100,	Run Time (min):	8.49
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 11:32	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

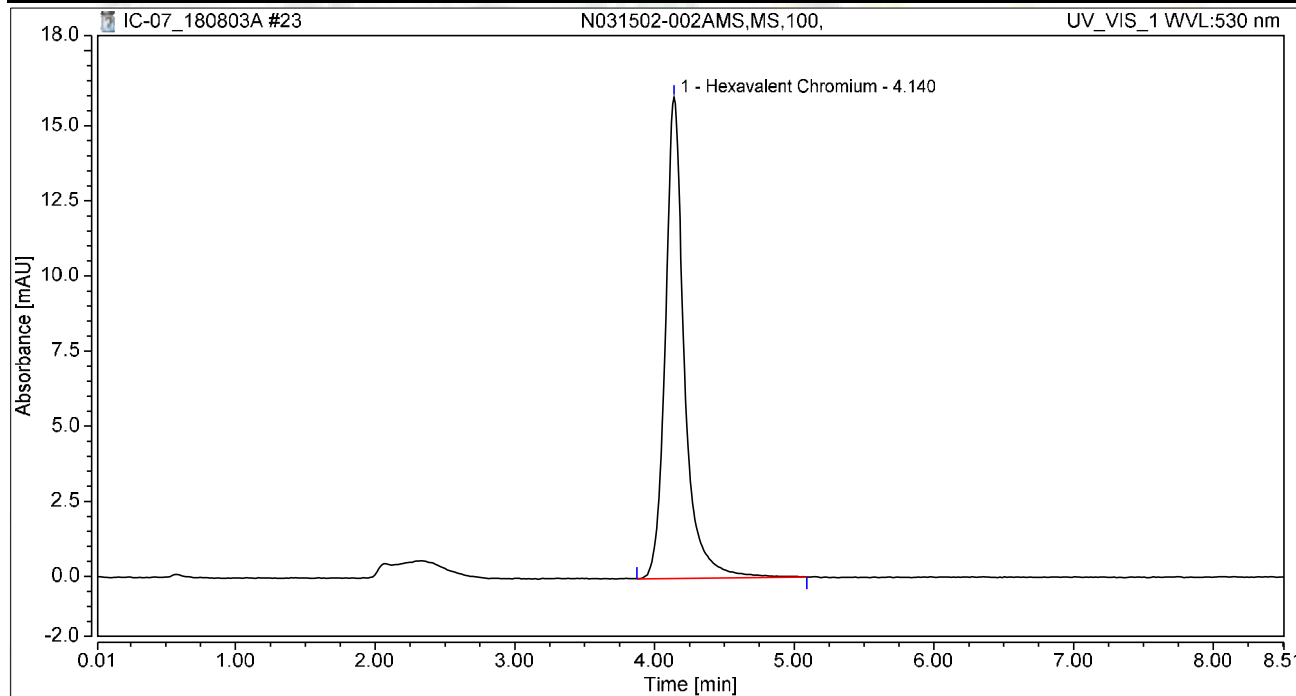
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.214	7.781	100.00	100.00	4.7617
<b>Total:</b>			<b>1.214</b>	<b>7.781</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031502-002AMS,MS,100,	Run Time (min):	8.49
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 11:41	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

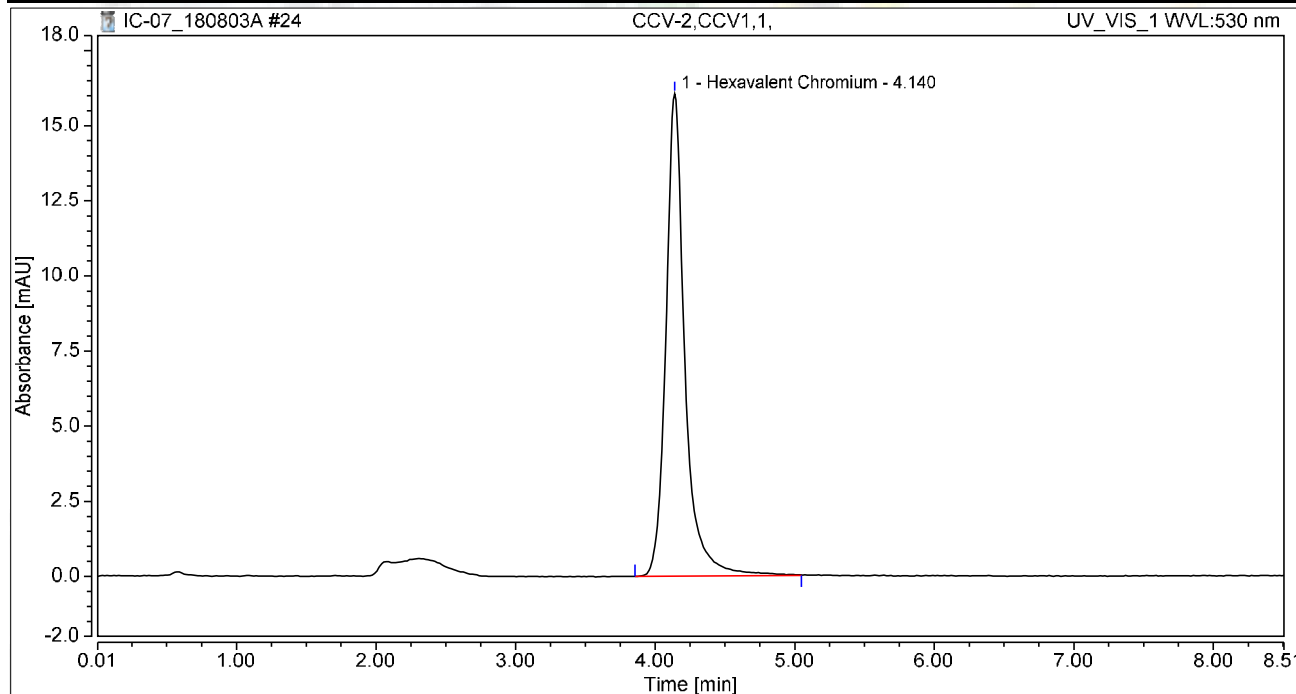
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	2.536	16.013	100.00	100.00	9.9434
<b>Total:</b>			<b>2.536</b>	<b>16.013</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-2,CCV1,1,	Run Time (min):	8.50
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 11:51	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

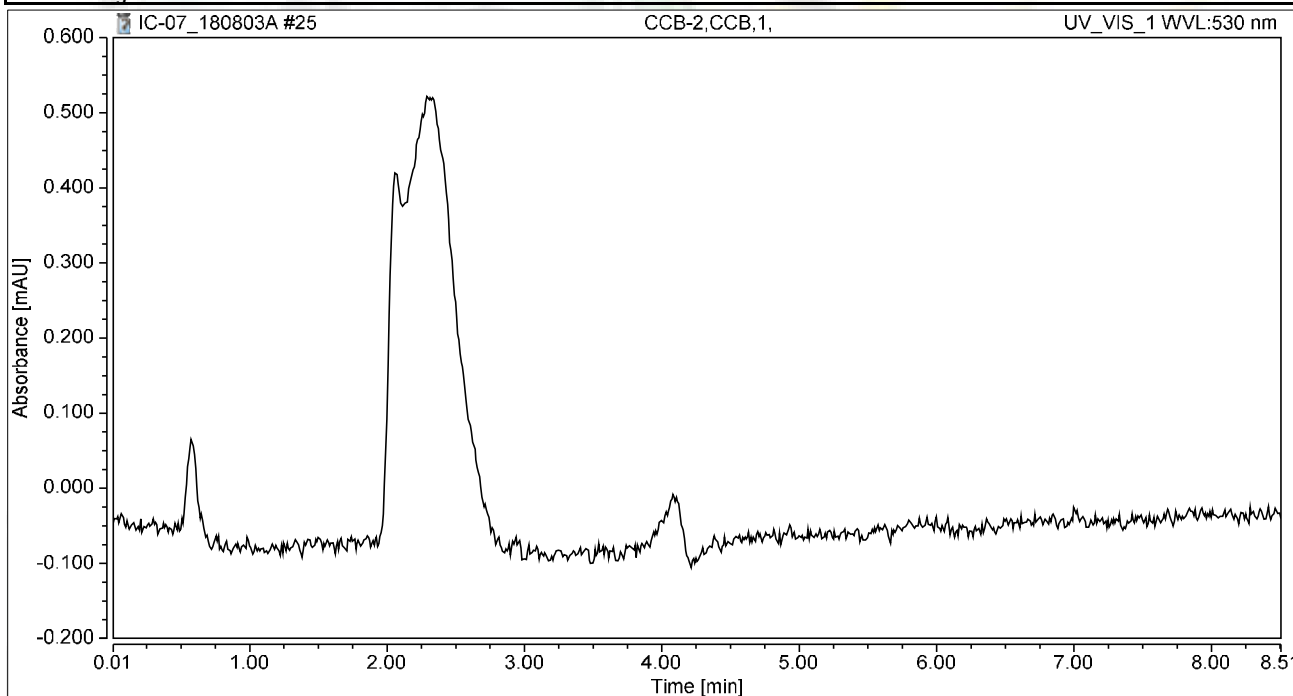
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	2.531	16.058	100.00	100.00	9.9240
<b>Total:</b>			<b>2.531</b>	<b>16.058</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-2,CCB,1,	Run Time (min):	8.50
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 12:00	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

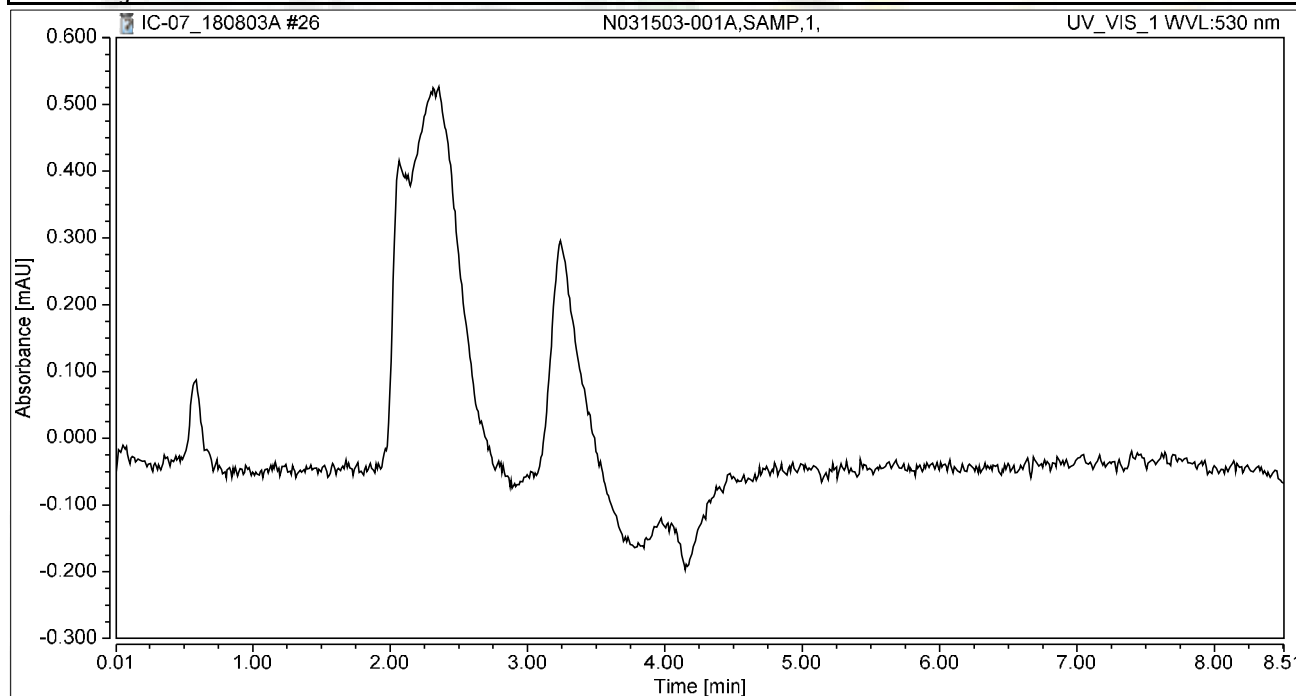
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031503-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	18	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 12:10	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

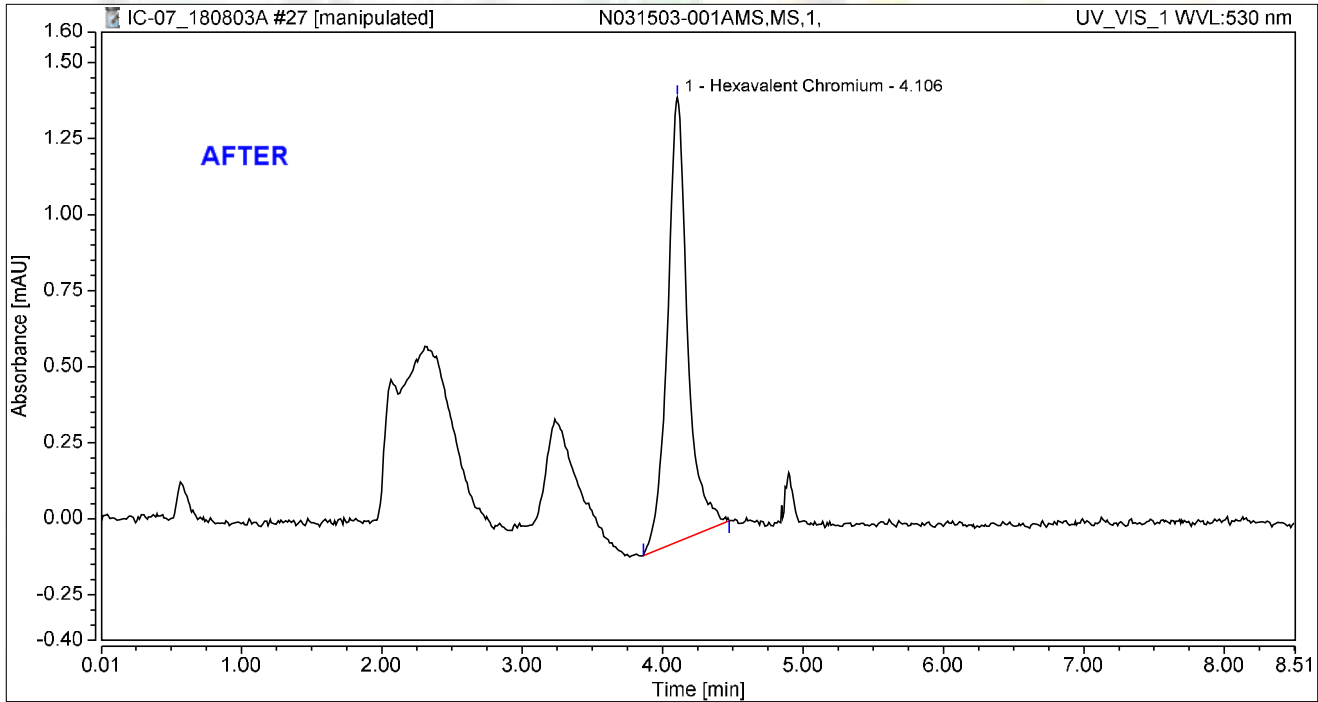
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031503-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 12:19	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.243	1.461	100.00	100.00	0.9519
<b>Total:</b>			<b>0.243</b>	<b>1.461</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 8/12/2018

Reviewed by:

*Harvey* 8/16/2018

My first report/Integration

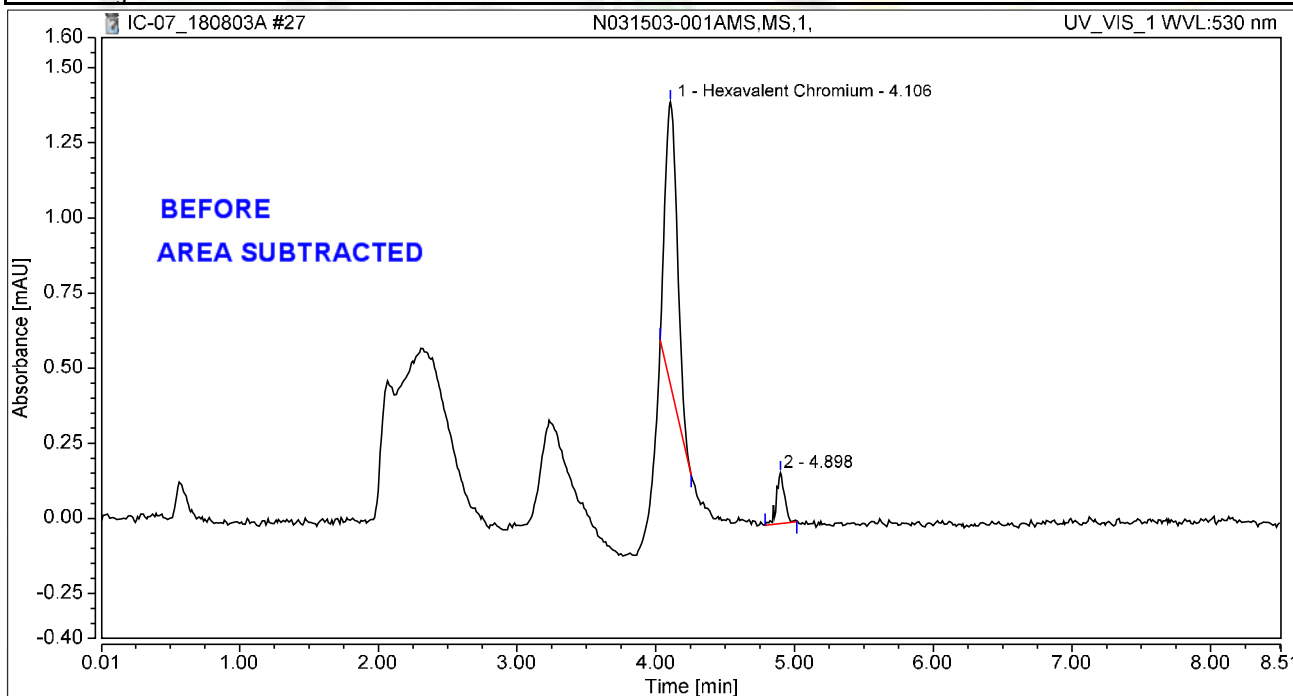
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	N031503-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 12:19	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.097	0.942	89.43	84.83	0.3794
2		4.898	0.011	0.168	10.57	15.17	n.a.
<b>Total:</b>			<b>0.108</b>	<b>1.110</b>	<b>100.00</b>	<b>100.00</b>	

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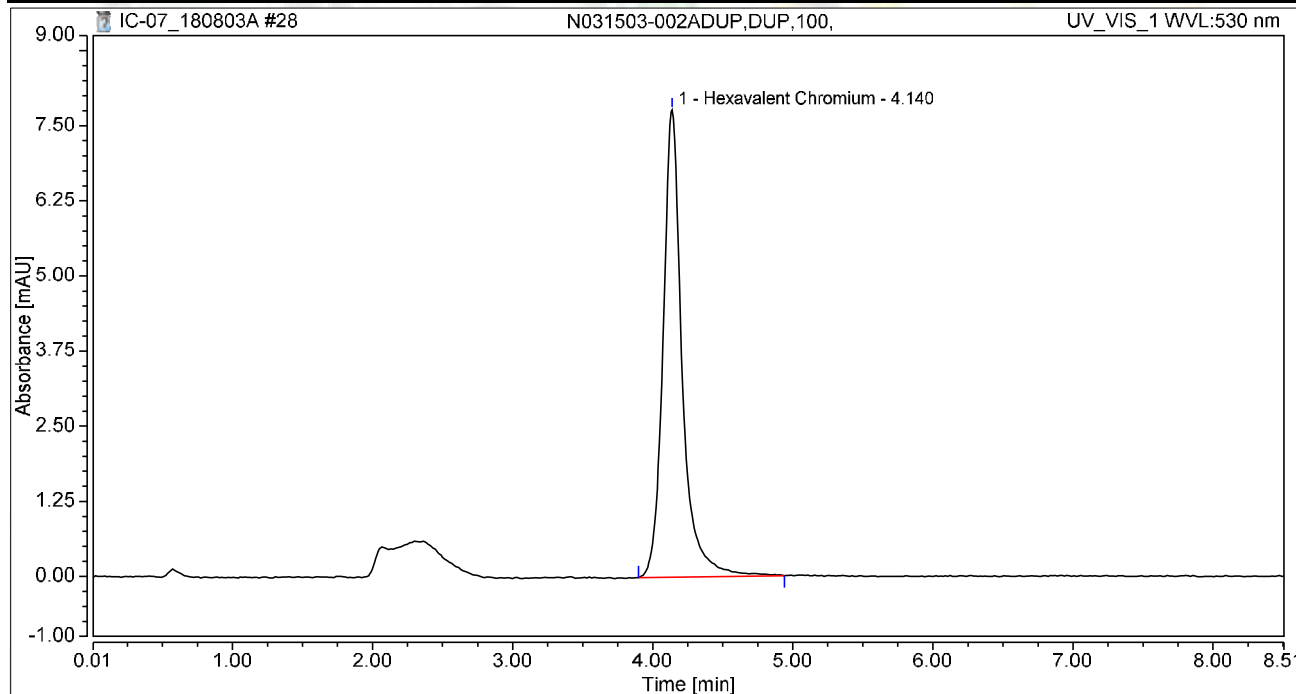


### Chromatogram and Results

**Injection Details**

Injection Name:	N031503-002ADUP,DUP,100,	Run Time (min):	8.50
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 12:29	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

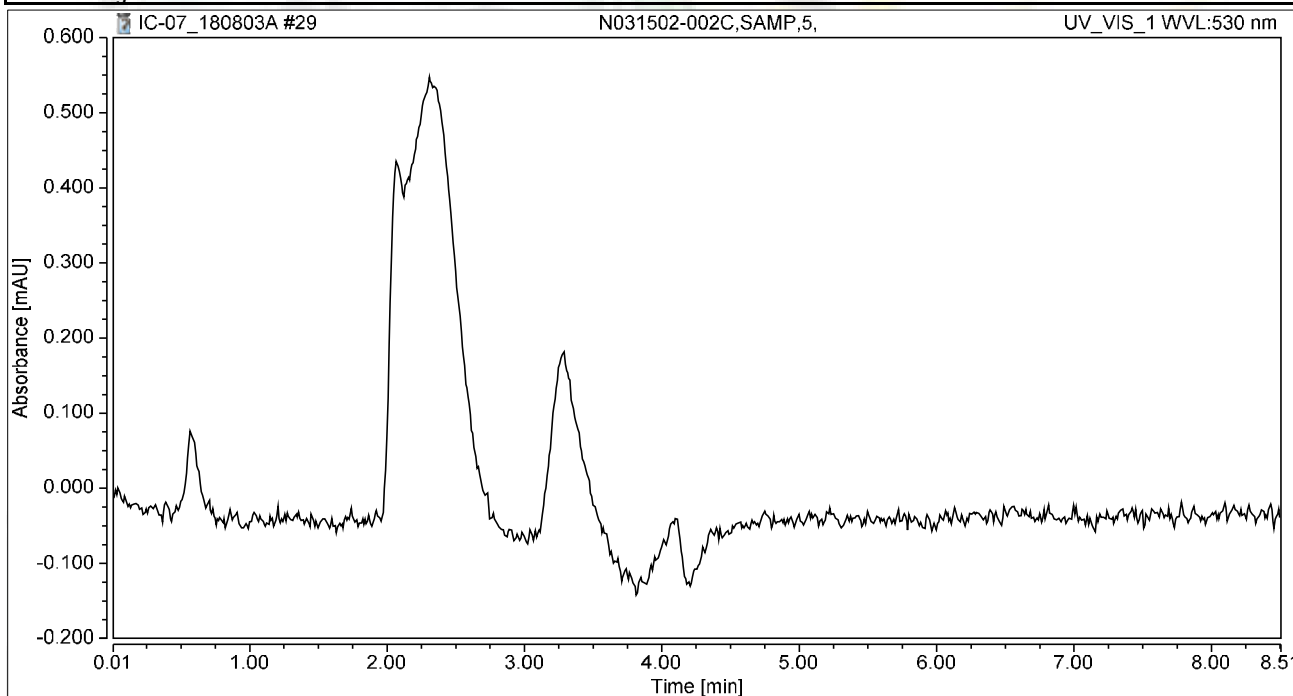
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.233	7.781	100.00	100.00	4.8349
<b>Total:</b>			<b>1.233</b>	<b>7.781</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031502-002C,SAMP,5,	Run Time (min):	8.50
Vial Number:	21	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 12:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

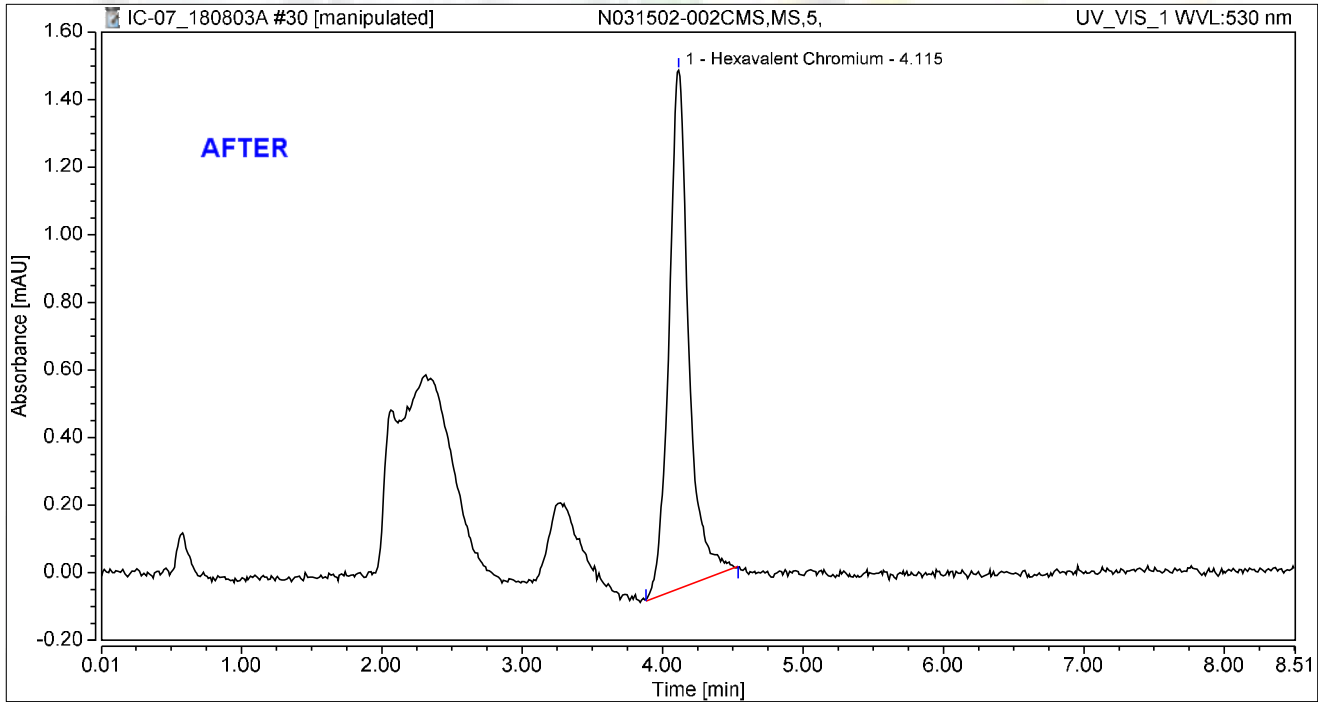
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031502-002CMS,MS,5,	Run Time (min):	8.50
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 12:48	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.252	1.535	100.00	100.00	0.9867
<b>Total:</b>			<b>0.252</b>	<b>1.535</b>	<b>100.00</b>	<b>100.00</b>	

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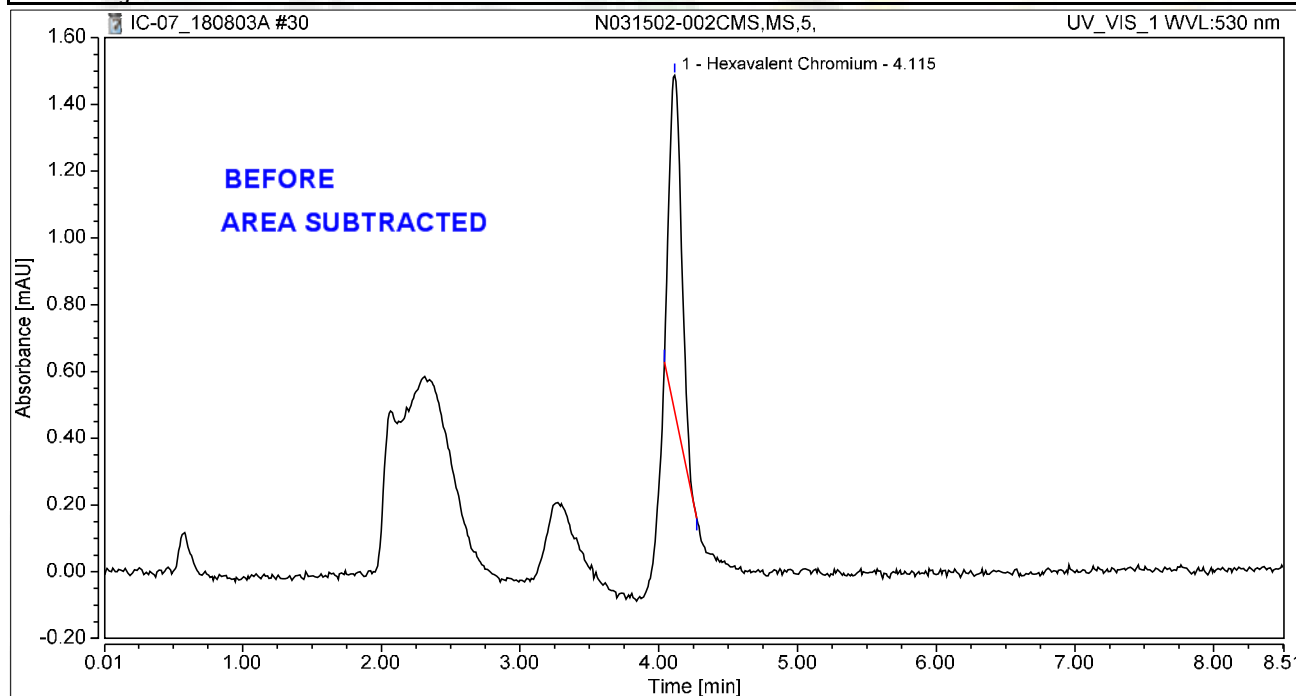
Reviewed by:  
*Marcy* 8/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031502-002CMS,MS,5,	Run Time (min):	8.50
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 12:48	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

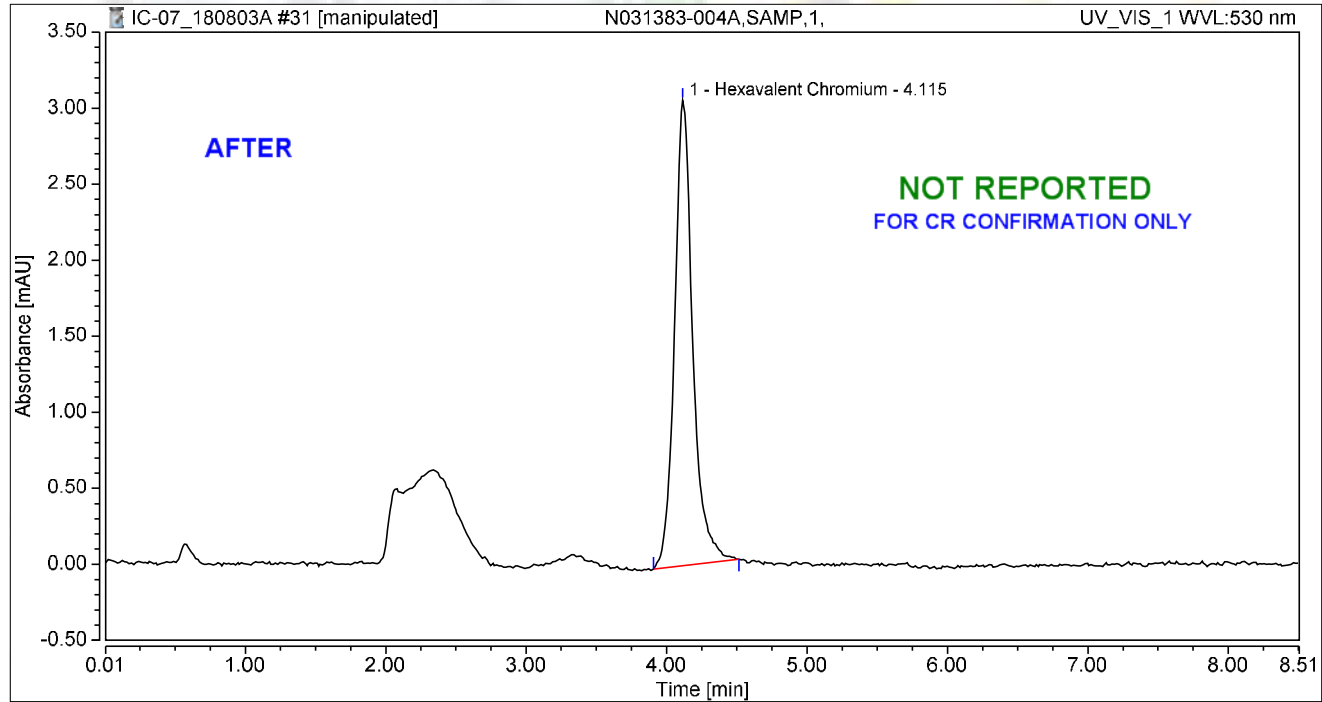
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.105	1.009	100.00	100.00	0.4124
<b>Total:</b>			<b>0.105</b>	<b>1.009</b>	<b>100.00</b>	<b>100.00</b>	

jba 8/12/2018

### Chromatogram and Results

Injection Details		
Injection Name:	N031383-004A,SAMP,1,	Run Time (min): 8.50
Vial Number:	23	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	03/Aug/18 12:57	Sample Weight: 1.0000

### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.459	3.059	100.00	100.00	1.7989
<b>Total:</b>			<b>0.459</b>	<b>3.059</b>	<b>100.00</b>	<b>100.00</b>	

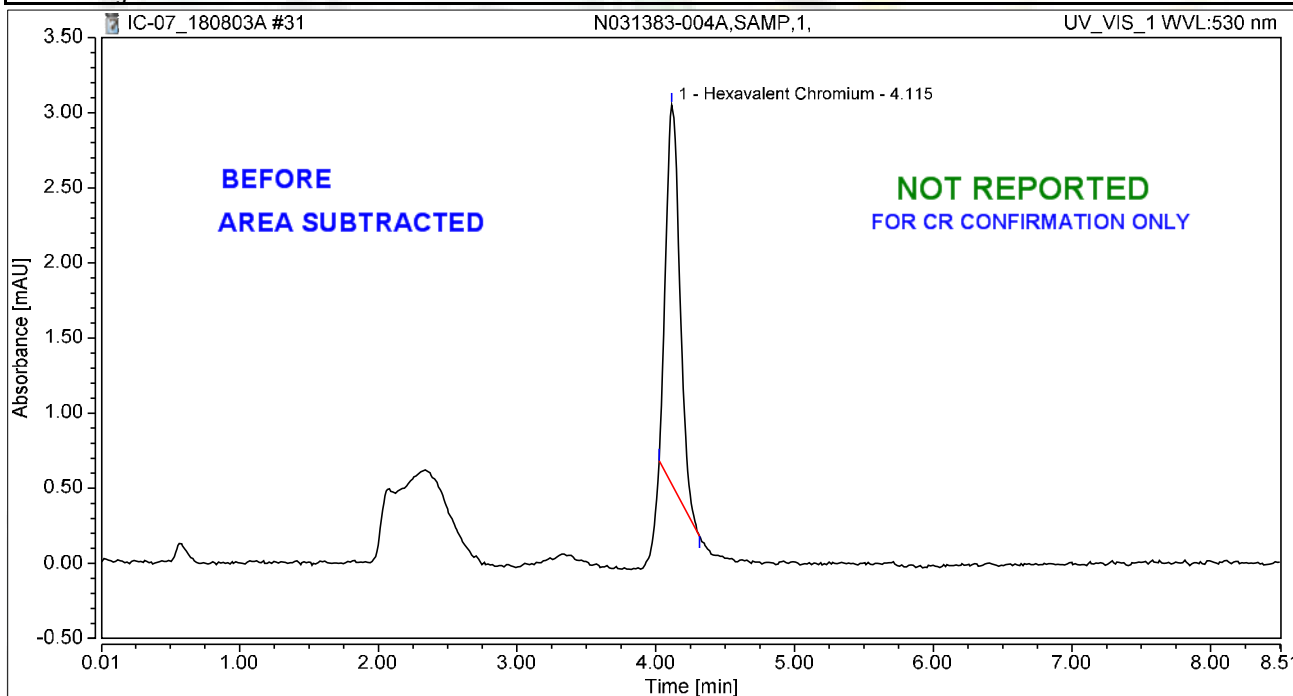
*rba* 8/12/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031383-004A,SAMP,1,	Run Time (min):	8.50
Vial Number:	23	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 12:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.298	2.524	100.00	100.00	1.1693
<b>Total:</b>			<b>0.298</b>	<b>2.524</b>	<b>100.00</b>	<b>100.00</b>	

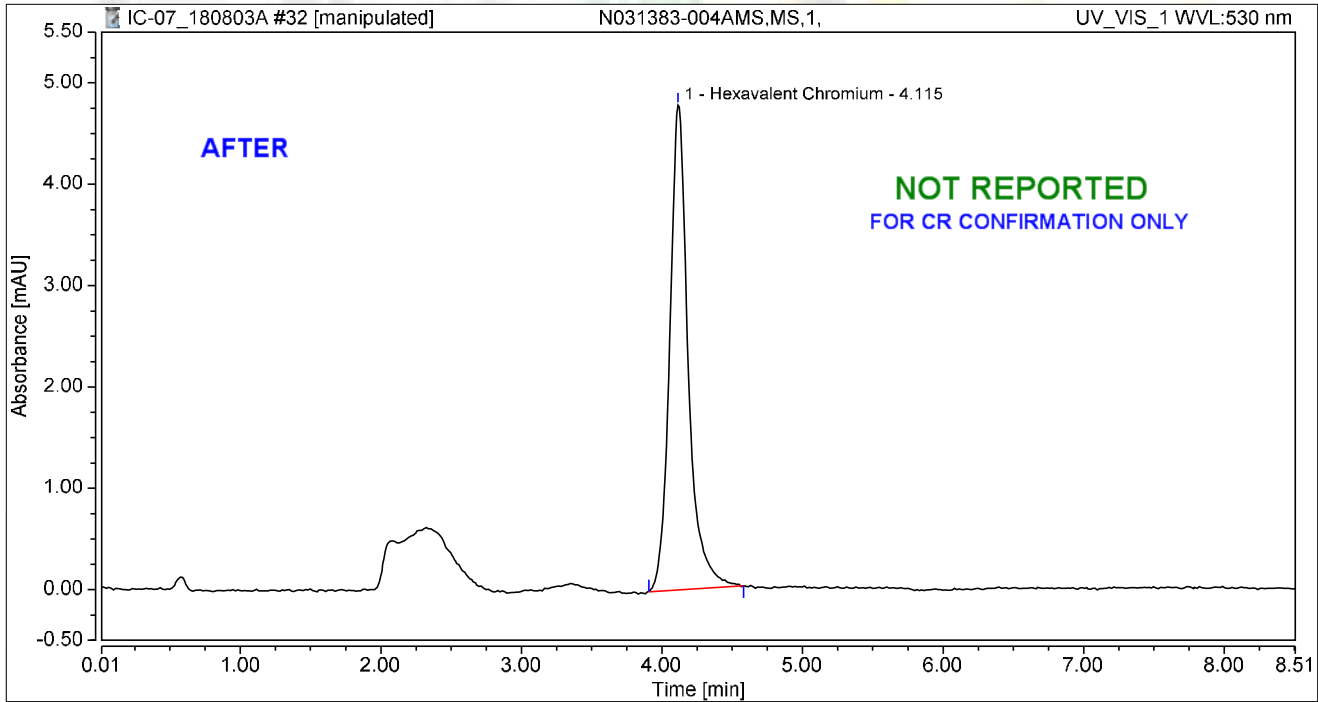
rba 8/12/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031383-004AMS,MS,1,	Run Time (min):	8.49
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 13:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

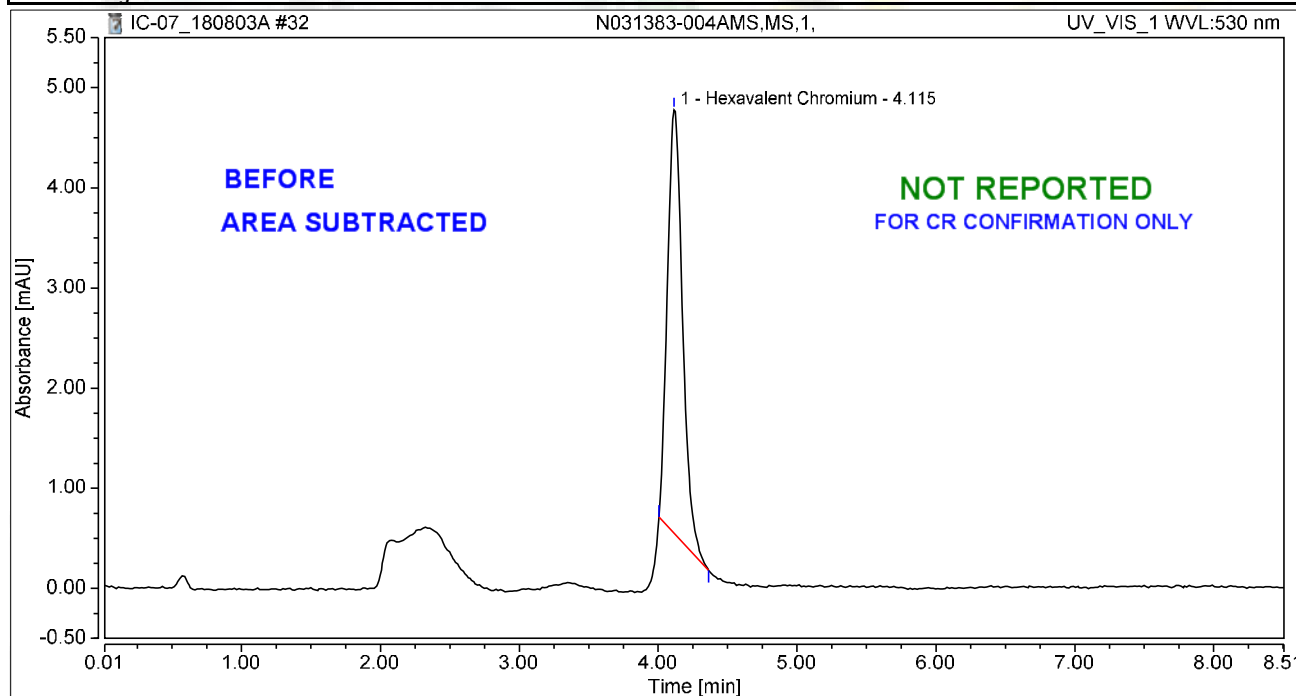
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.726	4.780	100.00	100.00	2.8471
<b>Total:</b>			<b>0.726</b>	<b>4.780</b>	<b>100.00</b>	<b>100.00</b>	

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### Chromatogram and Results

Injection Details		
Injection Name:	N031383-004AMS,MS,1,	Run Time (min): 8.49
Vial Number:	24	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	03/Aug/18 13:06	Sample Weight: 1.0000

#### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.536	4.227	100.00	100.00	2.1000
<b>Total:</b>			<b>0.536</b>	<b>4.227</b>	<b>100.00</b>	<b>100.00</b>	

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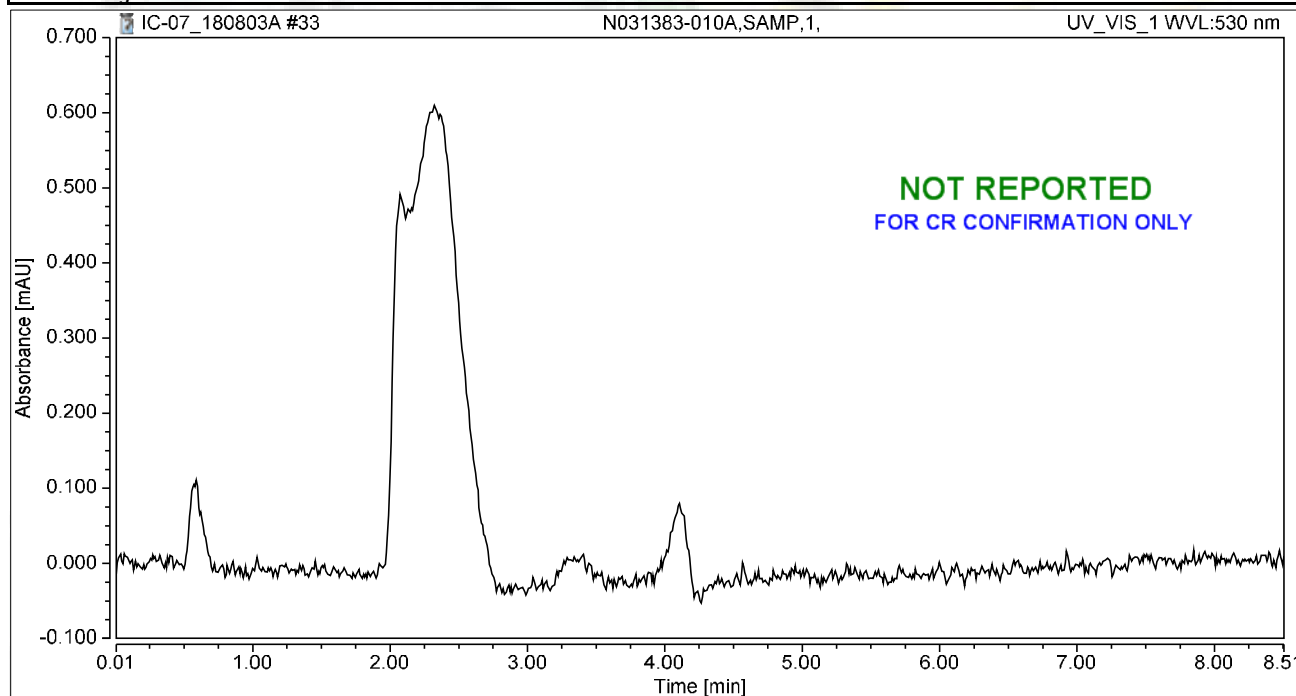


### Chromatogram and Results

**Injection Details**

Injection Name:	N031383-010A,SAMP,1,	Run Time (min):	8.50
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 13:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

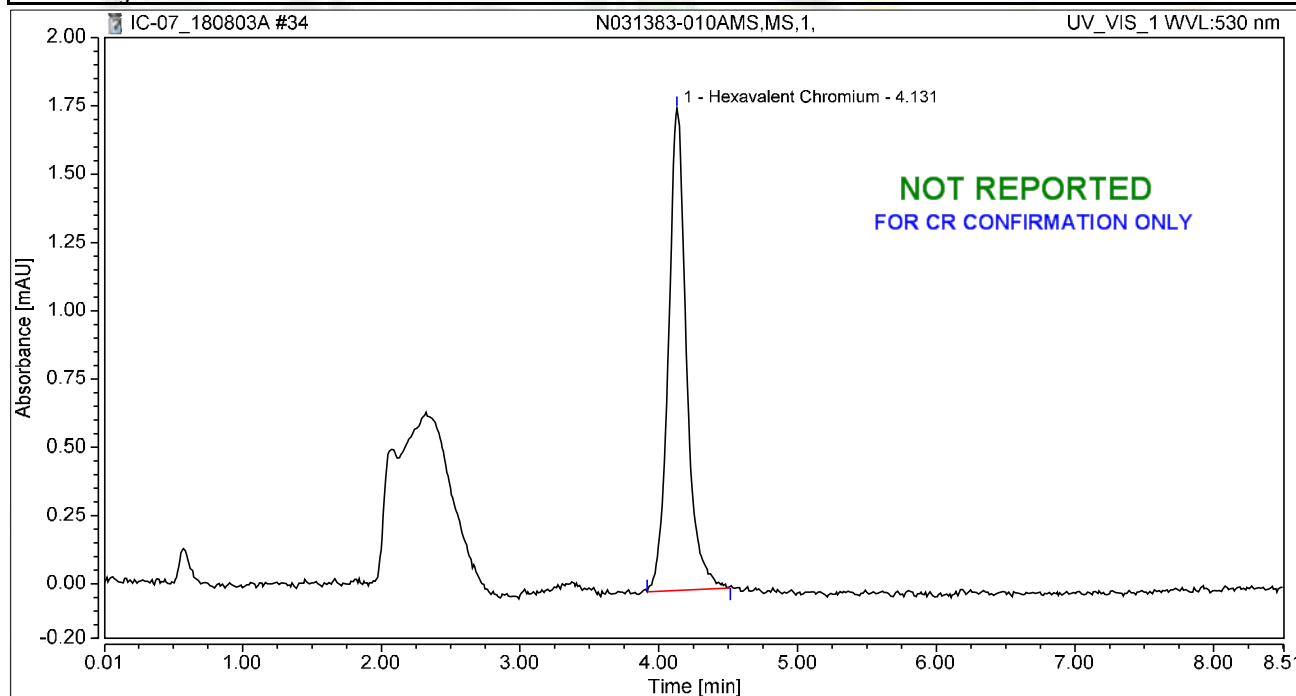
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031383-010AMS,MS,1,	Run Time (min):	8.50
Vial Number:	26	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 13:25	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

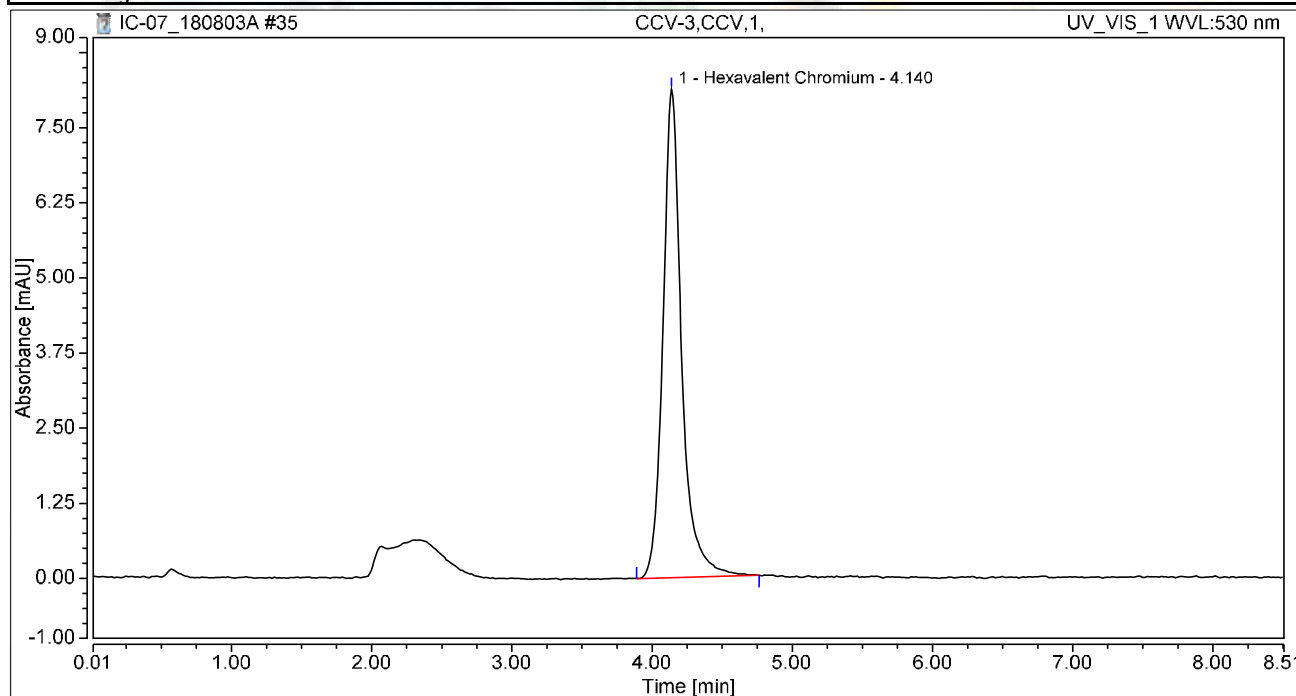
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.267	1.765	100.00	100.00	1.0465
<b>Total:</b>			<b>0.267</b>	<b>1.765</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-3,CCV,1,	Run Time (min):	8.49
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 13:35	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

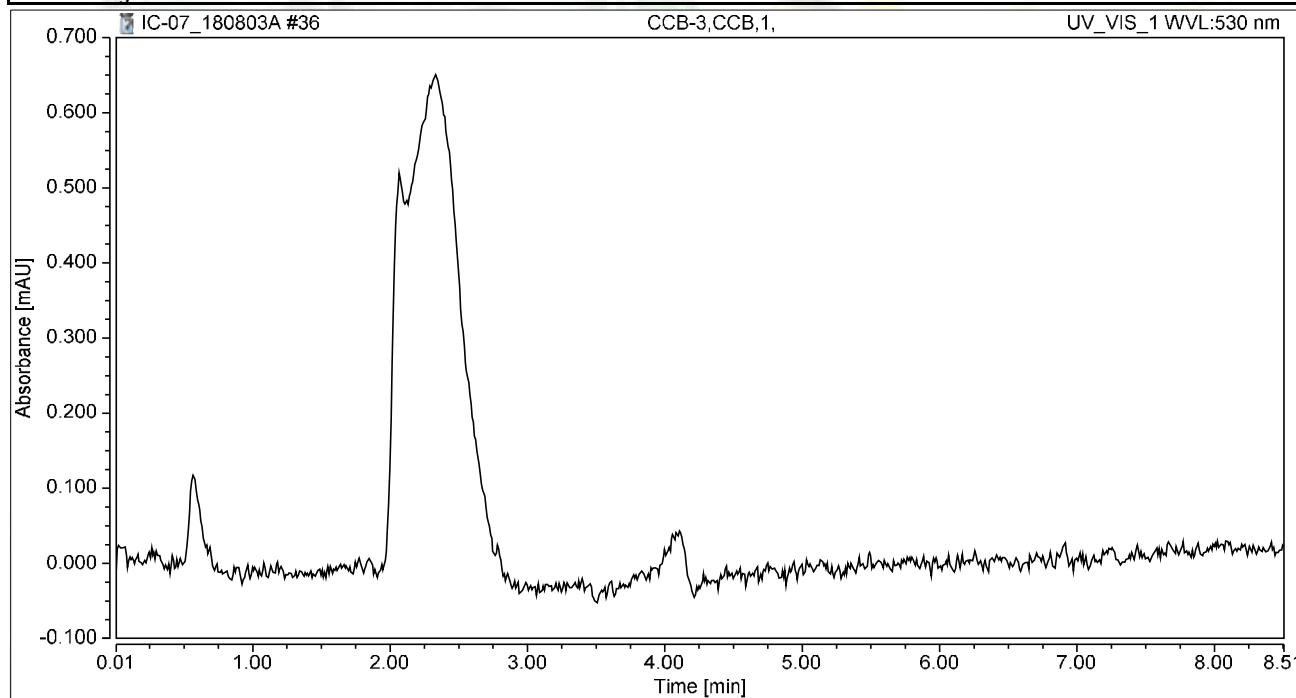
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.254	8.128	100.00	100.00	4.9161
<b>Total:</b>			<b>1.254</b>	<b>8.128</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	CCB-3,CCB,1,	Run Time (min):	8.50
Vial Number:	28	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 13:44	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

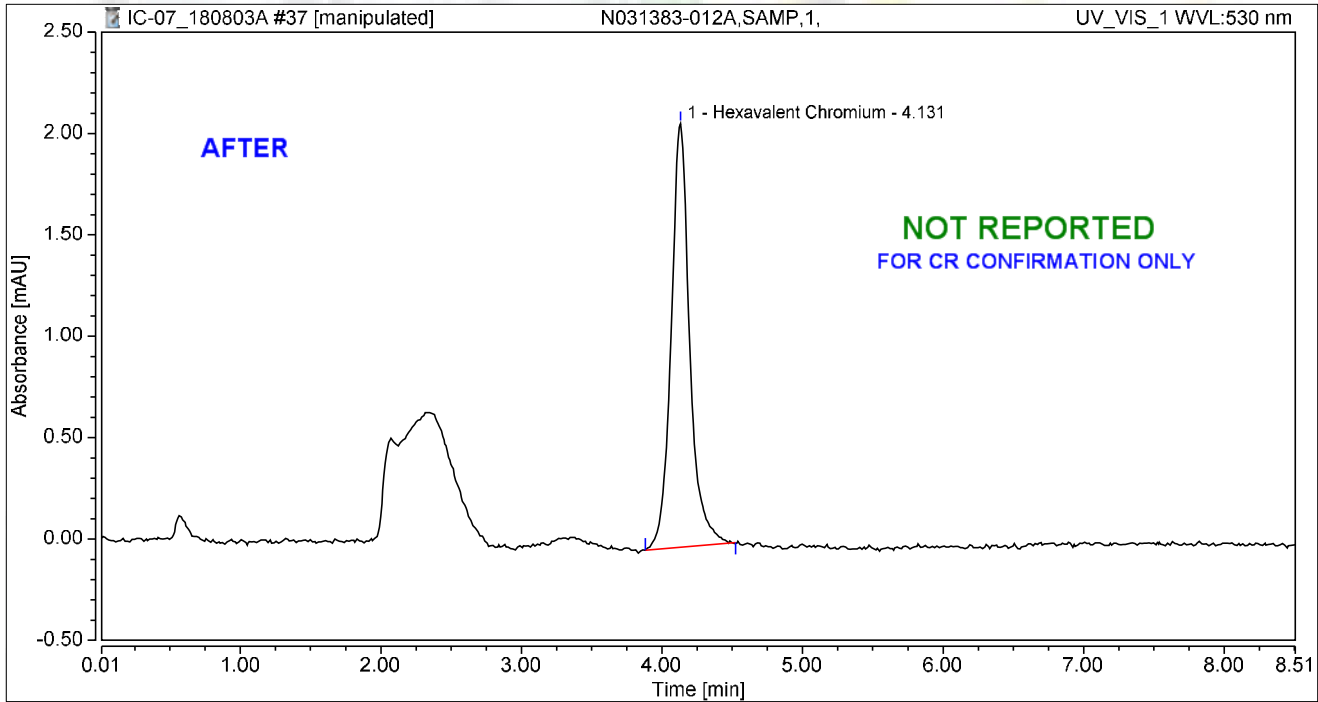
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031383-012A,SAMP,1,	Run Time (min):	8.49
Vial Number:	29	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 13:54	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.319	2.090	100.00	100.00	1.2508
<b>Total:</b>			<b>0.319</b>	<b>2.090</b>	<b>100.00</b>	<b>100.00</b>	

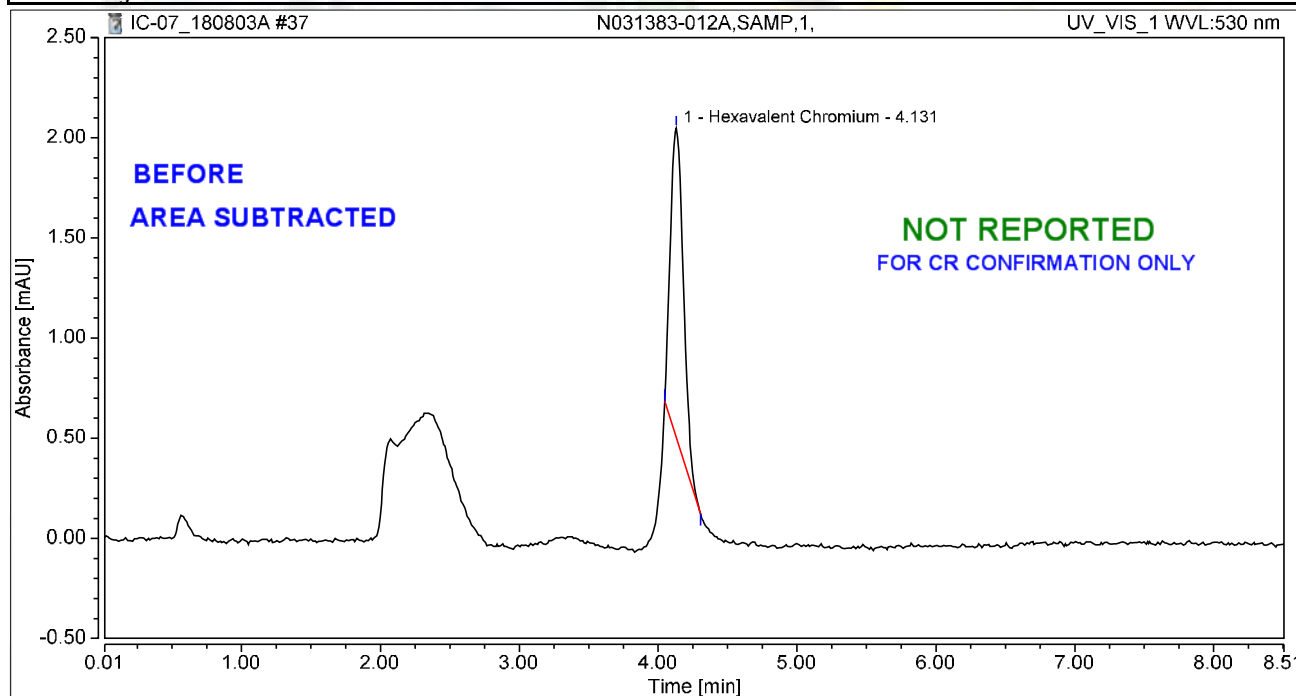
rba 8/12/2018

### Chromatogram and Results

#### Injection Details

Injection Name:	N031383-012A,SAMP,1,	Run Time (min):	8.49
Vial Number:	29	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 13:54	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.167	1.545	100.00	100.00	0.6540
<b>Total:</b>			<b>0.167</b>	<b>1.545</b>	<b>100.00</b>	<b>100.00</b>	

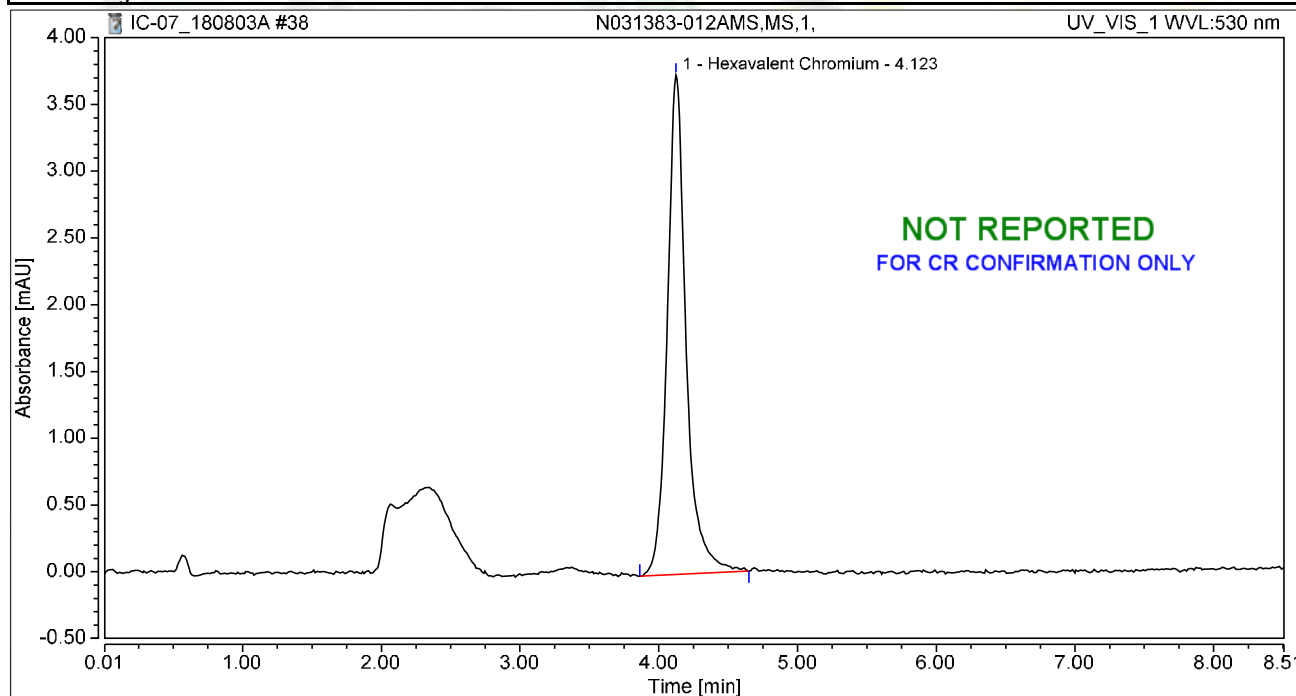
*rba* 8/12/2018

### Chromatogram and Results

#### Injection Details

Injection Name:	N031383-012AMS,MS,1,	Run Time (min):	8.50
Vial Number:	30	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 14:03	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

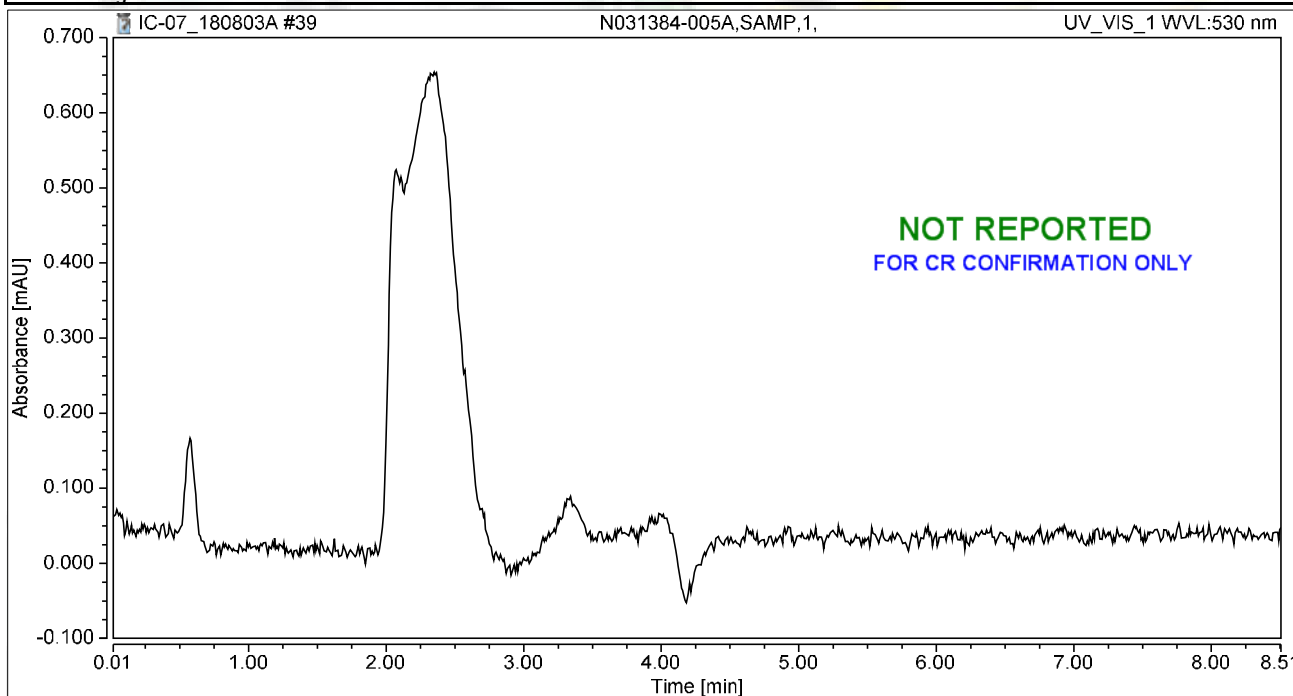
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.590	3.741	100.00	100.00	2.3132
<b>Total:</b>			<b>0.590</b>	<b>3.741</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031384-005A,SAMP,1,	Run Time (min):	8.49
Vial Number:	31	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 14:13	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

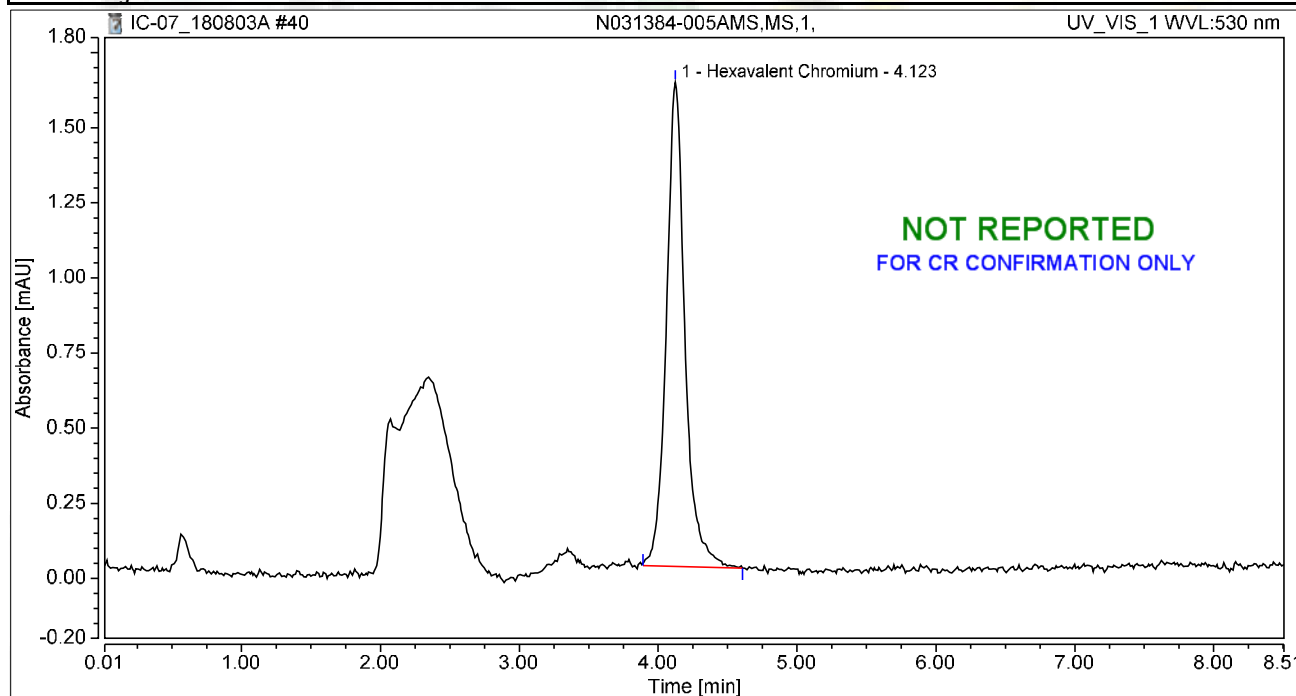


### Chromatogram and Results

#### Injection Details

Injection Name:	N031384-005AMS,MS,1,	Run Time (min):	8.49
Vial Number:	32	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 14:22	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

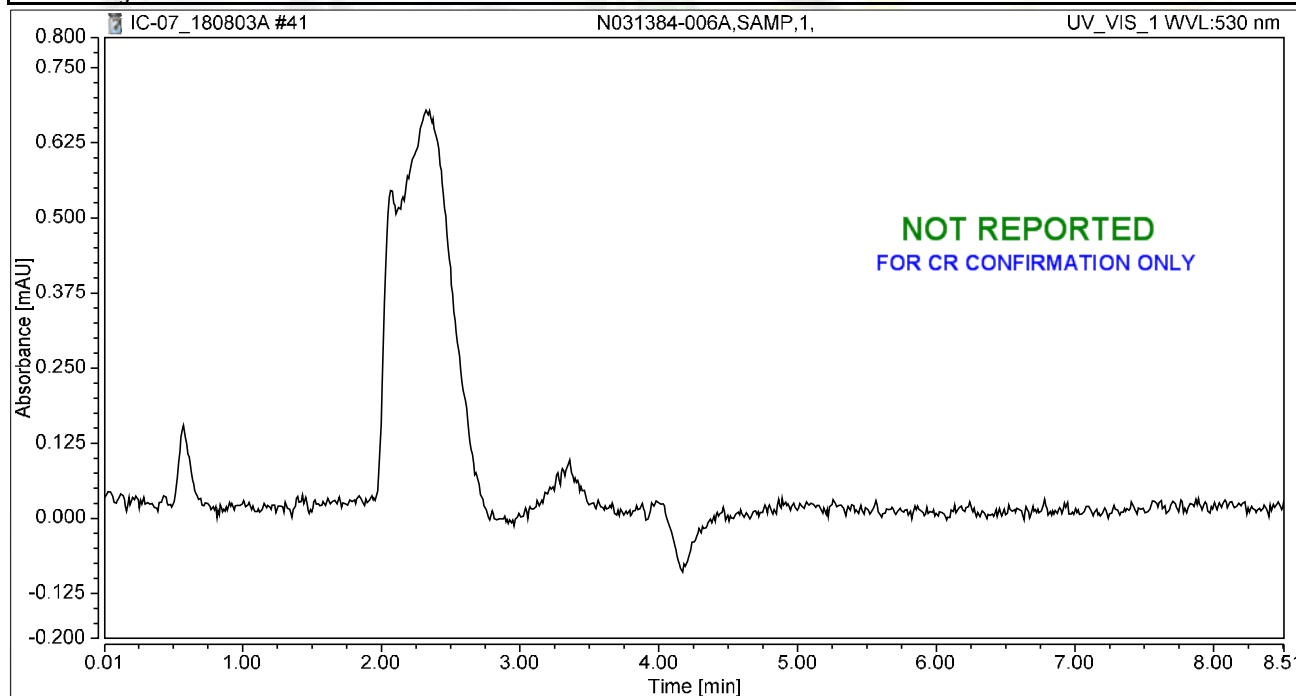
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.250	1.612	100.00	100.00	0.9801
<b>Total:</b>			<b>0.250</b>	<b>1.612</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031384-006A,SAMP,1,	Run Time (min):	8.50
Vial Number:	33	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 14:32	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

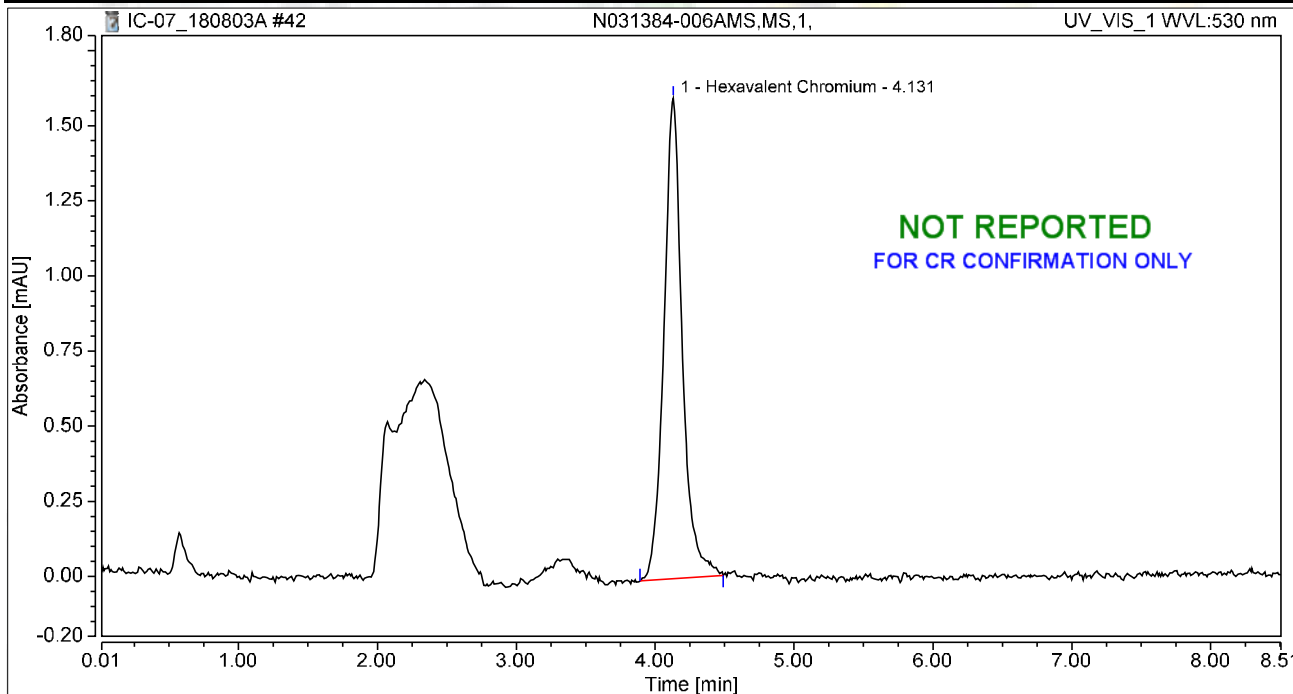
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031384-006AMS,MS,1,	Run Time (min):	8.49
Vial Number:	34	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 14:41	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

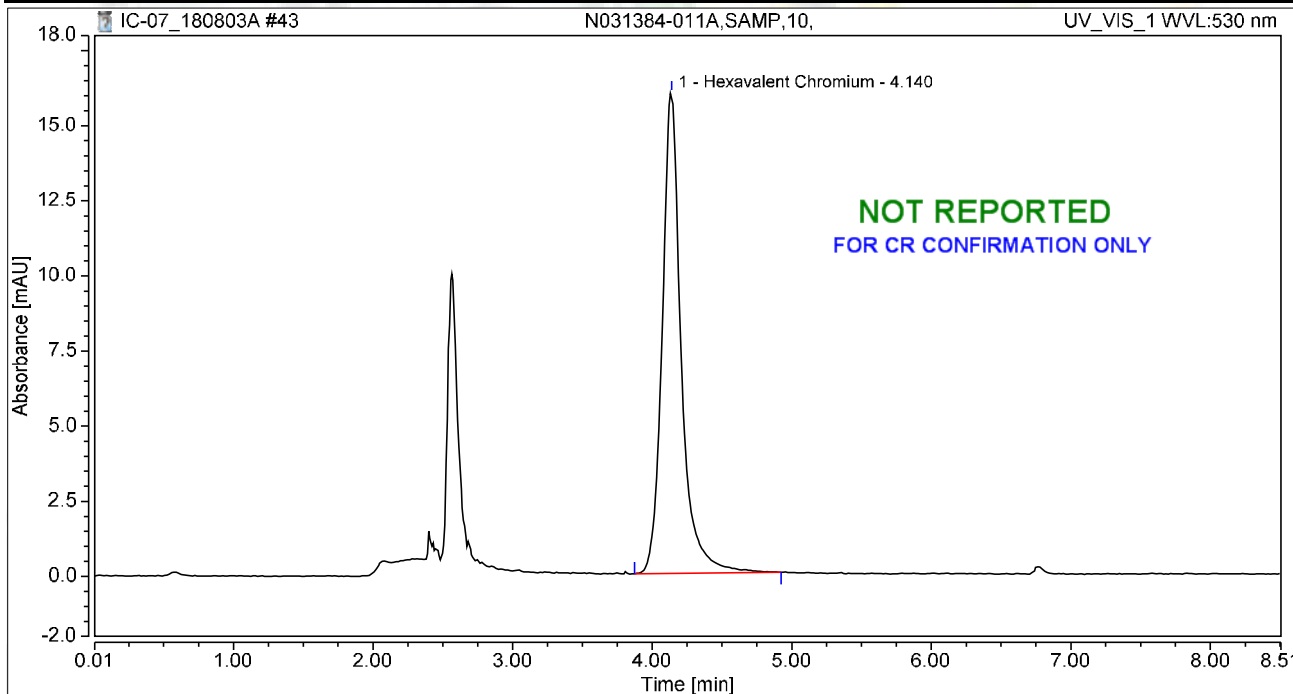
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.245	1.599	100.00	100.00	0.9601
<b>Total:</b>			<b>0.245</b>	<b>1.599</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031384-011A,SAMP,10,	Run Time (min):	8.50
Vial Number:	35	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 14:51	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

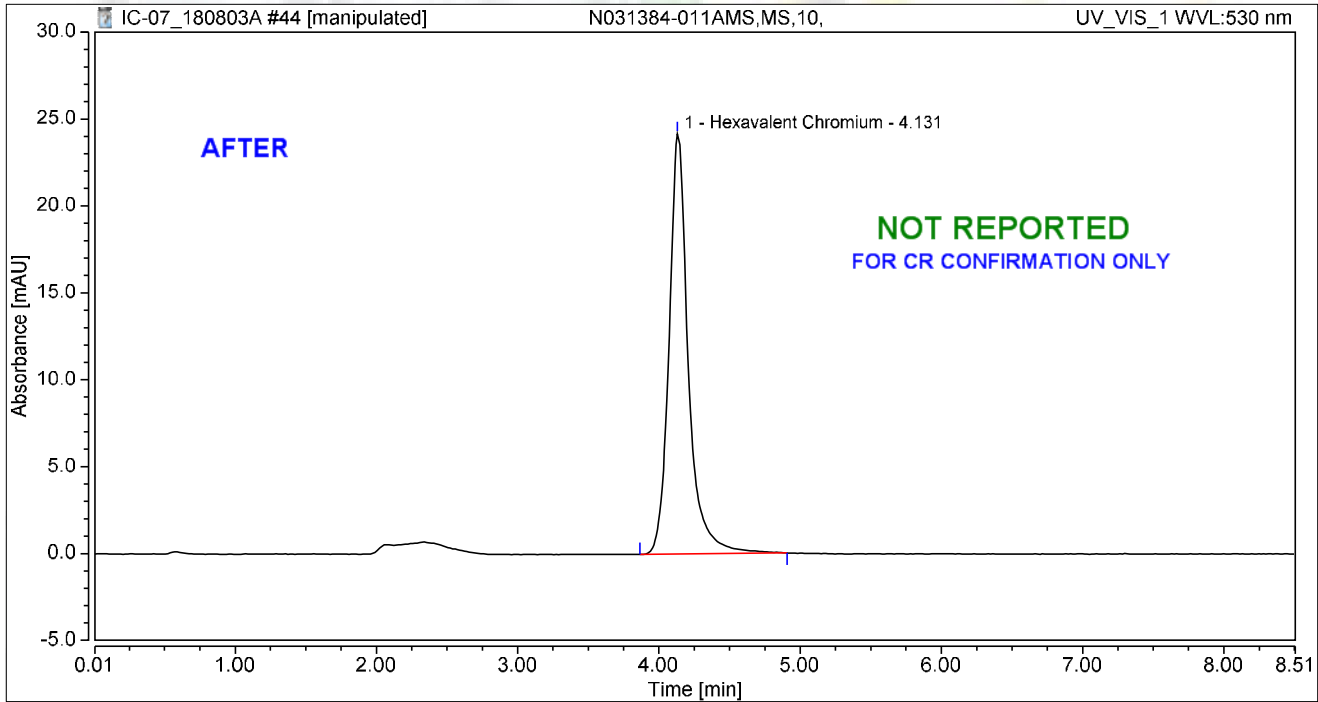
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	2.536	15.992	100.00	100.00	9.9420
<b>Total:</b>			<b>2.536</b>	<b>15.992</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031384-011AMS,MS,10,	Run Time (min):	8.50
Vial Number:	36	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 15:00	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	3.821	24.167	100.00	100.00	14.9814
<b>Total:</b>			<b>3.821</b>	<b>24.167</b>	<b>100.00</b>	<b>100.00</b>	

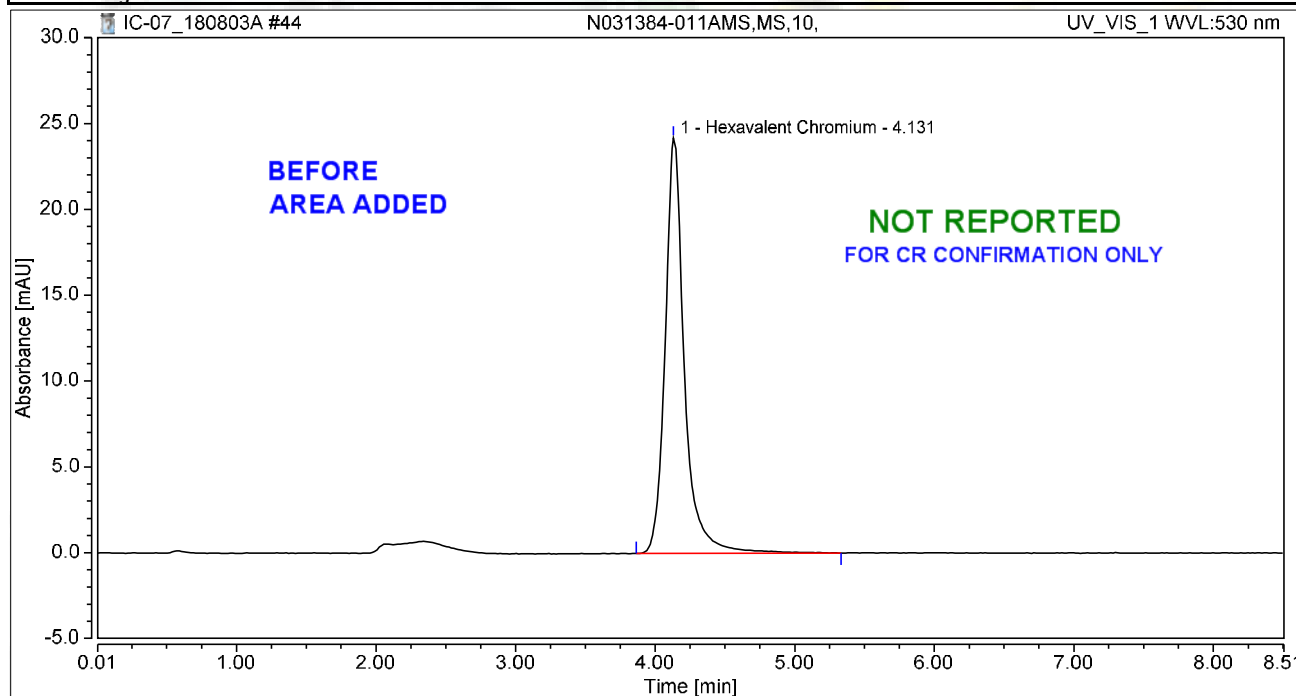
rba 8/12/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031384-011AMS,MS,10,	Run Time (min):	8.50
Vial Number:	36	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 15:00	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	3.875	24.186	100.00	100.00	15.1928
<b>Total:</b>			<b>3.875</b>	<b>24.186</b>	<b>100.00</b>	<b>100.00</b>	

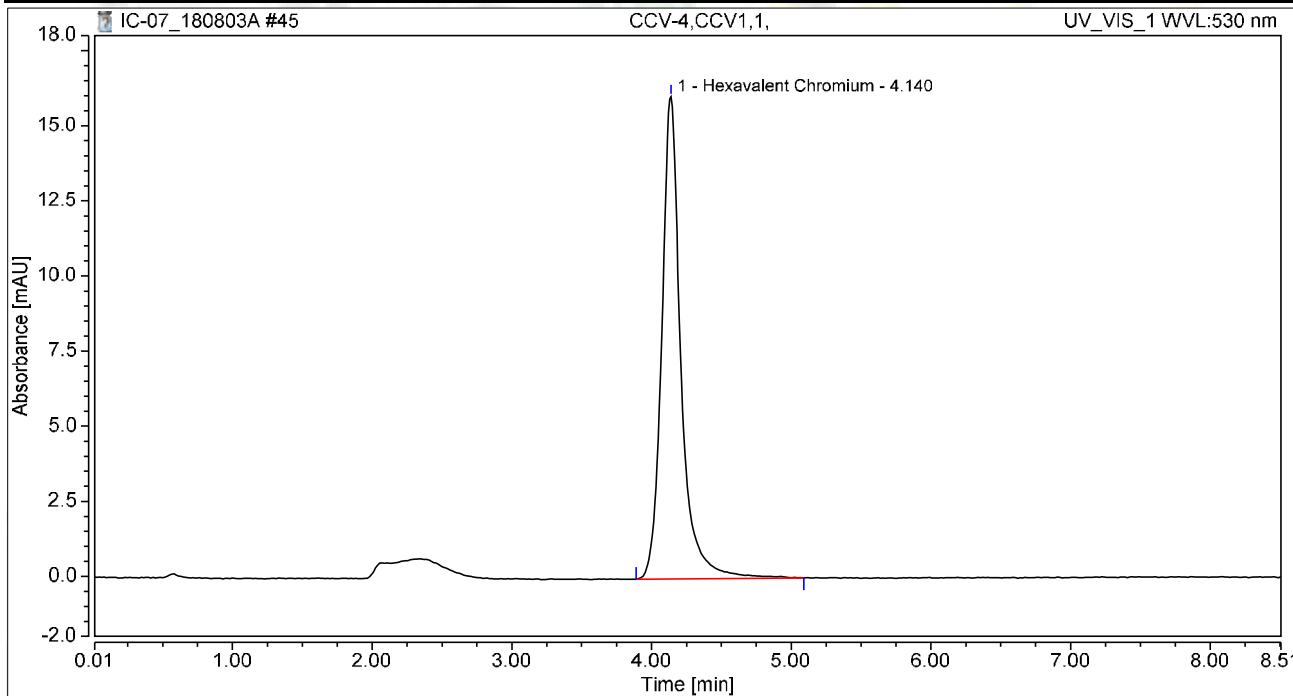
rba 8/12/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-4,CCV1,1,	Run Time (min):	8.49
Vial Number:	37	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 15:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

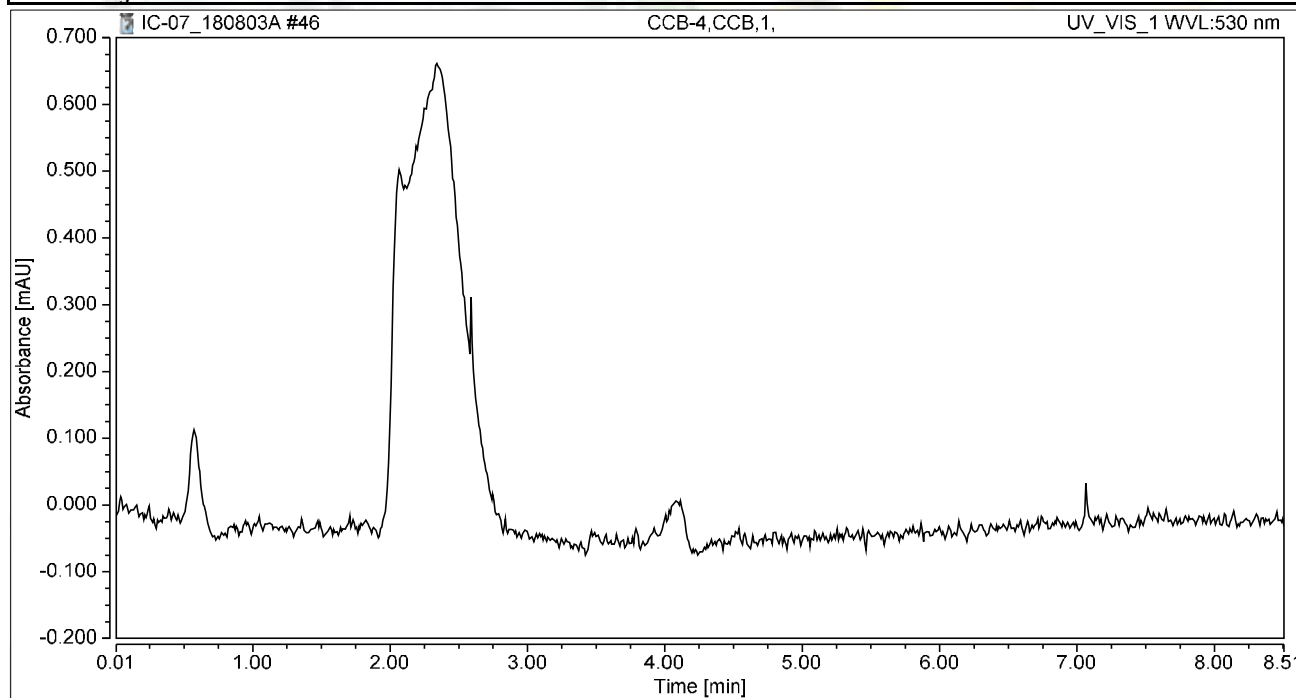
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	2.556	16.053	100.00	100.00	10.0221
<b>Total:</b>			<b>2.556</b>	<b>16.053</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	CCB-4,CCB,1,	Run Time (min):	8.50
Vial Number:	38	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180731_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Aug/18 15:19	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	



# SM 2320B



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R126666 Analyst: LSR  
 ASSET #:      N031503 Date Analyzed: 2-Aug

Method: EPA 2320

Initial Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
Continuing Calibration						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
Sample Information						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
QC Items						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
Preliminary Report						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer *Silvia Ramit*  
 2nd Level Reviewer *Nancy* 8/16/2018

Date: 8/7/2018  
 Date:

# SAMPLE CALCULATION



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[www.assetlaboratories.com](http://www.assetlaboratories.com)

Sample ID: **N031503-001B @ pH 7.90**

A. Standardization of Sulfuric Acid (titrant):

$$\text{Normality of acid} = (A) (B) / (53.00) (C)$$

Where:

A, grams weighed for  $\text{Na}_2\text{CO}_3$  solution ( $\text{Na}_2\text{CO}_3$  Standardization Solution)  
B, mL  $\text{Na}_2\text{CO}_3$  solution taken for titration, and  
C, ml of sulfuric acid used to inflection point

Spike Standards

**$\text{Na}_2\text{CO}_3$  Standardization Solution**, ACS Grade (1.00 ml = 2500ug as  $\text{CaCO}_3$ ):  
Dissolve 2.650 grams of  $\text{Na}_2\text{CO}_3$  in distilled water and dilute to 1 liter.

**LCS/MS/MSD Stock**  $\text{NaHCO}_3$ , ACS Grade (1.00 ml = 5000 ug as  $\text{CaCO}_3$ ):  
Dissolve 0.8398 grams of  $\text{NaHCO}_3$  in distilled water and dilute to 1 liter.

Therefore,

$$\begin{aligned} \text{Normality of Acid} &= (2.65 \text{ g/L}) (5\text{mL}) / (53.00) (11.75 \text{ mL}) \\ &= \mathbf{0.02128 \text{ N}} \end{aligned}$$

B. CALCULATION OF ALKALINITY (for a 50 ml sample)

$$\text{Total Alkalinity (as } \text{CaCO}_3\text{), mg/L} = M_{\text{vol.}} * N \text{ H}_2\text{SO}_4 * \text{DF} * 1000$$

Where:

$M_{\text{vol.}}$  volume titrant used to reach pH 4.5, ml  
N, Normality of  $\text{H}_2\text{SO}_4$   
DF, Dilution Factor = (50 ml) / (Vol. of Sample used)

Therefore,

$$\begin{aligned} \text{Total Alkalinity (as } \text{CaCO}_3\text{), mg/L} &= (9.10) (0.02128 \text{ N}) (1) * 1000 \\ &= 193.6480 \text{ mg/L} \end{aligned}$$

Reporting results in two significant figures,

$$= \mathbf{190 \text{ mg/L as } \text{CaCO}_3}$$

*Julia Ramit* 8/7/2018

C. SPECIATED ALKALINITY:

Phenolphthalein Alkalinity

$$\begin{aligned} \text{P alkalinity, mg/L as CaCO}_3 &= P_{\text{vol.}} \cdot N \text{ H}_2\text{SO}_4 \cdot \text{DF} \cdot 1000 \\ &= (0) (0.02128 \text{ N}) (1) \cdot 1000 \\ &= \mathbf{0} \end{aligned}$$

Total Alkalinity

$$\begin{aligned} \text{T alkalinity, mg/L as CaCO}_3 &= M_{\text{vol.}} \cdot N \text{ H}_2\text{SO}_4 \cdot \text{DF} \cdot 1000 \\ &= (9.10 \text{ mL}) (0.02128) (1) \cdot 1000 \\ &= \mathbf{193.6480 \text{ mg/L as CaCO}_3} \end{aligned}$$

Where:

- $P_{\text{vol.}}$  - Volume titrant used to reach pH 8.3, ml
- $M_{\text{vol.}}$  - Volume titrant used to reach pH 4.5, ml
- $N$  - Normality of  $\text{H}_2\text{SO}_4$
- $\text{DF}$  - Dilution Factor = (50 ml) / (Vol. of Sample used)

Then OH,  $\text{CO}_3$ ,  $\text{HCO}_3$  alkalinities as  $\text{CaCO}_3$  will be calculated as follows:

Result of Titration	OH Alkalinity as $\text{CaCO}_3$	$\text{CO}_3$ Alkalinity as $\text{CaCO}_3$	$\text{HCO}_3$ Alkalinity as $\text{CaCO}_3$
$P = 0$	0	0	T
$P < \frac{1}{2} T$	0	2P	$T - 2P$
$P = \frac{1}{2} T$	0	2P	0
$P > \frac{1}{2} T$	$2P - T$	$2(T - P)$	0
$P = T$	T	0	0

Therefore,

$$\text{OH Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{CO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{HCO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{193.6480 \text{ mg/L}}$$

Reporting results in two significant figures,

$$\text{OH Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{CO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{HCO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{190 \text{ mg/L}}$$

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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SAMPLE	PH SAMPLE	AMOUNT	V@8.3	VT TO 4.5	Sample Type	Standardization:		
MB-1	5.21	50	0.00	0.050	MBLK	Spike amt:	5	ml
LCS-1	8.58	50	0.05	4.35	LCS	Titrant used:	11.750	ml
N031482-001C	7.83	50	0.00	2.50	SAMP			
N031503-001B	7.90	50	0.00	9.10	SAMP	N H2SO4	0.02128	Normal
N031503-002B	7.85	50	0.00	7.00	SAMP			
N031482-001CDUP	7.85	50	0.00	2.50	DUP	Date Analyzed:	8/2/18	
N031503-002BMS	7.91	50	0.00	11.50	MS	Time:	1:30 PM	
N031503-002BMSD	7.92	50	0.00	11.40	MSD	Analyzed By:	LSR	
						Sodium Carbonate:	CINV-161205A	
						Sodium Bicarbonate:	CINV-180510A	
						Sulfuric Acid:	R180507B	

Lilia Ramit 8/7/2018

Date Analyzed:		8/2/18	Reagents:				Standardization:				P = 0		
Time Started:		1:30 PM	Sodium Carbonate:		CINV-161205A	Spike amt:		5	mL	P < 1/2 T			
Analyzed By:		LSR	Hydrochloric Acid:		0	Titrant used:		11.75	mL	P = 1/2 T			
			Sulfuric Acid:		R180507B					P > 1/2 T			
						N H2SO4		0.02128	N	P = T			
Sample ID	Sample Vol/Wt.	Sample pH	Std. Code	Spike Amount	Spike Conc.	Normality, Titrant	Vol. Used to pH 8.3, ml.	Vol. Used pH 8.3 to 4.5, ml.	Total Vol. Used, ml.	DF (50ml/Vsamp.)	P Alkalinity	T Alkalinity	Comments
MB-1	50	5.21				0.02128	0.00	0.05	0.05	1	0.00	1.06	
LCS-1	50	8.58				0.02128	0.05	4.30	4.35	1	1.06	92.55	
N031482-001C	50	7.83				0.02128	0.00	2.50	2.50	1	0.00	53.19	
N031503-001B	50	7.9				0.02128	0.00	9.10	9.10	1	0.00	193.62	
N031503-002B	50	7.85				0.02128	0.00	7.00	7.00	1	0.00	148.94	
N031482-001CDL	50	7.85				0.02128	0.00	2.50	2.50	1	0.00	53.19	
N031503-002BMS	50	7.91				0.02128	0.00	11.50	11.50	1	0.00	244.68	
N031503-002BMS	50	7.92				0.02128	0.00	11.40	11.40	1	0.00	242.55	

*Julia Ramit*

8/7/2018



# Speciated, Alkalinity as CaCO3

SM 2320B

Date Analyzed:	<u>8/2/18</u>
Time:	<u>1:30 PM</u>
Analyzed By:	<u>LSR</u>

SAMPLE ID	OH	CO3	HCO3	TOTAL	CHECK	COMMENT	REMARKS
MB-1	0.00	0.00	1.06	1.06	1.06		P = 0
LCS-1	0.00	2.13	90.43	92.55	92.55		P < 1/2 T
N031482-001C	0.00	0.00	53.19	53.19	53.19		P = 0
N031503-001B	0.00	0.00	193.62	193.62	193.62		P = 0
N031503-002B	0.00	0.00	148.94	148.94	148.94		P = 0
N031482-001CDUP	0.00	0.00	53.19	53.19	53.19		P = 0
N031503-002BMS	0.00	0.00	244.68	244.68	244.68		P = 0
N031503-002BMSD	0.00	0.00	242.55	242.55	242.55		P = 0

*Julia Ramit*

8/7/2018

Alkalinity Preparation and Runlog

<b>Matrix:</b> <u>h<sub>2</sub>O</u> <b>Date Extracted:</b> <u>8/2/18</u> <b>Time Extracted:</b> <u>13:20</u> <b>Extracted By:</b> <u>RC</u> <b>Date Analyzed:</b> <u>8/2/18</u> <b>Time Analyzed:</b> <u>13:20</u> <b>Analyzed By:</b> <u>RC</u>	<b>Reagent Lot # / Reagent ID</b> Sodium Carbonate: <u>CMV-180570A</u> Hydrochloric Acid: <u>-</u> Sulfuric Acid: <u>R180570</u> Sodium Bicarbonate: <u>CMV-180570A</u>
---	---

pH meter Calibration:

SLOPE: 98.9%

pH 7	- 7.01	CMV 180570B
4	- 4.01	180570A
10	- 10.01	180131B

Sample ID.	Sample Wt./Vol.	Sample pH	Std Code	Spike Amt Added	Spike Conc.	Norm. Titrant	Vol. At pH = 8.3	Vol. At pH = 4.5	Dilution (F/I)	Calculations	Comments
<b>STANDARDIZATION</b>											
#1	50 mL	10.47	180570A	5 mL	0.05N	-	-	11.80	50/50	$N \text{ H}_2\text{SO}_4 = \frac{(2.45 \text{ g/L})(5 \text{ mL})}{(50)(N \text{ titrant})} = 0.02118644$ $= 0.021367521$	
#2	1	10.41	2	1	1	-	-	11.70	1		
1)	M012	5.21	-	-	-	0.02128	0	0.05			Ave: 0.02127698
2)	LCS	8.58	180570A	1 mL	0.05N		0.05	4.25			
3)	N031482-1C	7.83	-	-	-		0	2.50			
4)	N031502-1B	7.90	-	-	-		0	9.10			
5)	1 2B	7.85	-	-	-		0	7.0			
6)	N031482-1C00P	7.85	-	-	-		0	2.50			
7)	N031502-2B MS	7.91	180570A	1 mL	0.05N		0	11.50			
8)	1 2B MSD	7.92	1	1	1		0	11.40			
9)											
10)											
11)											
12)											
13)											
14)											
15)											
16)											
17)											
18)											
19)											
20)											
$P = \frac{(V \text{ pH } 8.3)(N \text{ H}_2\text{SO}_4)(50,000)}{V_{Sx}}$											
$T = \frac{(V \text{ pH } 4.5)(N \text{ H}_2\text{SO}_4)(50,000)}{V_{Sy}}$											
MS											
MSD											
LCS										Julia Kamit	8/7/2018

# EPA 300.0



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"



IC Technical Batch Review Checklist (CH2MHILL)  
ASSET LABORATORIES - LAS VEGAS

IC CH2M  
REV.7.0  
071116

QC Batch Number: R126715  
ASSET #: N031502

Instrument ID: IC-08  
Analyst: RBA  
Date Analyzed: 8/2/2018

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others 9056

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)			X			
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?			X			
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?	X					
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)			X			
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)			X			
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X					
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments:

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer RBA

Date: 8/7/2018

2nd Level Reviewer Nancy 8/16/2018

Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## Sample Calculation

**METHOD:** EPA 300  
**TEST NAME:** INORGANIC ANIONS BY IC  
**MATRIX:** GROUNDWATER

FORMULA:

Calculate the Sulfate concentration, in mg/L, in the original sample as follows:

$$\text{Sulfate, mg/L} = A * DF$$

where:

A = mg/L, IC calculated concentration  
DF = dilution factor

For **N031503-001B** concentration in mg/L is calculated as follows:

$$\begin{aligned}\text{Sulfate, mg/L} &= 5.4419 * 50 \\ &= 272.095\end{aligned}$$

Reporting result in two significant values,

$$\text{Sulfate, mg/L} = 270$$

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENTAL INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

Sequence: IC-08\_180801A  
Operator: IC-05

Page 1 of 6  
Printed: 8/6/2018 6:16:00 PM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 83

Created: 8/1/2018 8:46:33 AM by IC-05  
(Modified, not saved)

No.	Name	Type	Inj. Vol.	Program	Method	Status
1	BLANK,BLANK,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
2	Std - 0	Standard	1000.0	Anions Default	EPA 300_0_180801	Finished
3	Std - 1	Standard	1000.0	Anions Default	EPA 300_0_180801	Finished
4	Std - 2	Standard	1000.0	Anions Default	EPA 300_0_180801	Finished
5	Std - 3	Standard	1000.0	Anions Default	EPA 300_0_180801	Finished
6	Std - 4	Standard	1000.0	Anions Default	EPA 300_0_180801	Finished
7	Std - 5	Standard	1000.0	Anions Default	EPA 300_0_180801	Finished
8	ICV	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
9	ICB	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
10	MB-H2O,MBLK,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
11	LCS-H2O,LCS,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
12	N031482-001J,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
13	N031482-001J,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
14	N031482-001JDUP,DUP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
15	N031482-001JMS,MS,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
16	N031482-001JMSD,MSD,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
17	N031482-001J,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
18	N031482-001JDUP,DUP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
19	N031482-001JMS,MS,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
20	CCV-1,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
21	CCB-1,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
22	N031482-001JMSD,MSD,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
23	N031383-001C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
24	N031383-001CMS,MS,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
25	N031383-001CMSD,MSD,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
26	N031407-010C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
27	N031407-010CMS,MS,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
28	N031383-015C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
29	N031383-015CDUP,DUP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
30	N031383-002C,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
31	N031383-003C,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
32	CCV-2,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
33	CCB-2,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
34	N031383-007C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
35	N031383-008C,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
36	N031383-009C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
37	N031383-010C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
38	N031383-011C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
39	N031383-012C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
40	N031383-013C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
41	N031383-014C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished



Sequence: IC-08\_180801A  
Operator: IC-05

Page 2 of 6  
Printed: 8/6/2018 6:16:00 PM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 83  
Created: 8/1/2018 8:46:33 AM by IC-05  
(Modified, not saved)

No.	Name	Inj. Date/Time	Comment
1	BLANK,BLANK,1	8/1/2018 8:46:58 AM	BLANK
2	Std - 0	8/1/2018 9:02:17 AM	IBLANK
3	Std - 1	8/1/2018 9:27:52 AM	STD-LOW
4	Std - 2	8/1/2018 9:43:10 AM	STD
5	Std - 3	8/1/2018 9:58:28 AM	STD
6	Std - 4	8/1/2018 10:27:23 AM	STD
7	Std - 5	8/1/2018 10:42:41 AM	STD-HIGH
8	ICV	8/1/2018 10:57:59 AM	ICV
9	ICB	8/1/2018 11:13:17 AM	ICB
10	MB-H2O,MBLK,1	8/1/2018 11:28:35 AM	METHOD BLANK
11	LCS-H2O,LCS,1	8/1/2018 11:51:43 AM	LCS
12	N031482-001J,SAMP,1	8/1/2018 12:07:01 PM	SAMP,10mL
13	N031482-001J,SAMP,5	8/1/2018 12:40:54 PM	SAMP,2>10mL
14	N031482-001JDUP,DUP,5	8/1/2018 12:59:38 PM	DUP,2>10mL
15	N031482-001JMS,MS,5	8/1/2018 1:14:56 PM	MS,2>10mL
16	N031482-001JMSD,MSD,5	8/1/2018 1:30:14 PM	MSD,2>10mL
17	N031482-001J,SAMP,10	8/1/2018 1:45:32 PM	SAMP,1>10mL
18	N031482-001JDUP,DUP,10	8/1/2018 2:00:50 PM	DUP,1>10mL
19	N031482-001JMS,MS,10	8/1/2018 2:16:08 PM	MS,1>10mL
20	CCV-1,CCV,1	8/1/2018 2:31:26 PM	CCV
21	CCB-1,CCB,1	8/1/2018 2:46:44 PM	CCB
22	N031482-001JMSD,MSD,10	8/1/2018 3:02:02 PM	MSD,1>10mL
23	N031383-001C,SAMP,10	8/1/2018 3:18:59 PM	SAMP,1>10mL
24	N031383-001CMS,MS,10	8/1/2018 3:34:17 PM	MS,1>10mL
25	N031383-001CMSD,MSD,10	8/1/2018 3:49:35 PM	MSD,1>10mL
26	N031407-010C,SAMP,10	8/1/2018 4:04:53 PM	SAMP,1>10mL
27	N031407-010CMS,MS,10	8/1/2018 4:20:12 PM	MS,1>10mL
28	N031383-015C,SAMP,5	8/1/2018 4:35:29 PM	SAMP,2>10mL
29	N031383-015CDUP,DUP,5	8/1/2018 4:50:48 PM	DUP,2>10mL
30	N031383-002C,SAMP,20	8/1/2018 5:06:06 PM	SAMP,0.5>10mL
31	N031383-003C,SAMP,20	8/1/2018 5:21:24 PM	SAMP,0.5>10mL
32	CCV-2,CCV,1	8/1/2018 5:36:42 PM	CCV
33	CCB-2,CCB,1	8/1/2018 5:52:00 PM	CCB
34	N031383-007C,SAMP,2	8/1/2018 6:07:18 PM	MS,0.5>10mL
35	N031383-008C,SAMP,20	8/1/2018 6:22:36 PM	MSD,0.5>10mL
36	N031383-009C,SAMP,2	8/1/2018 6:37:54 PM	SAMP,5>10mL
37	N031383-010C,SAMP,2	8/1/2018 6:53:12 PM	SAMP,5>10mL
38	N031383-011C,SAMP,10	8/1/2018 7:08:31 PM	SAMP,1>10mL
39	N031383-012C,SAMP,10	8/1/2018 7:23:48 PM	SAMP,1>10mL
40	N031383-013C,SAMP,10	8/1/2018 7:39:07 PM	SAMP,1>10mL
41	N031383-014C,SAMP,5	8/1/2018 7:54:25 PM	SAMP,0.1>10mL

Sequence: IC-08\_180801A  
Operator: IC-05

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 83

Created: 8/1/2018 8:46:33 AM by IC-05  
(Modified, not saved)

No.	Name	Type	Inj. Vol.	Program	Method	Status
42	N031383-016C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
43	N031407-009C,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
44	CCV-3,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
45	CCB-3,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
46	N031407-011C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
47	N031407-012C,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
48	N031407-013C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
49	N031482-001J,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
50	LCS-2,LCS,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
51	MB-2,MBLK,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
52	N031422-009C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
53	N031422-009CMS,MS,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
54	N031422-009CMSD,MSD,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
55	N031407-018C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
56	CCV-4,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
57	CCB-4,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
58	N031407-018CMS,MS,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
59	N031422-002C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
60	N031422-002CDUP,DUP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
61	N031407-019C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
62	N031407-020C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
63	N031407-021C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
64	N031407-022C,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
65	N031422-001C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
66	N031422-003C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
67	N031422-004C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
68	CCV-5,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
69	CCB-5,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
70	N031422-005C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
71	N031422-006C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
72	N031422-007C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
73	N031422-008C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
74	N031422-010C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
75	N031422-011C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
76	N031422-012C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
77	N031422-013C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
78	N031422-014C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
79	N031407-014C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
80	CCV-6,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
81	CCB-6,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
82	N031433-008C,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished

*rba* 8/7/2018

Sequence: IC-08\_180801A  
Operator: IC-05

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Printed: 8/6/2018 6:16:00 PM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 83  
Created: 8/1/2018 8:46:33 AM by IC-05  
(Modified, not saved)

No.	Name	Inj. Date/Time	Comment
42	N031383-016C,SAMP,5	8/1/2018 8:09:43 PM	SAMP,2>10mL
43	N031407-009C,SAMP,20	8/1/2018 8:25:01 PM	SAMP,0.5>10mL
44	CCV-3,CCV,1	8/1/2018 8:40:20 PM	CCV
45	CCB-3,CCB,1	8/1/2018 8:55:38 PM	CCB
46	N031407-011C,SAMP,10	8/1/2018 9:10:57 PM	SAMP,1>10mL
47	N031407-012C,SAMP,20	8/1/2018 9:26:14 PM	SAMP,0.5>10mL
48	N031407-013C,SAMP,10	8/1/2018 9:41:32 PM	SAMP,1>10mL
49	N031482-001J,SAMP,50	8/1/2018 9:56:51 PM	SAMP,0.2>10mL
50	LCS-2,LCS,1	8/1/2018 10:12:09 PM	LCS
51	MB-2,MBLK,1	8/1/2018 10:27:27 PM	METHOD BLANK
52	N031422-009C,SAMP,10	8/1/2018 10:42:44 PM	SAMP,1>10mL
53	N031422-009CMS,MS,10	8/1/2018 10:58:03 PM	MS,1>10mL
54	N031422-009CMSD,MSD,10	8/1/2018 11:13:21 PM	MSD,1>10mL
55	N031407-018C,SAMP,5	8/1/2018 11:28:39 PM	SAMP,2>10mL
56	CCV-4,CCV,1	8/1/2018 11:43:58 PM	CCV
57	CCB-4,CCB,1	8/1/2018 11:59:15 PM	CCB
58	N031407-018CMS,MS,5	8/2/2018 12:14:33 AM	MS,2>10mL
59	N031422-002C,SAMP,10	8/2/2018 12:29:52 AM	SAMP,1>10mL
60	N031422-002CDUP,DUP,10	8/2/2018 12:45:10 AM	DUP,1>10mL
61	N031407-019C,SAMP,5	8/2/2018 1:00:28 AM	SAMP,2>10mL
62	N031407-020C,SAMP,2	8/2/2018 1:15:47 AM	SAMP,5>10mL
63	N031407-021C,SAMP,10	8/2/2018 1:31:05 AM	SAMP,1>10mL
64	N031407-022C,SAMP,20	8/2/2018 1:46:24 AM	SAMP,0.5>10mL
65	N031422-001C,SAMP,5	8/2/2018 2:01:42 AM	SAMP,2>10mL
66	N031422-003C,SAMP,2	8/2/2018 2:17:00 AM	SAMP,5>10mL
67	N031422-004C,SAMP,10	8/2/2018 2:32:18 AM	SAMP,1>10mL
68	CCV-5,CCV,1	8/2/2018 2:47:37 AM	CCV
69	CCB-5,CCB,1	8/2/2018 3:02:54 AM	CCB
70	N031422-005C,SAMP,10	8/2/2018 3:18:12 AM	SAMP,1>10mL
71	N031422-006C,SAMP,5	8/2/2018 3:33:30 AM	SAMP,2>10mL
72	N031422-007C,SAMP,2	8/2/2018 3:48:49 AM	SAMP,5>10mL
73	N031422-008C,SAMP,5	8/2/2018 4:04:07 AM	SAMP,2>10mL
74	N031422-010C,SAMP,5	8/2/2018 4:19:26 AM	SAMP,2>10mL
75	N031422-011C,SAMP,2	8/2/2018 4:34:44 AM	SAMP,5>10mL
76	N031422-012C,SAMP,2	8/2/2018 4:50:02 AM	SAMP,5>10mL
77	N031422-013C,SAMP,5	8/2/2018 5:05:21 AM	SAMP,2>10mL
78	N031422-014C,SAMP,10	8/2/2018 5:20:40 AM	SAMP,1>10mL
79	N031407-014C,SAMP,2	8/2/2018 5:35:58 AM	SAMP,5>10mL
80	CCV-6,CCV,1	8/2/2018 5:51:17 AM	CCV
81	CCB-6,CCB,1	8/2/2018 6:06:35 AM	CCB
82	N031433-008C,SAMP,1	8/2/2018 6:21:54 AM	SAMP,10mL

Sequence: IC-08\_180801A  
Operator: IC-05

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Printed: 8/6/2018 6:16:00 PM

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Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 83

Created: 8/1/2018 8:46:33 AM by IC-05  
(Modified, not saved)

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No.	Name	Type	Inj. Vol.	Program	Method	Status
83	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished

*rba* 8/7/2018

Sequence: IC-08\_180801A  
Operator: IC-05

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Printed: 8/6/2018 6:16:00 PM

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Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 83

Created: 8/1/2018 8:46:33 AM by IC-05  
(Modified, not saved)

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No.	Name	Inj. Date/Time	Comment
83	BLANK,BLANK	8/2/2018 6:37:12 AM	BLANK

Sequence: IC-08\_180802A  
Operator: IC-05

Page 1 of 4  
Printed: 8/5/2018 11:23:34 PM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 68

Created: 8/2/2018 8:47:41 AM by IC-05  
Last Update: 8/2/2018 4:32:50 PM by IC-05

No.	Name	Type	Inj. Vol.	Program	Method	Status
1	BLANK,BLANK,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
2	Std - 0	Standard	1000.0	Anions Default	EPA 300_0_180801	Finished
3	Std - 1	Standard	1000.0	Anions Default	EPA 300_0_180801	Finished
4	Std - 2	Standard	1000.0	Anions Default	EPA 300_0_180801	Finished
5	Std - 3	Standard	1000.0	Anions Default	EPA 300_0_180801	Finished
6	Std - 4	Standard	1000.0	Anions Default	EPA 300_0_180801	Finished
7	Std - 5	Standard	1000.0	Anions Default	EPA 300_0_180801	Finished
8	BLANK,BLANK,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
9	CCV-1,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
10	CCB-1,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
11	MB-H2O,MBLK,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
12	LCS-H2O,LCS,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
13	N031502-002B,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
14	N031406-008A,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
15	N031406-009A,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
16	N031406-010A,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
17	N031406-011A,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
18	N031406-012A,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
19	N031406-013A,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
20	BLANK,BLANK,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
21	CCV-2,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
22	CCB-2,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
23	N031406-014A,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
24	N031406-011ADUP,DUP,20	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
25	N031421-001A,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
26	N031421-002A,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
27	N031421-003A,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
28	N031406-012A,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
29	N031406-013A,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
30	N031421-011A,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
31	N031406-014AMS,MS,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
32	N031406-014AMSD,MSD,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
33	CCV-3,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
34	CCB-3,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
35	N031502-002BMS,MS,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
36	LCS-2,LCS,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
37	MB-2,MBLK,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
38	N031433-002C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
39	N031433-009C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
40	N031444-005C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
41	N031433-009CMS,MS,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished

Sequence: IC-08\_180802A  
Operator: IC-05

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Printed: 8/5/2018 11:23:35 PM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 68

Created: 8/2/2018 8:47:41 AM by IC-05  
Last Update: 8/2/2018 4:32:50 PM by IC-05

No.	Name	Inj. Date/Time	Comment
1	BLANK,BLANK,1	8/1/2018 8:46:58 AM	BLANK
2	Std - 0	8/1/2018 9:02:17 AM	IBLANK
3	Std - 1	8/1/2018 9:27:52 AM	STD-LOW
4	Std - 2	8/1/2018 9:43:10 AM	STD
5	Std - 3	8/1/2018 9:58:28 AM	STD
6	Std - 4	8/1/2018 10:27:23 AM	STD
7	Std - 5	8/1/2018 10:42:41 AM	STD-HIGH
8	BLANK,BLANK,1	8/2/2018 8:53:28 AM	BLANK
9	CCV-1,CCV,1	8/2/2018 9:08:45 AM	CCV
10	CCB-1,CCB,1	8/2/2018 9:24:03 AM	CCB
11	MB-H2O,MBLK,1	8/2/2018 9:39:21 AM	METHOD BLANK
12	LCS-H2O,LCS,1	8/2/2018 9:54:39 AM	LCS
13	N031502-002B,SAMP,5	8/2/2018 10:35:15 AM	SAMP,2>10mL
14	N031406-008A,SAMP,1	8/2/2018 10:54:19 AM	SAMP,10mL
15	N031406-009A,SAMP,20	8/2/2018 11:11:38 AM	SAMP,0.5>10mL
16	N031406-010A,SAMP,20	8/2/2018 11:26:56 AM	SAMP,0.5>10mL
17	N031406-011A,SAMP,20	8/2/2018 11:42:13 AM	SAMP,0.5>10mL
18	N031406-012A,SAMP,20	8/2/2018 11:57:32 AM	SAMP,0.5>10mL
19	N031406-013A,SAMP,50	8/2/2018 12:12:50 PM	SAMP,0.2>10mL
20	BLANK,BLANK,1	8/2/2018 12:28:08 PM	BLANK
21	CCV-2,CCV,1	8/2/2018 12:43:26 PM	CCV
22	CCB-2,CCB,1	8/2/2018 12:58:44 PM	CCB
23	N031406-014A,SAMP,5	8/2/2018 1:14:02 PM	SAMP,2>10mL
24	N031406-011ADUP,DUP,20	8/2/2018 1:33:00 PM	DUP,0.5>10mL
25	N031421-001A,SAMP,5	8/2/2018 1:57:58 PM	SAMP,2>10mL
26	N031421-002A,SAMP,1	8/2/2018 2:13:16 PM	SAMP,10mL
27	N031421-003A,SAMP,1	8/2/2018 2:28:34 PM	SAMP,10mL
28	N031406-012A,SAMP,50	8/2/2018 2:43:53 PM	SAMP,0.2>10mL
29	N031406-013A,SAMP,20	8/2/2018 2:59:11 PM	SAMP,0.5>10mL
30	N031421-011A,SAMP,1	8/2/2018 3:14:29 PM	SAMP,10mL
31	N031406-014AMS,MS,5	8/2/2018 3:29:48 PM	MS,2>10mL
32	N031406-014AMSD,MSD,5	8/2/2018 3:45:05 PM	MSD,2>10mL
33	CCV-3,CCV,1	8/2/2018 4:00:24 PM	CCV
34	CCB-3,CCB,1	8/2/2018 4:34:02 PM	CCB
35	N031502-002BMS,MS,5	8/2/2018 4:49:20 PM	MS,2>10mL
36	LCS-2,LCS,1	8/2/2018 5:04:37 PM	LCS
37	MB-2,MBLK,1	8/2/2018 5:19:55 PM	METHOD BLANK
38	N031433-002C,SAMP,5	8/2/2018 5:35:13 PM	SAMP,2>10mL
39	N031433-009C,SAMP,10	8/2/2018 5:50:31 PM	SAMP,1>10mL
40	N031444-005C,SAMP,5	8/2/2018 6:05:48 PM	SAMP,2>10mL
41	N031433-009CMS,MS,10	8/2/2018 6:21:06 PM	MS,1>10mL

Sequence: IC-08\_180802A  
Operator: IC-05

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 68

Created: 8/2/2018 8:47:41 AM by IC-05  
Last Update: 8/2/2018 4:32:50 PM by IC-05

No.	Name	Type	Inj. Vol.	Program	Method	Status
42	N031433-009CMSD,MSD,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
43	N031444-005CMS,MS,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
44	N031433-002CDUP,DUP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
45	CCV-4,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
46	CCB-4,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
47	N031433-001C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
48	N031433-005C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
49	N031433-006C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
50	N031433-007C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
51	N031433-008C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
52	N031444-001C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
53	N031444-011C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
54	N031444-006C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
55	N031444-006C,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
56	N031502-002B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
57	CCV-5,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
58	CCB-5,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
59	N031503-001B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
60	N031503-002B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
61	N031503-002B,SAMP,500	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
62	N031503-002BDUP,DUP,500	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
63	N031503-002BMS,MS,500	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
64	N031503-002BMSD,MSD,500	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
65	N031503-001B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
66	N031503-001B,SAMP,100	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
67	CCV-6,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished
68	CCB-6,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180801	Finished

*rba* 8/7/2018



Sequence: IC-08\_180802A  
Operator: IC-05

Page 4 of 4  
Printed: 8/5/2018 11:23:35 PM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 68

Created: 8/2/2018 8:47:41 AM by IC-05  
Last Update: 8/2/2018 4:32:50 PM by IC-05

No.	Name	Inj. Date/Time	Comment
42	N031433-009CMSD,MSD,10	8/2/2018 6:36:24 PM	MSD,1>10mL
43	N031444-005CMS,MS,5	8/2/2018 6:51:42 PM	MS,2>10mL
44	N031433-002CDUP,DUP,5	8/2/2018 7:07:00 PM	DUP,2>10mL
45	CCV-4,CCV,1	8/2/2018 7:22:18 PM	CCV
46	CCB-4,CCB,1	8/2/2018 7:37:36 PM	CCB
47	N031433-001C,SAMP,5	8/2/2018 7:52:54 PM	SAMP,2>10mL
48	N031433-005C,SAMP,2	8/2/2018 8:08:12 PM	SAMP,5>10mL
49	N031433-006C,SAMP,2	8/2/2018 8:23:30 PM	SAMP,5>10mL
50	N031433-007C,SAMP,2	8/2/2018 8:38:48 PM	SAMP,5>10mL
51	N031433-008C,SAMP,2	8/2/2018 8:54:07 PM	SAMP,5>10mL
52	N031444-001C,SAMP,2	8/2/2018 9:09:24 PM	SAMP,5>10mL
53	N031444-011C,SAMP,10	8/2/2018 9:24:42 PM	SAMP,1>10mL
54	N031444-006C,SAMP,2	8/2/2018 9:40:00 PM	SAMP,5>10mL
55	N031444-006C,SAMP,1	8/2/2018 9:55:19 PM	SAMP,10mL
56	N031502-002B,SAMP,50	8/2/2018 10:10:36 PM	SAMP,0.2>10mL
57	CCV-5,CCV,1	8/2/2018 10:25:54 PM	CCV
58	CCB-5,CCB,1	8/2/2018 10:41:12 PM	CCB
59	N031503-001B,SAMP,50	8/2/2018 10:56:30 PM	SAMP,0.2>10mL
60	N031503-002B,SAMP,50	8/2/2018 11:11:48 PM	SAMP,0.2>10mL
61	N031503-002B,SAMP,500	8/2/2018 11:27:06 PM	SAMP,0.02>10mL
62	N031503-002BDUP,DUP,500	8/2/2018 11:42:23 PM	DUP,0.02>10mL
63	N031503-002BMS,MS,500	8/2/2018 11:57:42 PM	MS,0.02>10mL
64	N031503-002BMSD,MSD,500	8/3/2018 12:13:00 AM	MSD,0.02>10mL
65	N031503-001B,SAMP,50	8/3/2018 12:28:18 AM	SAMP,0.2>10mL
66	N031503-001B,SAMP,100	8/3/2018 12:43:36 AM	SAMP,0.1>10mL
67	CCV-6,CCV,1	8/3/2018 12:58:55 AM	CCV
68	CCB-6,CCB,1	8/3/2018 1:14:13 AM	CCB

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

(EPA 300) - INITIAL CALIBRATION

Instrument ID: IC-08  
Date Calibrated: 8/1/2018

Initial Calibration:

Chloride	STD0	STD1	STD2	STD3	STD4	STD5	
COMPOUND, in ug/L	0	0.5	1	2	5	10	R <sup>2</sup>
Area,mAU*min	0.0000	0.0761	0.1484	0.2991	0.7684	1.6040	1.000

	Stock
Standard Concentration:	1000000 PPB
Standard ID:	ISST-170814B

Calibration Acceptance Criteria: > 0.995 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

(EPA 300) - INITIAL CALIBRATION

Instrument ID: IC-08  
Date Calibrated: 8/1/2018

Initial Calibration:

Sulfate	STD0	STD1	STD2	STD3	STD4	STD5	
COMPOUND, in ug/L	0	0.5	2	4	10	20	R <sup>2</sup>
Area,mAU*min	0.0000	0.0568	0.2226	0.4514	1.1569	2.3890	1.000

	Stock
Standard Concentration:	1000000 PPB
Standard ID:	ISST-170814G

Calibration Acceptance Criteria: > 0.995 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_CLPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>8/1/2018</b>	SeqNo: <b>3100248</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.015	0.50	2.000	0	101	90	110				

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100250</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.934	0.50	2.000	0	96.7	90	110				

Sample ID <b>CCV-4</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100254</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.942	0.50	2.000	0	97.1	90	110				

Sample ID <b>CCV-5</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100256</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.941	0.50	2.000	0	97.0	90	110				

Sample ID <b>CCV-6</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3100263</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.934	0.50	2.000	0	96.7	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/1/2018</b>	SeqNo: <b>3100265</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.887	0.50	4.000	0	97.2	90	110				

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100267</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.899	0.50	4.000	0	97.5	90	110				

Sample ID <b>CCV-4</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100278</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.875	0.50	4.000	0	96.9	90	110				

Sample ID <b>CCV-5</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100289</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.877	0.50	4.000	0	96.9	90	110				

Sample ID <b>CCV-6</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3100298</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.891	0.50	4.000	0	97.3	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_CLPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>8/1/2018</b>	SeqNo: <b>3100249</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	0.116	0.50									

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100251</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	0.231	0.50									

Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100255</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	0.117	0.50									

Sample ID <b>CCB-5</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100257</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	0.116	0.50									

Sample ID <b>CCB-6</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3100264</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	<del>ND</del> 0.125	0.50									

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

*Henry*  
8/16/2018  
for

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>
Client ID: <b>ICB</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/1/2018</b>	SeqNo: <b>3100266</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate ND 0.50

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100268</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate ND 0.50

Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100279</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate ND 0.50

Sample ID <b>CCB-5</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/2/2018</b>	SeqNo: <b>3100290</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate ND 0.50

Sample ID <b>CCB-6</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126715</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126715</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/3/2018</b>	SeqNo: <b>3100299</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate ND 0.50

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-08

### Analytical Sequence

Date Analyzed: 8/2/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
--------------------	-----------------------	-------------------

ICV	Chloride 3.894	
CCV-3	Chloride 3.867	
CCV-4	Chloride 3.870	
CCV-5	Chloride 3.884	
CCV-6	Chloride 3.887	

**Average** 3.877

**Applied RT Window** 3.677 - 4.077

LCS-R126715_CL	Chloride 3.867	PASS
MB-R126715_CL	Chloride 3.874	PASS
N031503-002B	Chloride 3.887	PASS
N031503-002BDUP	Chloride 3.890	PASS
N031503-002BMS	Chloride 3.887	PASS
N031503-002BMSD	Chloride 3.890	PASS
N031503-001B	Chloride 3.890	PASS

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-08

### Analytical Sequence

Date Analyzed: 8/2/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
--------------------	-----------------------	-------------------

ICV	Sulfate	7.960
CCV-3	Sulfate	7.607
CCV-4	Sulfate	7.600
CCV-5	Sulfate	7.597
CCV-6	Sulfate	7.593

**Average** 7.599

**Applied RT Window** 7.399 - 7.799

LCS-R126715_SO4	Sulfate	7.600	PASS
MB-R126715_SO4	Sulfate	N.A.	N.A.
N031503-002B	Sulfate	7.597	PASS
N031503-002BDUP	Sulfate	7.587	PASS
N031503-002BMS	Sulfate	7.587	PASS
N031503-002BMSD	Sulfate	7.587	PASS
N031503-001B	Sulfate	7.597	PASS

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **INORGANIC IONS by Ion Chromatography**  
 Method Number: EPA 300.0  
 Analysis Date(s): 5/23/2017 ; 5/24/2017; 5/25/2017  
 Analyst/Technician: Ria Abes

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **IC-08**

Acceptance Criteria: MDL < spike < 10XMDL

	Datafile	170523A D36	170523A D37	170523A D38	170524A D17	170524A D18	170525A D45	170525A D46					
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	MDL	LOD	PQL	
Fluoride	0.020	0.022	0.021	0.020	0.023	0.026	0.024	0.020	0.0021	<b>0.0065</b>	0.020	0.10	
Chloride	0.133	0.136	0.136	0.133	0.141	0.133	0.136	0.025	0.0029	<b>0.0091</b>	0.020	0.50	
Nitrite	0.030	0.028	0.027	0.028	0.028	0.027	0.027	0.020	0.0010	<b>0.0030</b>	0.010	0.05	
Bromide	0.037	0.042	0.043	0.038	0.040	0.032	0.025	0.040	0.0062	<b>0.0196</b>	0.040	0.20	
Nitrate	0.035	0.034	0.033	0.033	0.033	0.031	0.030	0.020	0.0016	<b>0.0050</b>	0.010	0.05	
Phosphate	0.047	0.051	0.049	0.046	0.052	0.047	0.059	0.040	0.0043	<b>0.0135</b>	0.030	0.10	
Sulfate	0.213	0.199	0.208	0.216	0.199	0.201	0.198	0.050	0.0073	<b>0.0229</b>	0.050	0.50	



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL & INDUSTRIAL

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

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## MDL/LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Inorganic Ions by Ion Chromatography (Low Level)**  
 Method Number: EPA Method 300.0  
 Analysis Date(s): 3/29-30/2018  
 Analyst: Ria B. Abes

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **IC-08**

Compound	MDL	LOD Spike Conc., mg/L	LOD Actual Conc., mg/L	PQL Spike Conc., mg/L	PQL Actual Conc., mg/L	%Recovery
Fluoride	<b>0.0065</b>	0.020	0.0252	0.10	0.087	<b><u>87</u></b>
Chloride	<b>0.0091</b>	0.020	0.1193	0.50	0.5757	<b><u>115</u></b>
Nitrite	<b>0.0030</b>	0.010	0.0237	0.05	0.0638	<b><u>128</u></b>
Bromide	<b>0.0196</b>	0.040	0.0405	0.20	0.1993	<b><u>100</u></b>
Nitrate	<b>0.0050</b>	0.010	0.0191	0.05	0.0561	<b><u>112</u></b>
Phosphate	<b>0.0135</b>	0.030	0.0415	0.10	0.1216	<b><u>122</u></b>
Sulfate	<b>0.0229</b>	0.050	0.3682	0.50	0.6549	<b><u>131</u></b>



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL PROFESSIONALS

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691



# SM 4500-NO3F



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number:                     R126959                     Analyst:                     QBM                      
 ASSET #:                     N031503                     Date Analyzed:                     8/15/2018                      
 Method:           4500\_N03          

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.	X					
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)	X					
3. ICV within ± 15% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.	X					
5. CCV within ± 15% of expected value.	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)	X					
<b>Sample Information</b>						
8. All samples are within linear range.	X					
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer                     QBM                     Date:           8/16/18            
 2nd Level Reviewer           *Nancy* 8/16/2018           Date:

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 4500N03F  
**TEST NAME:** Nitrate/Nitrite-N by Automated Cadmium Reduction  
**MATRIX:** Groundwater

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

$$\text{Nitrate/Nitrite-N, mg/L} = A * DF$$

where:

A = mg/L, instrument calculated concentration  
DF = dilution factor

For: **N031503-002C**

The concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{Nitrate/Nitrite-N} &= 0.5404 * 5 \\ &= 2.702 \text{ mg/L} \end{aligned}$$

Reporting result in two significant figures,

$$\text{Nitrate/Nitrite-N} = 2.7 \text{ mg/L}$$

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## EPA 353.2 NO3 as N (NO3CD) - Endpoint

## General setup

Measuring unit	ppm
Number of decimals	4
Stabilization time (sec)	26
Measurement time (sec)	3
Sample volume (µl)	450
Filter	546
Reagent prime	No
CD Reduction	Yes

## Limits and dilution

Low level	-0.2
High level	4
Max linearity	4
Blank min	0
Blank max	0.049
Postdilution factor %	10
Factor Calculations	No

## Washes

Number of final washes	6
Wash every	R1, R2

## O.D. Corrections

Carry Over	No
Carry Over value	0.0000
Blank	No
Gain	No

## Reagents

N.	Volume (µl)	Incubation time (sec)
1	200	102
2	300	663
3	0	0

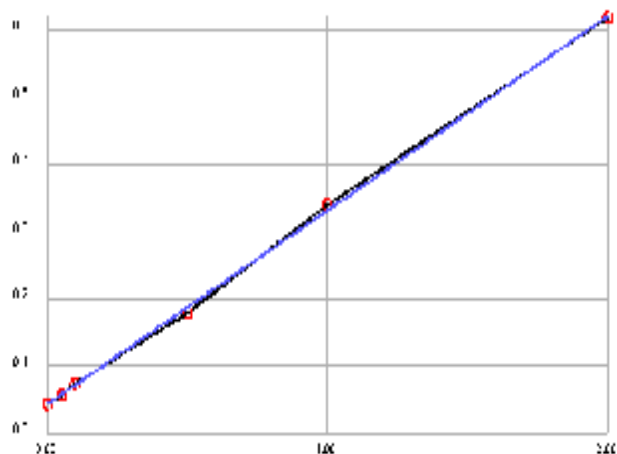
## QC

N.	Value	Tolerance
1	1	0.1

## Calibration

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	$y = 0.2882x + 0.0438$
Correlation	.99978



Calibrant	Energy	Set	Conc
1	0.0435	0.0000	-0.0009
2	0.0578	0.0500	0.0487
3	0.0752	0.1000	0.1091
4	0.1807	0.5000	0.4751
5	0.3390	1.0000	1.0244
6	0.6183	2.0000	1.9936

Notes:

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126959</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R126959</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>8/15/2018</b>	SeqNo: <b>3109935</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.523	0.050	0.5000	0	105	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126959</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126959</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>8/15/2018</b>	SeqNo: <b>3109946</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.459	0.050	0.5000	0	91.8	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126959</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R126959</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>8/15/2018</b>	SeqNo: <b>3109962</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.484	0.050	0.5000	0	96.7	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values



# INITIAL CALIBRATION AND CONTINUING CALIBRATION BLANK SUMMARY



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031503  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126959</b>
Client ID: <b>ICB</b>	Batch ID: <b>R126959</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>8/15/2018</b>	SeqNo: <b>3109936</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126959</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126959</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>8/15/2018</b>	SeqNo: <b>3109947</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>126959</b>
Client ID: <b>CCB</b>	Batch ID: <b>R126959</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>8/15/2018</b>	SeqNo: <b>3109963</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Advanced Technology Laboratories, Inc.

3151 W. Post Rd.  
Las Vegas, NV. 89118  
702-307-2659  
702-307-2691  
[www.atl-labs.com](http://www.atl-labs.com)

Time start: 08-15-2018 13:52

Time end: 08-15-2018 16:09

			EPA 353.2 NO3 as N		
			ppm	Flags	OD
1	<BLANK>	<b>NOT REPORTED</b>	15:39:00	-0.0009	0.0435
2	<BLANK>	<b>NOT REPORTED</b>	15:39:55	0.0036	0.0448
3	<CAL1>		15:40:55	-0.0009 [0]	0.0435
4	<CAL2>		15:41:50	0.0487 [0.05]	0.0578
5	<CAL3>		15:42:45	0.1091 [0.1]	0.0752
6	<CAL4>		15:43:47	0.4751 [0.5]	0.1807
7	<CAL5>		15:44:41	1.0244 [1]	0.3390
8	<CAL6>		15:45:36	1.9936 [2]	0.6183
9	,BLANK,BLANK,1,	<b>NOT REPORTED</b>	15:46:38	0.0733	0.0649
10	,ICV,ICV,1,		15:47:31	0.5227	0.1944
11	,ICB,ICB,1,		15:48:33	0.0206	0.0497
12	,MB-H2O,MBLK,1,		15:49:28	0.0091	0.0464
13	,LCS-H2O,LCS,1,		15:50:24	0.5234	0.1946
14	,N031588-001D,SAMP,1,		15:51:24	0.2763	0.1234
15	,N031503-001C,SAMP,1,		15:52:19	0.0199	0.0495
16	,N031502-002D,SAMP,5,		15:53:15	0.5248	0.1950
17	,N031502-002DDUP,DUP,5,		15:54:03	0.5810	0.2112
18	,N031503-002C,SAMP,5,		15:54:46	0.5404	0.1995
19	,N031503-002CMS,MS,5,		15:55:36	0.9658	0.3221
20	,N031503-002CMSD,MSD,5,		15:56:18	1.1799	0.3838
21	,BLANK,	<b>NOT REPORTED</b>	15:57:07	0.0338	0.0535
22	,CCV-1,CCV,1,		15:57:49	0.4592	0.1761
23	,CCB-1,CCB,1,		15:58:32	0.0202	0.0496
24	,N031596-001C,SAMP,1,		15:59:20	0.0095	0.0465
25	,N031597-001C,SAMP,1,		16:00:04	0.0109	0.0469
26	,N031589-001D,SAMP,1,		16:00:53	0.2406	0.1131

		<b>EPA 353.2 NO3 as N</b>		
		<b>ppm</b>	<b>Flags</b>	<b>OD</b>
27	,N031590-001D,SAMP,1,	16:01:35	0.2420	0.1135
28	,N031591-001D,SAMP,1,	16:02:18	0.2121	0.1049
29	,N031592-001D,SAMP,1,	16:03:06	0.2801	0.1245
30	,N031593-001D,SAMP,1,	16:03:50	0.2638	0.1198
31	,N031594-001D,SAMP,1,	16:04:32	0.2427	0.1137
32	,N031595-001D,SAMP,1,	16:05:21	0.1230	0.0792
33	,BLANK, <b>NOT REPORTED</b>	16:06:03	-0.0040	0.0426
34	,CCV-2,CCV,1,	16:06:46	0.4835	0.1831
35	,CCB-2,CCB,1,	16:07:36	0.0126	0.0474

Nitrate/Nitrite as N by Cadmium Reduction Preparation and Runlog

**Matrix:**

Method: SM 4500-NO3-F/ EPA 353.2

Instrument: Easy Chem Analyzer

Date Analyzed: 8/15/2018

Time Analyzed: 1:52 PM

Analyzed By: QBM

Reagent ID #

Ammonium Chloride reagent/Buffer: R180802C

Color reagent: R180802D

2% Copper Sulfate: R180802B

Ammonium Hydroxide: CINV-180521D

Sample ID.	Sample Wt./Vol.	Sample pH	Std Code	Spike Amt Added (mL)	Spike Conc.(PPM)	Final Volume (mL)	Dilution (F/I)	Reading & Calculations (mg/L)	Comments
N031502-002D		8.56							
N031503-001C		8.63							
N031503-002C		7.42							
N031588-001D		8.11							
N031589-001D		7.72							
N031590-001D		7.88							
N031591-001D		6.56							
N031592-001D		6.42							
N031593-001D		6.03							
N031594-001D		7.99							
N031595-001D		8.70							
N031596-001C		7.64							
N031597-001C		7.37							

# MDL STUDY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Nitrate/Nitrite by Cadmium Reduction**  
 Method Number: SM4500NO3F  
 Analysis Date(s): 10/25,2017, 10/26/2017, 10/27/2017  
 Analyst/Technician: Quennie B. Manimtim

Matrix: **Water**  
 Unit: mg/L  
 Spike Conc: 0.05 mg/L

Analyte	#1	#2	#3	#4	#5	#6	#7	Ave	SD	t <sub>(n-1)</sub> value	MDL	PQL
Nitrate/Nitrite as N	0.0573	0.0562	0.0500	0.0730	0.0698	0.0637	0.0564	0.0609	0.0082	3.143	0.0259	0.05
<b>Method Blank</b>												
Nitrate/Nitrite as N	0.0160	0.0067	0.0064	0.0204	0.0173	0.0036	0.0083	0.0112	0.0065	3.143	0.0317	0.05
<b>MDL:</b>	<b>0.0317</b>	<b>mg/L</b>										



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CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
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NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
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September 21, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N031976

RE: PG&E Topock - PMP

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 06, 2018 by ASSET Laboratories .  
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in  
accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Nancy Libucos Tor*

Quennie Manimtim  
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in  
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EPA ID CA01638

**NEVADA** | P:702.307.2659 F:702.307.2691  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - PMP  
**Lab Order:** N031976

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**CASE NARRATIVE**

**SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time except for pH. pH testing is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

**Analytical Comments for 200.7\_Dissolved:**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Calcium in QC samples N031947-002E-MS1 and N031947-002E-MSD1 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Sodium in QC samples N031976-001D-MS2 and N031976-001D-MSD2 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.



**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - PMP  
**Lab Order:** N031976  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N031976-001A	PE-01-0918	Groundwater	9/6/2018 7:45:00 AM	9/6/2018	9/21/2018
N031976-001B	PE-01-0918	Groundwater	9/6/2018 7:45:00 AM	9/6/2018	9/21/2018
N031976-001C	PE-01-0918	Groundwater	9/6/2018 7:45:00 AM	9/6/2018	9/21/2018
N031976-001D	PE-01-0918	Groundwater	9/6/2018 7:45:00 AM	9/6/2018	9/21/2018
N031976-002A	TW-03D-0918	Groundwater	9/6/2018 7:35:00 AM	9/6/2018	9/21/2018
N031976-002B	TW-03D-0918	Groundwater	9/6/2018 7:35:00 AM	9/6/2018	9/21/2018
N031976-002C	TW-03D-0918	Groundwater	9/6/2018 7:35:00 AM	9/6/2018	9/21/2018
N031976-002D	TW-03D-0918	Groundwater	9/6/2018 7:35:00 AM	9/6/2018	9/21/2018



**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180907D</b>	QC Batch: <b>R127488</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	4000	0.10	0.10		umhos/cm	1	9/7/2018 11:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



**ASSET LABORATORIES**  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180907D</b>	QC Batch: <b>R127488</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	7600	0.10	0.10		umhos/cm	1	9/7/2018 11:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID	<b>N031976-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>120.1_WPGE</b>	Units:	<b>umhos/cm</b>	Prep Date:		RunNo:	<b>127488</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R127488</b>	TestNo:	<b>EPA 120.1</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3134244</b>
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC	
Specific Conductance		7650.000		0.10						7630	0.262
											2

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180907E</b>	QC Batch: <b>R127489</b>				PrepDate		Analyst: <b>LR</b>
pH	7.4	0.10	0.10	H	pH Units	1	9/7/2018 11:35 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/7/2018 11:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank E Value above quantitation range  
H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit  
S Spike/Surrogate outside of limits due to matrix interference Results are wet unless otherwise specified  
DO Surrogate Diluted Out



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180907E</b>	QC Batch: <b>R127489</b>				PrepDate		Analyst: <b>LR</b>
pH	7.2	0.10	0.10	H	pH Units	1	9/7/2018 11:35 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/7/2018 11:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 150.1\_4500H+B\_W**

Sample ID	<b>N031976-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>150.1_4500H</b>	Units:	<b>pH Units</b>	Prep Date:		RunNo:	<b>127489</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R127489</b>	TestNo:	<b>SM4500-H+B</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3134246</b>			
Analyte		Result		PQL		SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH		7.450		0.10							7.430	0.269	10	H
Temp. at time of pH Analysis		25.000		0.10							25.00	0	10	H

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_180910D</b>	QC Batch: <b>70585</b>				PrepDate	<b>9/10/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	2300	25	25		mg/L	1	9/10/2018 01:16 PM

**Qualifiers:**

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_180910D</b>	QC Batch: <b>70585</b>				PrepDate	<b>9/10/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	4400	50	50		mg/L	1	9/10/2018 01:16 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 160.1\_2540C\_W**

Sample ID	<b>LCS-70585</b>	SampType:	<b>LCS</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/10/2018</b>	RunNo:	<b>127525</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>70585</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>9/10/2018</b>	SeqNo:	<b>3136194</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		971.000		10	1000	0		97.1	80	120				

Sample ID	<b>MB-70585</b>	SampType:	<b>MBLK</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/10/2018</b>	RunNo:	<b>127525</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>70585</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>9/10/2018</b>	SeqNo:	<b>3136195</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		ND		10										

Sample ID	<b>N031976-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/10/2018</b>	RunNo:	<b>127525</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>70585</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>9/10/2018</b>	SeqNo:	<b>3136198</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		4275.000		50						4385		2.54	5	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 200.7**

RunID: NV00922-ICP2_180918D	QC Batch: 70588			PrepDate	9/11/2018	Analyst: CEI
Calcium	170000	85	500	µg/L	1	9/19/2018 06:56 AM
Iron	1300	18	20	µg/L	1	9/19/2018 06:56 AM
Magnesium	42000	48	100	µg/L	1	9/19/2018 06:56 AM
Sodium	660000	2400	12000	µg/L	25	9/19/2018 10:04 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 200.7**

RunID: NV00922-ICP2_180918D	QC Batch: 70588			PrepDate	9/11/2018	Analyst: CEI
Calcium	200000	85	500	µg/L	1	9/19/2018 07:05 AM
Iron	ND	18	20	µg/L	1	9/19/2018 07:05 AM
Magnesium	27000	48	100	µg/L	1	9/19/2018 07:05 AM
Sodium	1400000	4800	25000	µg/L	50	9/19/2018 10:21 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>MB-70588</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127688</b>
Client ID: <b>PBW</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142941</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Calcium	ND	500			
Iron	ND	20			
Magnesium	ND	100			

Sample ID <b>N031947-002E-MS1</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127688</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142948</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Calcium	162672.525	500	5000	159200	68.9 75 125 S
Magnesium	30702.805	100	5000	26060	92.9 75 125

Sample ID <b>N031947-002E-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127688</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142949</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Calcium	161988.521	500	5000	159200	55.2 75 125 162700 0.421 20 S
Magnesium	30656.718	100	5000	26060	92.0 75 125 30700 0.150 20

Sample ID <b>LCS1-70588</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127688</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142952</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Calcium	5072.922	500	5000	0	101 85 115
Iron	95.867	20	100.0	0	95.9 85 115
Magnesium	4885.973	100	5000	0	97.7 85 115

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPBB**

Sample ID	<b>N031947-002E-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127688</b>					
Client ID:	<b>ZZZZZZ</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143244</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	114.951	20	100.0	0	115	75	125	112.3	2.31	20	

Sample ID	<b>MB-70588</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127711</b>					
Client ID:	<b>PBW</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143702</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	ND	500									

Sample ID	<b>LCS2-70588</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127711</b>					
Client ID:	<b>LCSW</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143703</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	19724.229	500	20000	0	98.6	85	115				

Sample ID	<b>N031976-001D-MS2</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127711</b>					
Client ID:	<b>ZZZZZZ</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143707</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	668540.359	12000	20000	656100	62.2	75	125				S

Sample ID	<b>N031976-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127711</b>					
Client ID:	<b>ZZZZZZ</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143708</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	658513.829	12000	20000	656100	12.0	75	125	668500	1.51	20	S

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPBB**

Sample ID	<b>N031947-002E-MS1</b>	SampType:	<b>MS</b>	TestCode:	<b>200.7_WDPG</b>	Units:	<b>µg/L</b>	Prep Date:	<b>9/11/2018</b>	RunNo:	<b>127717</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70588</b>	TestNo:	<b>EPA 200.7</b>			Analysis Date:	<b>9/19/2018</b>	SeqNo:	<b>3143758</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron		112.330		20	100.0	0		112	75	125				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICPMS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180911B</b>	QC Batch: <b>70574</b>			PrepDate	<b>9/10/2018</b>	Analyst: <b>CEI</b>
Manganese	470	1.3	2.5	µg/L	5	9/11/2018 01:49 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICPMS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180911B</b>	QC Batch: <b>70574</b>			PrepDate	<b>9/10/2018</b>	Analyst: <b>CEI</b>
Manganese	34	0.26	0.50	µg/L	1	9/11/2018 01:54 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>MB-70574</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/10/2018</b>	RunNo: <b>127538</b>
Client ID: <b>PBW</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137042</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			

Sample ID <b>LCS-70574</b>	SampType: <b>LCS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/10/2018</b>	RunNo: <b>127538</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137043</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	105.761	0.50	100.0	0	106 85 115

Sample ID <b>N032002-001C-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/10/2018</b>	RunNo: <b>127538</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137056</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	101.675	0.50	100.0	2.041	99.6 75 125

Sample ID <b>N032002-001C-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/10/2018</b>	RunNo: <b>127538</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137057</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	102.521	0.50	100.0	2.041	100 75 125 101.7 0.829 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180910A</b>	QC Batch: <b>R127506</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/10/2018 02:47 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180911B</b>	QC Batch: <b>70574</b>				PrepDate	<b>9/10/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/11/2018 01:43 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_180910A	QC Batch: R127506				PrepDate		Analyst: RAB
Hexavalent Chromium	500	3.3	20		µg/L	100	9/10/2018 03:06 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 200.8</b>							
RunID: NV00922-ICP7_180911B	QC Batch: 70574				PrepDate	9/10/2018	Analyst: CEI
Chromium	510	0.65	5.0		µg/L	5	9/11/2018 02:00 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>MB-70574</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>9/10/2018</b>	RunNo: <b>127538</b>
Client ID: <b>PBW</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136935</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	ND	1.0			
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Sample ID <b>LCS-70574</b>	SampType: <b>LCS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>9/10/2018</b>	RunNo: <b>127538</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136936</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	10.146	1.0	10.00	0	101 85 115
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Sample ID <b>N032002-001C-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>9/10/2018</b>	RunNo: <b>127538</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136949</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	9.525	1.0	10.00	0	95.2 75 125
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Sample ID <b>N032002-001C-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>9/10/2018</b>	RunNo: <b>127538</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136950</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	9.645	1.0	10.00	0	96.4 75 125 9.525 1.25 20
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID: <b>MB-R127506</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135093</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      ND                      0.20

Sample ID: <b>LCS-R127506</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135094</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      5.233                      0.20                      5.000                      0                      105                      90                      110

Sample ID: <b>N031976-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135107</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      0.914                      0.20                      1.000                      0                      91.4                      90                      110

Sample ID: <b>N031976-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135109</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      1026.870                      20                      500.0                      500.7                      105                      90                      110

Sample ID: <b>N031976-002AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135110</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      1021.750                      20                      500.0                      500.7                      104                      90                      110                      1027                      0.500                      20

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID	N031977-001ADUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:	RunNo:				
Client ID:	ZZZZZZ	Batch ID:	R127506	TestNo:	EPA 218.6	Analysis Date:	9/10/2018	SeqNo:	3135111				
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		2.891		0.20						2.868	0.802	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_180911A</b>	QC Batch: <b>R127531</b>				PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	260	1.2	5.0		mg/L	1	9/11/2018 09:15 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_180911A</b>	QC Batch: <b>R127531</b>				PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	150	1.2	5.0		mg/L	1	9/11/2018 09:15 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 3151 W. Post Rd., Las Vegas, NV 89118  
 ELAP Cert 2676 | NV Cert NV00922  
 ORELAP/NELAP Cert 4046

"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 2320\_W\_SP**

Sample ID	<b>LCS-R127531</b>	SampType:	<b>LCS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127531</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R127531</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>3136368</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		96.436		5.0	100.0	0		96.4	85	115				

Sample ID	<b>MB-R127531</b>	SampType:	<b>MBLK</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127531</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R127531</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>3136369</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		ND		5.0										

Sample ID	<b>N031976-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127531</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127531</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>3136371</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		259.958		5.0							255.8	1.63	30	

Sample ID	<b>N031976-002BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127531</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127531</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>3136373</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		245.283		5.0	100.0	150.9		94.3	75	125				

Sample ID	<b>N031976-002BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127531</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127531</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>3136374</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		245.283		5.0	100.0	150.9		94.3	75	125	245.3	0	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180907A	QC Batch: R127468				PrepDate		Analyst: RAB
Chloride	970	1.8	100		mg/L	200	9/7/2018 06:20 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180907A	QC Batch: R127468				PrepDate		Analyst: RAB
Sulfate	340	1.1	25		mg/L	50	9/7/2018 07:21 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180907A	QC Batch: R127468				PrepDate		Analyst: RAB
Chloride	2100	4.6	250		mg/L	500	9/7/2018 04:32 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180907A	QC Batch: R127468				PrepDate		Analyst: RAB
Sulfate	490	1.1	25		mg/L	50	9/7/2018 07:36 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_CLPGE**

Sample ID	<b>MB-R127468_CL</b>	SampType:	<b>MBLK</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127468</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R127468</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3133376</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		ND		0.50										

Sample ID	<b>LCS-R127468_CL</b>	SampType:	<b>LCS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127468</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R127468</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3133377</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		2.001		0.50	2.000	0		100	90	110				

Sample ID	<b>N031976-002BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127468</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127468</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3133384</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		3139.050		250	1000	2119		102	80	120				

Sample ID	<b>N031976-002BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127468</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127468</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3133385</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		3169.850		250	1000	2119		105	80	120	3139	0.976	20	

Sample ID	<b>N031976-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127468</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127468</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3133387</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		973.560		100							968.0	0.573	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID	<b>MB-R127468_SO4</b>	SampType:	<b>MBLK</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127468</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R127468</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3133396</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate	0.196	0.50												
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Sample ID	<b>LCS-R127468_SO4</b>	SampType:	<b>LCS</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127468</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R127468</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3133397</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate	3.909	0.50	4.000	0	97.7	90	110							
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Sample ID	<b>N031976-001BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127468</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127468</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3133411</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate	534.455	25	200.0	343.4	95.5	80	120							
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Sample ID	<b>N031976-001BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127468</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127468</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3133412</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate	543.200	25	200.0	343.4	99.9	80	120	534.5	1.62	20				
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Sample ID	<b>N031976-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127468</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127468</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3133413</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate	487.975	25						487.9	0.0246	20				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	ND	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180912B</b>	QC Batch: <b>R127567</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	2.7	0.16	0.25		mg/L	5	9/12/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R127567</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127567</b>
Client ID: <b>PBW</b>	Batch ID: <b>R127567</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/12/2018</b>	SeqNo: <b>3138747</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R127567</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127567</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R127567</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/12/2018</b>	SeqNo: <b>3138748</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.476	0.050	0.5000	0	95.2 85 115

Sample ID <b>N031976-002CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127567</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127567</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/12/2018</b>	SeqNo: <b>3138752</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	2.668	0.25			2.719 1.89 20

Sample ID <b>N031947-002DMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127567</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127567</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/12/2018</b>	SeqNo: <b>3138754</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	4.851	0.25	2.500	2.705	85.8 75 125

Sample ID <b>N031947-002DMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127567</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127567</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/12/2018</b>	SeqNo: <b>3138755</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	5.233	0.25	2.500	2.705	101 75 125 4.851 7.58 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R127648</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141096</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N ND 0.050

Sample ID <b>LCS-R127648</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141097</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 0.565 0.050 0.5000 0 113 85 115

Sample ID <b>N032065-005EDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141101</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 0.504 0.050 0.4465 12.1 20

Sample ID <b>N032065-004EMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141103</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 0.934 0.050 0.5000 0.4076 105 75 125

Sample ID <b>N032065-004EMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141104</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 0.966 0.050 0.5000 0.4076 112 75 125 0.9339 3.40 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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Page 1 of 1

Client: <b>Arcadis</b>		Report to: <b>Dan Bush</b>			Bill to: <b>Lisa Kellog</b>		EDD Requirement				QA/QC		Sample Receipt Condition																																											
Address: <b>1410 Rocky Ridge Dr. #330</b>		Company: <b>Arcadis</b>			Address: <b>2999 Oak Road, Suite 300</b>		Excel EDD <input type="checkbox"/>		RTNE <input type="checkbox"/>		1. Chilled <input type="checkbox"/>		Y <input type="checkbox"/> N <input checked="" type="checkbox"/>																																											
Address: <b>Roseville, CA 95661</b>		Email: <b>dan.bush@arcadis.com</b> <b>daniel.moore@critigen.com</b>			Address: <b>Walnut Creek, CA 94597</b>		GeoTracker <input type="checkbox"/>		RWQCB <input type="checkbox"/>		2. Headspace <input type="checkbox"/>		<input type="checkbox"/>																																											
Phone: <b>916.786.3302</b> Fax: _____		Address: <b>1410 Rocky Ridge Dr. #330</b>			Email to: <b>lisa.kellog@arcadis.com</b> PO# _____		Labspec <input type="checkbox"/>		CalTrans <input type="checkbox"/>		3. Container Intact <input type="checkbox"/>		<input type="checkbox"/>																																											
Submitted By: <b>Spencer Doolittle</b>		Address: <b>Roseville, CA 95661</b>			Phone: <b>951.677.0577</b> Fax: _____		Others <input type="checkbox"/>		Level III <input type="checkbox"/>		4. Seal Present <input type="checkbox"/>		<input type="checkbox"/>																																											
Title: <b>Project Manager</b>		Phone: <b>916.786.3302</b> Fax: _____			Global ID: _____		Specify:		LEVEL IV <input checked="" type="checkbox"/>		5. IR number <b>2</b>		6. Method of Cooling <b>1E</b>																																											
Signature: <b>SDoolittle</b> Date: <b>9/6/18</b>		Sampled By: <b>Spencer Doolittle</b>			Matrix		Analyses Requested																																																	
I hereby authorize ASSET Labs to perform the tests indicated below:		I attest to the validity and authenticity of this sample. I am aware that tempering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action.			Ground <input checked="" type="checkbox"/> Sediment <input type="checkbox"/>		Cr+6 by SM/3500		Alkalinity		pH		Chloride		Specific Conductance		Sulfate		TDS		NO2/NO3 by SM 4500		Ca, Fe, Mg, Na by EPA 200.7		Cr, Mn by 200.8		Turn Around Time		No. of container		Container Type		PRESERVATION		Courier:		Tracking No.																			
Project Name: <b>PG&amp;E Topock - PMP</b>		Signature: <b>SDoolittle</b> Date: <b>9/6/18</b>			Potable <input type="checkbox"/> Soil <input type="checkbox"/>																						NPDES <input type="checkbox"/> Other Solid <input type="checkbox"/>		Surface <input type="checkbox"/>		Remarks																									
Project Number:																																																								
Item No.		Laboratory Work Order No.		Sample ID/Location		Date																					Time		Water		Solid		Others		Alkalinity		pH		Chloride		Specific Conductance		Sulfate		TDS		NO2/NO3 by SM 4500		Ca, Fe, Mg, Na by EPA 200.7		Cr, Mn by 200.8		Turn Around Time		No. of container	
1		N031976-01		PE-01-0918		9/6/18		0745		X						X		X		X		X		X		X		X		X		X		E		4		P		N/S																
2		-02		TW-03D-0918		9/6/18		0736		X						X		X		X		X		X		X		X		X		X		E		4		P		N/S																
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Reinquished by (Signature and Printed Name): <b>SDoolittle</b> Spencer Doolittle		Date / Time: <b>9/6/18/1110</b>		Received by (Signature and Printed Name): <b>Puryalay</b>		Date / Time: <b>9/6/18</b>		<b>1110</b>		Turn Around Time (TAT)				Special Instruction:																																										
Reinquished by (Signature and Printed Name): <b>Puryalay</b>		Date / Time: <b>9/6/18</b>		Received by (Signature and Printed Name): <b>Puryalay</b>		Date / Time: <b>9/6/18</b>		<b>1931</b>		<input type="checkbox"/> A < 24 Hrs or Same Day TAT																																														
Reinquished by (Signature and Printed Name): _____		Date / Time: _____		Received by (Signature and Printed Name): _____		Date / Time: _____		<input type="checkbox"/> B = Next Workday																																																
Reinquished by (Signature and Printed Name): _____		Date / Time: _____		Received by (Signature and Printed Name): _____		Date / Time: _____		<input type="checkbox"/> C = 2 Workdays																																																
Reinquished by (Signature and Printed Name): _____		Date / Time: _____		Received by (Signature and Printed Name): _____		Date / Time: _____		<input type="checkbox"/> D = 3 Workdays																																																
Reinquished by (Signature and Printed Name): _____		Date / Time: _____		Received by (Signature and Printed Name): _____		Date / Time: _____		<input checked="" type="checkbox"/> E = Routine 5-7 Workdays TAT Starts at 8 AM the following day if samples received after 3:00 PM.																																																
Terms		1. All samples will be disposed in 45 days upon receipt and records will be destroyed in 5 years upon submission of final report. 2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis. Less than 24 hrs = 200% Next Day = 100% 2 Workdays = 50% 3 Workdays = 35% 4 Workdays = 20% 3. Custom EDD formats will be an additional 3% of the total project price. 4. Add 10% surcharge for Level III Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.				5. Trip Blanks and Equipment Blanks are billable sample. 6. ASSET Laboratories is not responsible for samples collected using incorrect methodology. 7. Terms are net 30 Days. 8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed. 9. For subcontract analysis, TAT and Surcharges will vary.				Preservatives: H = HCl N = HNO3 S = H2SO4 C = 4PC Z = Zn(AC)2 O = NaOH T = Na2S2O3 Others/Specify:				Container Type: T = Tube V = VOA P = Pint J = Jar B = Tedlar G = Glass M = Metal P = Plastic C = Can																																										

White = Laboratory Copy

Yellow = Customer's Copy

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.


If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 9/6/2018 Workorder: N031976  
 Rep sample Temp (Deg C): 3.1 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |   |  |   |
|---|---|--|---|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>                                  |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                       |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                       |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 11. All samples received within holding time?   | Yes <input type="checkbox"/>  | No <input checked="" type="checkbox"/>                     |   |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>                                |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input checked="" type="checkbox"/><br>Yes <input type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input type="checkbox"/><br>NA <input checked="" type="checkbox"/> |

Comments: Samples for pH were past holding time upon receipt.

Checklist Completed By: YR  9/7/2018

Reviewed By:  LG 091818

**Subject:** RE: PG&E Topock - PMP (Asset Labs No. N031976)  
**From:** "Madsen, Laura" <Laura.Madsen@arcadis.com>  
**Date:** 9/11/2018 3:34 PM  
**To:** Yoandra Rodriguez <yoandra@assetlaboratories.com>  
**CC:** "Madsen, Laura" <Laura.Madsen@arcadis.com>

Hi Yoandra,

Cr6 is acceptable to be analyzed by method 218.6. We have the lab prepare the COCs for us, maybe you can talk to them about the method? I think this happens every month lol.

Thanks,  
Laura

---

**From:** Yoandra Rodriguez <yoandra@assetlaboratories.com>  
**Sent:** Tuesday, September 11, 2018 2:42 PM  
**To:** Madsen, Laura <Laura.Madsen@arcadis.com>  
**Subject:** Fwd: PG&E Topock - PMP (Asset Labs No. N031976)

Hi Laura,

Please follow up.

Thanks!

----- Forwarded Message -----

**Subject:**PG&E Topock - PMP (Asset Labs No. N031976)  
**Date:**Fri, 7 Sep 2018 12:56:26 -0700  
**From:**Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
**To:**Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
**CC:**[maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com) <[maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com)>, 'Andreafe. Gallardo' <[andrea.gallardo@assetlaboratories.com](mailto:andrea.gallardo@assetlaboratories.com)>, 'Sonny. Lorenzo' <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>

Hi Laura,

Please be informed that Cr+6 will be analyzed by 218.6. Please confirm.

COC is attached for reference.

Thanks,

--  
Yoandra Rodriguez  
Sample Control Officer  
Asset Laboratories

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# ASSET Laboratories

## WORK ORDER Summary

07-Sep-18

WorkOrder: N031976

Client ID: ARCUS02

Project: PG&E Topock - PMP

QC Level: Level IV

Date Received: 9/6/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N031976-001A	PE-01-0918	9/6/2018 7:45:00 AM	9/20/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031976-001B			9/20/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		SM 1030F1	Cation-Anion Balance Calculation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031976-001C			9/20/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031976-001D			9/20/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 200.7	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 200.8	DISSOLVED METALS BY ICPMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 200.8	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031976-002A	TW-03D-0918	9/6/2018 7:35:00 AM	9/20/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031976-002B			9/20/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		SM 2320 B	ALKALINITY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW



# ASSET Laboratories

## WORK ORDER Summary

07-Sep-18

**WorkOrder:** N031976

**Client ID:** ARCUS02

**Project:** PG&E Topock - PMP

**QC Level:** Level IV

**Date Received:** 9/6/2018

**Comments:**

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N031976-002B	TW-03D-0918	9/6/2018 7:35:00 AM	9/20/2018	Groundwater	EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		SM 1030F1	Cation-Anion Balance Calculation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031976-002C			9/20/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031976-002D			9/20/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 200.7	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 200.8	DISSOLVED METALS BY ICPMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 200.8	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031976-003A	FOLDER	9/20/2018	9/20/2018		EDD	Client specific project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			9/20/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			9/20/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

# ***ARCADIS***

Project: PG&E Topock - PMP

ASSET Laboratories Work Order:  
N031976

## ***ANALYTICAL and QC RESULTS SAMPLE RECEIVING ITEMS***

***PRIVILEGED AND CONFIDENTIAL***



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P: 562.219.7435 F: 562.219.7436

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3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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### ASSET Laboratories Work Order: N031976

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September 21, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N031976

RE: PG&E Topock - PMP

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 06, 2018 by ASSET Laboratories .  
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in  
accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Nancy Libucos Tor*

Quennie Manimtim  
Laboratory Director

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - PMP  
**Lab Order:** N031976

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**CASE NARRATIVE**

**SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time except for pH. pH testing is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

**Analytical Comments for 200.7\_Dissolved:**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Calcium in QC samples N031947-002E-MS1 and N031947-002E-MSD1 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Sodium in QC samples N031976-001D-MS2 and N031976-001D-MSD2 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.



**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - PMP  
**Lab Order:** N031976  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N031976-001A	PE-01-0918	Groundwater	9/6/2018 7:45:00 AM	9/6/2018	9/21/2018
N031976-001B	PE-01-0918	Groundwater	9/6/2018 7:45:00 AM	9/6/2018	9/21/2018
N031976-001C	PE-01-0918	Groundwater	9/6/2018 7:45:00 AM	9/6/2018	9/21/2018
N031976-001D	PE-01-0918	Groundwater	9/6/2018 7:45:00 AM	9/6/2018	9/21/2018
N031976-002A	TW-03D-0918	Groundwater	9/6/2018 7:35:00 AM	9/6/2018	9/21/2018
N031976-002B	TW-03D-0918	Groundwater	9/6/2018 7:35:00 AM	9/6/2018	9/21/2018
N031976-002C	TW-03D-0918	Groundwater	9/6/2018 7:35:00 AM	9/6/2018	9/21/2018
N031976-002D	TW-03D-0918	Groundwater	9/6/2018 7:35:00 AM	9/6/2018	9/21/2018



**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180907D</b>	QC Batch: <b>R127488</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	4000	0.10	0.10		umhos/cm	1	9/7/2018 11:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180907D</b>	QC Batch: <b>R127488</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	7600	0.10	0.10		umhos/cm	1	9/7/2018 11:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID	<b>N031976-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>120.1_WPGE</b>	Units:	<b>umhos/cm</b>	Prep Date:		RunNo:	<b>127488</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R127488</b>	TestNo:	<b>EPA 120.1</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3134244</b>
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC	
Specific Conductance		7650.000		0.10						7630	0.262
											2

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180907E</b>	QC Batch: <b>R127489</b>				PrepDate		Analyst: <b>LR</b>
pH	7.4	0.10	0.10	H	pH Units	1	9/7/2018 11:35 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/7/2018 11:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180907E</b>	QC Batch: <b>R127489</b>				PrepDate		Analyst: <b>LR</b>
pH	7.2	0.10	0.10	H	pH Units	1	9/7/2018 11:35 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/7/2018 11:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 150.1\_4500H+B\_W**

Sample ID	<b>N031976-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>150.1_4500H</b>	Units:	<b>pH Units</b>	Prep Date:		RunNo:	<b>127489</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R127489</b>	TestNo:	<b>SM4500-H+B</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3134246</b>			
Analyte		Result		PQL		SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH		7.450		0.10							7.430	0.269	10	H
Temp. at time of pH Analysis		25.000		0.10							25.00	0	10	H

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_180910D</b>	QC Batch: <b>70585</b>				PrepDate	<b>9/10/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	2300	25	25		mg/L	1	9/10/2018 01:16 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



**ASSET LABORATORIES**  
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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_180910D</b>	QC Batch: <b>70585</b>				PrepDate	<b>9/10/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	4400	50	50		mg/L	1	9/10/2018 01:16 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 160.1\_2540C\_W**

Sample ID	<b>LCS-70585</b>	SampType:	<b>LCS</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/10/2018</b>	RunNo:	<b>127525</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>70585</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>9/10/2018</b>	SeqNo:	<b>3136194</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		971.000		10	1000	0		97.1	80	120				

Sample ID	<b>MB-70585</b>	SampType:	<b>MBLK</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/10/2018</b>	RunNo:	<b>127525</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>70585</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>9/10/2018</b>	SeqNo:	<b>3136195</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		ND		10										

Sample ID	<b>N031976-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/10/2018</b>	RunNo:	<b>127525</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>70585</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>9/10/2018</b>	SeqNo:	<b>3136198</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		4275.000		50						4385		2.54	5	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 200.7**

RunID: NV00922-ICP2_180918D	QC Batch: 70588			PrepDate	9/11/2018	Analyst: CEI
Calcium	170000	85	500	µg/L	1	9/19/2018 06:56 AM
Iron	1300	18	20	µg/L	1	9/19/2018 06:56 AM
Magnesium	42000	48	100	µg/L	1	9/19/2018 06:56 AM
Sodium	660000	2400	12000	µg/L	25	9/19/2018 10:04 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 200.7**

RunID: NV00922-ICP2_180918D	QC Batch: 70588			PrepDate	9/11/2018	Analyst: CEI
Calcium	200000	85	500	µg/L	1	9/19/2018 07:05 AM
Iron	ND	18	20	µg/L	1	9/19/2018 07:05 AM
Magnesium	27000	48	100	µg/L	1	9/19/2018 07:05 AM
Sodium	1400000	4800	25000	µg/L	50	9/19/2018 10:21 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>MB-70588</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127688</b>
Client ID: <b>PBW</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142941</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Calcium	ND	500			
Iron	ND	20			
Magnesium	ND	100			

Sample ID <b>N031947-002E-MS1</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127688</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142948</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Calcium	162672.525	500	5000	159200	68.9	75	125					S
Magnesium	30702.805	100	5000	26060	92.9	75	125					

Sample ID <b>N031947-002E-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127688</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142949</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Calcium	161988.521	500	5000	159200	55.2	75	125	162700	0.421	20	S
Magnesium	30656.718	100	5000	26060	92.0	75	125	30700	0.150	20	

Sample ID <b>LCS1-70588</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127688</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142952</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Calcium	5072.922	500	5000	0	101	85	115				
Iron	95.867	20	100.0	0	95.9	85	115				
Magnesium	4885.973	100	5000	0	97.7	85	115				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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EPA ID CA01638

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3151 W. Post Rd., Las Vegas, NV 89118  
ELAP Cert 2676 | NV Cert NVO0922  
ORELAP/NELAP Cert 4046

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>N031947-002E-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127688</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143244</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	114.951	20	100.0	0	115	75	125	112.3	2.31	20	

Sample ID <b>MB-70588</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127711</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143702</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	ND	500									

Sample ID <b>LCS2-70588</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127711</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143703</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	19724.229	500	20000	0	98.6	85	115				

Sample ID <b>N031976-001D-MS2</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127711</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143707</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	668540.359	12000	20000	656100	62.2	75	125				S

Sample ID <b>N031976-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>9/11/2018</b>	RunNo: <b>127711</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143708</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	658513.829	12000	20000	656100	12.0	75	125	668500	1.51	20	S

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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 EPA ID CA01638

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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID	<b>N031947-002E-MS1</b>	SampType:	<b>MS</b>	TestCode:	<b>200.7_WDPG</b>	Units:	<b>µg/L</b>	Prep Date:	<b>9/11/2018</b>	RunNo:	<b>127717</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70588</b>	TestNo:	<b>EPA 200.7</b>			Analysis Date:	<b>9/19/2018</b>	SeqNo:	<b>3143758</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron		112.330		20	100.0	0		112	75	125				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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 ELAP Cert 2921  
 EPA ID CA01638

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 3151 W. Post Rd., Las Vegas, NV 89118  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICPMS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180911B</b>	QC Batch: <b>70574</b>			PrepDate	<b>9/10/2018</b>	Analyst: <b>CEI</b>
Manganese	470	1.3	2.5	µg/L	5	9/11/2018 01:49 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 ELAP Cert 2921  
 EPA ID CA01638

**NEVADA** | P:702.307.2659 F:702.307.2691  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICPMS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180911B</b>	QC Batch: <b>70574</b>			PrepDate	<b>9/10/2018</b>	Analyst: <b>CEI</b>
Manganese	34	0.26	0.50	µg/L	1	9/11/2018 01:54 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 ELAP Cert 2921  
 EPA ID CA01638

**NEVADA** | P:702.307.2659 F:702.307.2691  
 3151 W. Post Rd., Las Vegas, NV 89118  
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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>MB-70574</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/10/2018</b>	RunNo: <b>127538</b>
Client ID: <b>PBW</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137042</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			

Sample ID <b>LCS-70574</b>	SampType: <b>LCS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/10/2018</b>	RunNo: <b>127538</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137043</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	105.761	0.50	100.0	0	106 85 115

Sample ID <b>N032002-001C-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/10/2018</b>	RunNo: <b>127538</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137056</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	101.675	0.50	100.0	2.041	99.6 75 125

Sample ID <b>N032002-001C-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/10/2018</b>	RunNo: <b>127538</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137057</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	102.521	0.50	100.0	2.041	100 75 125 101.7 0.829 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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**NEVADA** | P:702.307.2659 F:702.307.2691  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180910A</b>	QC Batch: <b>R127506</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/10/2018 02:47 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180911B</b>	QC Batch: <b>70574</b>				PrepDate	<b>9/10/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/11/2018 01:43 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 ELAP Cert 2921  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180910A</b>	QC Batch: <b>R127506</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	500	3.3	20		µg/L	100	9/10/2018 03:06 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_180911B</b>	QC Batch: <b>70574</b>				PrepDate	<b>9/10/2018</b>	Analyst: <b>CEI</b>
Chromium	510	0.65	5.0		µg/L	5	9/11/2018 02:00 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 EPA ID CA01638

**NEVADA** | P:702.307.2659 F:702.307.2691  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>MB-70574</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>9/10/2018</b>	RunNo: <b>127538</b>
Client ID: <b>PBW</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136935</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	ND	1.0			
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Sample ID <b>LCS-70574</b>	SampType: <b>LCS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>9/10/2018</b>	RunNo: <b>127538</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136936</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	10.146	1.0	10.00	0	101 85 115
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Sample ID <b>N032002-001C-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>9/10/2018</b>	RunNo: <b>127538</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136949</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	9.525	1.0	10.00	0	95.2 75 125
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Sample ID <b>N032002-001C-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>9/10/2018</b>	RunNo: <b>127538</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136950</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	9.645	1.0	10.00	0	96.4 75 125 9.525 1.25 20
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CALIFORNIA** | P:562.219.7435 F:562.219.7436  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
ELAP Cert 2921  
EPA ID CA01638

**NEVADA** | P:702.307.2659 F:702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118  
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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID: <b>MB-R127506</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135093</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	ND	0.20									
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Sample ID: <b>LCS-R127506</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135094</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	5.233	0.20	5.000	0	105	90	110				
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Sample ID: <b>N031976-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135107</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	0.914	0.20	1.000	0	91.4	90	110				
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Sample ID: <b>N031976-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135109</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	1026.870	20	500.0	500.7	105	90	110				
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Sample ID: <b>N031976-002AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135110</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	1021.750	20	500.0	500.7	104	90	110	1027	0.500	20	
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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**NEVADA** | P: 702.307.2659 | F: 702.307.2691  
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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID	N031977-001ADUP	SampType:	DUP	TestCode:	218.6_WPGE	Units:	µg/L	Prep Date:	RunNo:				
Client ID:	ZZZZZZ	Batch ID:	R127506	TestNo:	EPA 218.6	Analysis Date:	9/10/2018	SeqNo:	3135111				
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		2.891		0.20						2.868	0.802	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_180911A</b>	QC Batch: <b>R127531</b>				PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	260	1.2	5.0		mg/L	1	9/11/2018 09:15 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 EPA ID CA01638

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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_180911A</b>	QC Batch: <b>R127531</b>				PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	150	1.2	5.0		mg/L	1	9/11/2018 09:15 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 2320\_W\_SP**

Sample ID	<b>LCS-R127531</b>	SampType:	<b>LCS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127531</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R127531</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>3136368</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		96.436		5.0	100.0	0		96.4	85	115				

Sample ID	<b>MB-R127531</b>	SampType:	<b>MBLK</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127531</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R127531</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>3136369</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		ND		5.0										

Sample ID	<b>N031976-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127531</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127531</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>3136371</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		259.958		5.0							255.8	1.63	30	

Sample ID	<b>N031976-002BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127531</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127531</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>3136373</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		245.283		5.0	100.0	150.9		94.3	75	125				

Sample ID	<b>N031976-002BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127531</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127531</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/11/2018</b>	SeqNo:	<b>3136374</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		245.283		5.0	100.0	150.9		94.3	75	125	245.3	0	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180907A	QC Batch: R127468				PrepDate		Analyst: RAB
Chloride	970	1.8	100		mg/L	200	9/7/2018 06:20 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180907A	QC Batch: R127468				PrepDate		Analyst: RAB
Sulfate	340	1.1	25		mg/L	50	9/7/2018 07:21 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180907A	QC Batch: R127468				PrepDate		Analyst: RAB
Chloride	2100	4.6	250		mg/L	500	9/7/2018 04:32 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180907A	QC Batch: R127468				PrepDate		Analyst: RAB
Sulfate	490	1.1	25		mg/L	50	9/7/2018 07:36 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_CLPGE**

Sample ID	<b>MB-R127468_CL</b>	SampType:	<b>MBLK</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127468</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R127468</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3133376</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		ND		0.50										

Sample ID	<b>LCS-R127468_CL</b>	SampType:	<b>LCS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127468</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R127468</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3133377</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		2.001		0.50	2.000	0		100	90	110				

Sample ID	<b>N031976-002BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127468</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127468</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3133384</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		3139.050		250	1000	2119		102	80	120				

Sample ID	<b>N031976-002BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127468</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127468</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3133385</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		3169.850		250	1000	2119		105	80	120	3139	0.976	20	

Sample ID	<b>N031976-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127468</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127468</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/7/2018</b>	SeqNo:	<b>3133387</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		973.560		100							968.0	0.573	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID <b>MB-R127468_SO4</b>	SampType: <b>MBLK</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133396</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	0.196	0.50									

Sample ID <b>LCS-R127468_SO4</b>	SampType: <b>LCS</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133397</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.909	0.50	4.000	0	97.7	90	110				

Sample ID <b>N031976-001BMS</b>	SampType: <b>MS</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133411</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	534.455	25	200.0	343.4	95.5	80	120				

Sample ID <b>N031976-001BMSD</b>	SampType: <b>MSD</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133412</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	543.200	25	200.0	343.4	99.9	80	120	534.5	1.62	20	

Sample ID <b>N031976-002BDUP</b>	SampType: <b>DUP</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133413</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	487.975	25						487.9	0.0246	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-001

**Client Sample ID:** PE-01-0918  
**Collection Date:** 9/6/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	ND	0.032	0.050	mg/L	1		9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 21-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N031976  
**Project:** PG&E Topock - PMP  
**Lab ID:** N031976-002

**Client Sample ID:** TW-03D-0918  
**Collection Date:** 9/6/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
----------	--------	-----	-----	------	-------	----	---------------

**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180912B</b>	QC Batch: <b>R127567</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	2.7	0.16	0.25		mg/L	5	9/12/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R127567</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127567</b>
Client ID: <b>PBW</b>	Batch ID: <b>R127567</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/12/2018</b>	SeqNo: <b>3138747</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R127567</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127567</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R127567</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/12/2018</b>	SeqNo: <b>3138748</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.476	0.050	0.5000	0	95.2 85 115

Sample ID <b>N031976-002CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127567</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127567</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/12/2018</b>	SeqNo: <b>3138752</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	2.668	0.25			2.719 1.89 20

Sample ID <b>N031947-002DMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127567</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127567</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/12/2018</b>	SeqNo: <b>3138754</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	4.851	0.25	2.500	2.705	85.8 75 125

Sample ID <b>N031947-002DMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127567</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127567</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/12/2018</b>	SeqNo: <b>3138755</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	5.233	0.25	2.500	2.705	101 75 125 4.851 7.58 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

CLIENT: ARCADIS U.S., Inc. - California

Work Order: N031976

Project: PG&E Topock - PMP

### ANALYTICAL QC SUMMARY REPORT

TestCode: 4500N03F\_W

Sample ID	<b>MB-R127648</b>	SampType:	<b>MBLK</b>	TestCode:	<b>4500N03F_W</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127648</b>	
Client ID:	<b>PBW</b>	Batch ID:	<b>R127648</b>	TestNo:	<b>SM4500-NO3</b>			Analysis Date:	<b>9/17/2018</b>	SeqNo:	<b>3141096</b>	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N ND 0.050

Sample ID	<b>LCS-R127648</b>	SampType:	<b>LCS</b>	TestCode:	<b>4500N03F_W</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127648</b>	
Client ID:	<b>LCSW</b>	Batch ID:	<b>R127648</b>	TestNo:	<b>SM4500-NO3</b>			Analysis Date:	<b>9/17/2018</b>	SeqNo:	<b>3141097</b>	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 0.565 0.050 0.5000 0 113 85 115

Sample ID	<b>N032065-005EDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>4500N03F_W</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127648</b>	
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127648</b>	TestNo:	<b>SM4500-NO3</b>			Analysis Date:	<b>9/17/2018</b>	SeqNo:	<b>3141101</b>	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 0.504 0.050 0.4465 12.1 20

Sample ID	<b>N032065-004EMS</b>	SampType:	<b>MS</b>	TestCode:	<b>4500N03F_W</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127648</b>	
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127648</b>	TestNo:	<b>SM4500-NO3</b>			Analysis Date:	<b>9/17/2018</b>	SeqNo:	<b>3141103</b>	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 0.934 0.050 0.5000 0.4076 105 75 125

Sample ID	<b>N032065-004EMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>4500N03F_W</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>127648</b>	
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R127648</b>	TestNo:	<b>SM4500-NO3</b>			Analysis Date:	<b>9/17/2018</b>	SeqNo:	<b>3141104</b>	
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N 0.966 0.050 0.5000 0.4076 112 75 125 0.9339 3.40 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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# SAMPLE RECEIVING ITEMS



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P: 562.219.7435 F: 562.219.7436

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**CHAIN OF CUSTODY RECORD**

Contact us:  
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P: 702.307.2659 F: 702.307.2691  
California: 11060 Artesia Blvd., Ste C, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436  
[www.assetlaboratories.com](http://www.assetlaboratories.com)

<b>Client:</b> Arcadis	<b>Report to:</b> Dan Bush	<b>Bill to:</b> Lisa Kellog	<b>EDD Requirement</b>	<b>QA/QC</b>	<b>Sampe Receipt Condition</b>
<b>Address:</b> 1410 Rocky Rldge Dr. #330	<b>Company:</b> Arcadis	<b>Address:</b> 2999 Oak Road, Suite 300	Excel EDD <input type="checkbox"/>	RTNE <input type="checkbox"/>	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
<b>Address:</b> Roseville, CA 95661	<b>Email:</b> dan.bush@arcadis.com daniel.moore@critigen.com	<b>Address:</b> Walnut Creek, CA 94597	GeoTracker <input type="checkbox"/>	RWQCB <input type="checkbox"/>	1. Chilled <input type="checkbox"/>
<b>Phone:</b> 916.786.3302	<b>Address:</b> 1410 Rocky Ridge Dr. #330	<b>Email to:</b> lisa.kellog@arcadis.com	Lebspec <input type="checkbox"/>	CalTrans <input type="checkbox"/>	2. Headspace <input type="checkbox"/>
<b>Submitted By:</b> Spencer Doolittle	<b>Address:</b> Roseville, CA 95661	<b>Phone:</b> 951.677.0577	Others <input type="checkbox"/>	Level III <input type="checkbox"/>	3. Container Intact <input type="checkbox"/>
<b>Title:</b> Project Manager	<b>Phone:</b> 916.786.3302	<b>Fax:</b>	<b>Specify:</b>	LEVEL IV <input checked="" type="checkbox"/>	4. Seal Present <input type="checkbox"/>
<b>Signature:</b> SDoolittle	<b>Date:</b> 9/6/18	<b>Matrix</b>	<b>Global ID:</b>	Regulatory <input type="checkbox"/>	5. IR number <input type="checkbox"/>
<b>Project Name:</b> PG&E Topock - PMP	<b>Signature:</b> SDoolittle	<b>Analyses Requested</b>	<b>Specify State:</b>	6. Method of Cooling	1e

<b>Signature:</b> SDoolittle	<b>Date:</b> 9/6/18	<b>Sampled By:</b> Spencer Doolittle	<b>Date:</b> 9/6/18	<b>Ground</b> <input checked="" type="checkbox"/>	<b>Sediment</b> <input type="checkbox"/>	<b>Potable</b> <input type="checkbox"/>	<b>Soil</b> <input type="checkbox"/>	<b>NPDES</b> <input type="checkbox"/>	<b>Other Solid</b> <input type="checkbox"/>	<b>Surface</b> <input type="checkbox"/>	<b>Cr-6 by SM/3500</b>	<b>Alkalinity</b>	<b>pH</b>	<b>Chloride</b>	<b>Specific Conductance</b>	<b>Sulfate</b>	<b>TDS</b>	<b>NO2/NO3 by SM 4500</b>	<b>Ca, Fe, Mg, Na by EPA 200.7</b>	<b>Cr, Mn by 200.8</b>	<b>Turn Around Time</b>	<b>No. of container</b>	<b>Container Type</b>	<b>PRESERVATION</b>	<b>Courier:</b>	<b>Tracking No.</b>	<b>Remarks</b>
I attest to the validity and authenticity of this sample. I am aware that tempering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action.																											

Item No.	Laboratory Work Order No.	Sample ID/Location	Date	Time	Water	Solid	Other	Cr-6 by SM/3500	Alkalinity	pH	Chloride	Specific Conductance	Sulfate	TDS	NO2/NO3 by SM 4500	Ca, Fe, Mg, Na by EPA 200.7	Cr, Mn by 200.8	Turn Around Time	No. of container	Container Type	PRESERVATION	Remarks	
1	N031976-01	PE-01-0918	9/6/18	0745	X			X	X	X	X	X	X	X	X	X	X	E	4	P	N/S		
2	-02	TW-03D-0918	9/6/18	0736	X			X	X	X	X	X	X	X	X	X	X	E	4	P	N/S		
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

<b>Relinquished by (Signature and Printed Name):</b> SDoolittle	<b>Date / Time:</b> 9/6/18/1110	<b>Received by (Signature and Printed Name):</b> pmyalay	<b>Date / Time:</b> 9/6/18 1110	<b>Turn Around Time (TAT)</b>	<b>Special Instruction:</b>
<b>Relinquished by (Signature and Printed Name):</b> pmyalay	<b>Date / Time:</b> 9/6/18 1931	<b>Received by (Signature and Printed Name):</b> pmyalay	<b>Date / Time:</b> 9/6/18 1931	<input type="checkbox"/> A < 24 Hrs or Same Day TAT	
<b>Relinquished by (Signature and Printed Name):</b>	<b>Date / Time:</b>	<b>Received by (Signature and Printed Name):</b>	<b>Date / Time:</b>	<input type="checkbox"/> B = Next Workday	
				<input type="checkbox"/> C = 2 Workdays	
				<input type="checkbox"/> D = 3 Workdays	
				<input checked="" type="checkbox"/> E = Routine 5-7 Workdays	
				TAT Starts at 8 AM the following day if samples received after 3:00 PM.	

<b>Terms</b>	<b>Preservatives:</b>	<b>Container Type:</b>
1. All samples will be disposed in 45 days upon receipt and records will be destroyed in 5 years upon submission of final report.	H = HCl N = HNO3 S = H2SO4 C = 4°C	T = Tube V = VOA P = Pint
2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis.	Z = Zn(AC)2 O = NaOH T = Na2S2O3	J = Jar B = Tedlar G = Glass
Less than 24 hrs = 200% Next Day = 100% 2 Workdays = 50% 3 Workdays = 35% 4 Workdays = 20%	<b>Others/Specify:</b>	M = Metal P = Plastic C = Can
3. Custom EDD formats will be an additional 3% of the total project price.		
4. Add 10% surcharge for Level III Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.		

White = Laboratory Copy

Yellow = Customer's Copy

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 9/6/2018 Workorder: N031976  
 Rep sample Temp (Deg C): 3.1 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |   |  |   |
|---|---|--|---|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>                                  |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                       |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                       |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 11. All samples received within holding time?   | Yes <input type="checkbox"/>  | No <input checked="" type="checkbox"/>                     |   |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>                                |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input checked="" type="checkbox"/><br>Yes <input type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input type="checkbox"/><br>NA <input checked="" type="checkbox"/> |

Comments: Samples for pH were past holding time upon receipt.

Checklist Completed By: YR  9/7/2018

Reviewed By:  LG 091818

**Subject:** RE: PG&E Topock - PMP (Asset Labs No. N031976)  
**From:** "Madsen, Laura" <Laura.Madsen@arcadis.com>  
**Date:** 9/11/2018 3:34 PM  
**To:** Yoandra Rodriguez <yoandra@assetlaboratories.com>  
**CC:** "Madsen, Laura" <Laura.Madsen@arcadis.com>

Hi Yoandra,

Cr6 is acceptable to be analyzed by method 218.6. We have the lab prepare the COCs for us, maybe you can talk to them about the method? I think this happens every month lol.

Thanks,  
Laura

---

**From:** Yoandra Rodriguez <yoandra@assetlaboratories.com>  
**Sent:** Tuesday, September 11, 2018 2:42 PM  
**To:** Madsen, Laura <Laura.Madsen@arcadis.com>  
**Subject:** Fwd: PG&E Topock - PMP (Asset Labs No. N031976)

Hi Laura,

Please follow up.

Thanks!

----- Forwarded Message -----

**Subject:**PG&E Topock - PMP (Asset Labs No. N031976)  
**Date:**Fri, 7 Sep 2018 12:56:26 -0700  
**From:**Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
**To:**Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
**CC:**[maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com) <[maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com)>, 'Andreafe. Gallardo' <[andrea.gallardo@assetlaboratories.com](mailto:andrea.gallardo@assetlaboratories.com)>, 'Sonny. Lorenzo' <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>

Hi Laura,

Please be informed that Cr+6 will be analyzed by 218.6. Please confirm.

COC is attached for reference.

Thanks,

--  
Yoandra Rodriguez  
Sample Control Officer  
Asset Laboratories

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# ASSET Laboratories

## WORK ORDER Summary

07-Sep-18

WorkOrder: N031976

Client ID: ARCUS02

Project: PG&E Topock - PMP

QC Level: Level IV

Date Received: 9/6/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N031976-001A	PE-01-0918	9/6/2018 7:45:00 AM	9/20/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031976-001B			9/20/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		SM 1030F1	Cation-Anion Balance Calculation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031976-001C			9/20/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031976-001D			9/20/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 200.7	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 200.8	DISSOLVED METALS BY ICPMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 200.8	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031976-002A	TW-03D-0918	9/6/2018 7:35:00 AM	9/20/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031976-002B			9/20/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		SM 2320 B	ALKALINITY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

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## WORK ORDER Summary

07-Sep-18

**WorkOrder:** N031976

**Client ID:** ARCUS02

**Project:** PG&E Topock - PMP

**QC Level:** Level IV

**Date Received:** 9/6/2018

**Comments:**

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N031976-002B	TW-03D-0918	9/6/2018 7:35:00 AM	9/20/2018	Groundwater	EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		SM 1030F1	Cation-Anion Balance Calculation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031976-002C			9/20/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031976-002D			9/20/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 200.7	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 200.8	DISSOLVED METALS BY ICPMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/20/2018		EPA 200.8	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N031976-003A	FOLDER	9/20/2018	9/20/2018		EDD	Client specific project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			9/20/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			9/20/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

## List of Analysts

### ASSET Laboratories Work Order: N031976

NAME	TEST METHOD
Quennie Manimtim	SM 4500-NO3F
Claire Ignacio	EPA 200.7_Dissolved, EPA 200.8_Dissolved
Ria Abes	EPA 218.6, EPA 300.0
Lilia Ramit	EPA 120.1, SM 4500-H+B, SM 2540C, SM 2320 B



# EPA 120.1



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R127488

Analyst: LSR

ASSET #: N031976

Date Analyzed: 9/7/2018

Method: EPA 120.1

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)			X			
<b>Sample Information</b>						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below the PQL .			X			
11. LCS compounds within control limits.			X			
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed	/		
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Julia Ramit

Date: 9/10/2018

2nd Level Reviewer Nancy 9/20/2018

Date:



# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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# Conductivity Logbook

Date: 9/7/18 1140

Analyst: LN

Standard	Std ID	Reading	Comments
9.91 <sup>us/cm</sup>	CINW-180731G	9.73 @ 26.7°C	% Rec: (90-110%)
1413	180515C	1400 @ 26.7°C	
9988	180731H	10120 @ 26.5°C	
99931	180515D	100100 @ 26.5°C	

Sample ID	Matrix	Reading	Comments
1 NO21976-01B	1H20	390 @ 25.9°C	
2 1 JB	1	7630 @ 25.8°C	
3 1 JB DP	1	7650 @ 25.8°C	
4			
5			
6			
7			
8 (1413 <sup>us/cm</sup> )	CINW-180417B	1453 @ 26.7°C	
9 10000	180516A	10020 @ 27.0°C	
10 99601	180521B	102500 @ 26.8°C	
Dup			Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Date: \_\_\_\_\_

Julia Ramit 9/10/2018

Analyst: \_\_\_\_\_

Standard	Std ID	Reading	Comments
			% Rec: (90-110%)

Sample ID	Matrix	Reading	Comments
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Dup			Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Logbook # 6



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# SM 4500-H+B



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**pH Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

pH ARCUS  
 REV 0  
 101215

**FIRST LEVEL REVIEW:**

QC Batch Number: R127489

Instrument ID: pH meter

ASSET #: N031976

Analyst: LSR

Date Analyzed: 7-Sep

Method: EPA 150.1

pH Meter Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Was the meter calibrated using 3 buffers (4,7 and 10)?	X					
2. Was a closing buffer used at the end of analysis?	X					
3. Was the meter checked every 10 samples?			X			
<b>Sample Information</b>						
4. Are all samples analyzed within hold time.		X				
<b>QC Items</b>						
5. Was a duplicate sample analyzed?	X					
<b>Raw Data and Miscellaneous Information</b>						
6. Are Non-Conformances documented			X			
7. Runlog complete and included in package.	X					
<b>Preliminary Report</b>						
8. Does the raw data match the preliminary report?	X					
9. Are analytical results correct?	X					
10. Is the QC summary report present and complete?	X					

Comments:

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer *Silia Ramit*

Date: 9/10/2018

2nd Level Reviewer *Nancy* 9/20/2018

Date: \_\_\_\_\_

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



# pH Logbook

Date: 9/6/18 945

Analyst: LR CONTD

Standard	Std ID	pH	Comments
Buffer 7	CIM-180515B	7.00 @x.00	
Buffer 4	180515A	4.00 @x.00	
Buffer 10	+ 180131B	9.98 @x.00	
Slope		98.17	Acceptance Criteria: 95%-105%

Sample ID	Matrix	pH	Comments
1 NOB1964-011A	Soil	7.10 @x.00	
2   12A		7.94 @x.00	
3   13A		7.58 @x.00	
4   13A DUP		7.53 @x.00	
5   14A		7.78 @x.00	
6   15A		7.94 @x.00	
7   16A		8.06 @x.00	
8   17A		7.60 @x.00	
9   18A		7.48 @x.00	
10   19A		7.44 @x.00	
Dup   20A		7.71 @x.00	Accept: 10% water, 20% soil
Buffer 7, 4, 10 (Circle one)	CIM-180320L	6.99 @x.00	Accept: +/-0.05 pH units from expected value

Date: 9/7/18 1125

Analyst: LR

Standard	Std ID	pH	Comments
Buffer 7	CIM-180515B	7.01 @x.00	
Buffer 4	180515A	4.02 @x.00	
Buffer 10	180131B	10.00 @x.00	
Slope		97.87	Acceptance Criteria: 95%-105%

Sample ID	Matrix	pH	Comments
1 NOB1976-001B	HW	7.43 @x.00	
2   1B DUP		7.45 @x.00	
3   2A B LR		7.25 @x.00	
4			
5			Buffer 7 CIM/180320L
6			= 7.00 @x.00
7			
8			Julia Ramit 9/10/2018
9			
10			

# SM 2540C



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: 70585 Analyst: LSR  
 ASSET #: N031976 Date Analyzed: 10-Sep

Method: **EPA 160.1**

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
<b>Sample Information</b>						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed	X		
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Julia Ramit

Date: 9/12/2018

2nd Level Reviewer Nancy 9/20/2018

Date:



# SAMPLE CALCULATION



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## SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B)*1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For N031976-001B, TDS concentration in mg/L is calculated as follows:

$$\begin{aligned}\text{TDS, mg/L} &= \frac{(49.4288-49.3351)*1000000}{40} \\ &= 2342.5 \text{ mg/L}\end{aligned}$$

Reporting result in two significant figures,

$$\text{TDS} = 2300 \text{ mg/L}$$

*Jilia Ramit* 9/12/2018

# SAMPLE PREPARATION LOG



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PREP BATCH REPORT

Prep Start Date: 9/10/2018 1:16:51 P

Reviewed/ Date: *Nancy* 9/20/2018

Page: 1 of 1

Prep End Date: 9/11/2018 10:15:00

Initials/ Date: *Lilia Ramit* 9/12/2018

Prep Factor Units Temp. (°C):

Prep Batch 70585 Prep Code: 160.1\_W\_PRE

Technician: Lilia Ramit

mL / mL

180

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70585	Water		100	<input type="checkbox"/>	0	0	100	1.000		
MB-70585	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N031976-001B	Groundwater		40	<input type="checkbox"/>	0	0	100	2.500		
N031976-002B	Groundwater		20	<input type="checkbox"/>	0	0	100	5.000		
N031976-002B-DU	Groundwater		20	<input type="checkbox"/>	0	0	100	5.000		
N031998-001A	Groundwater		50	<input type="checkbox"/>	0	0	100	2.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name	Spk ID	Spike Name	SampType	AmtAdd
10187	Glass Fiber Filter, 47mm	IWST180904A	1000 ppm NaCl	LCS	100

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 9/10/2018 1:16:51 P  
 Prep End Date:

Reviewed/ Date: \_\_\_\_\_  
 Initials/ Date: Lilia Ramit 9/12/2018

Page: 1 of 1

Prep Batch 70585 Prep Code: 160.1\_W\_PRE

Technician: Lilia Ramit

Prep Factor Units  
 mL / mL

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70585	Water	11057180904A	100	<input type="checkbox"/>	0	0	100	1.000		
MB-70585	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N031976-001B	Groundwater	3950	100   40	<input type="checkbox"/>	0	0	100	1.000		
N031976-002B	Groundwater	7630	100   20	<input type="checkbox"/>	0	0	100	1.000		
N031976-002B-DU	Groundwater		100   20	<input type="checkbox"/>	0	0	100	1.000		
N031998-001A	Groundwater	2720	100   50	<input type="checkbox"/>	0	0	100	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

10187

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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SOLIDS RAW DATA

TEST: TSS/ TDS/ TS

Date	Sample ID	Sample Vol. (ml)	Crucible + Filter (TSS) Crucible (TDS, TS) Tare Wt. (g)	Crucible + Filter+Sample (TSS) Crucible + Sample (TDS, TS) Tare Wt. (g)	Comments
7/10/18 1316 FF	MB 70585	100	68.1462 68.1459	68.1460 68.1460	
LL	LC8 70585	100	68.9440 68.9443	69.0412 69.0414	
XY	N031976-001B	40	49.3348 49.3351	49.4284 49.4288	
T	2B	20	46.0347 46.0351	46.1228 46.1228	
E	2B DVP	20	49.3468 49.3472	49.4324 49.4327	
IC	N031998-001A	50	60.2865 60.2804	60.3984 60.3988	
	Julia Ramif 9/12/2018 Crossing wt: 49.9995 @ 1015 7/10/18 KR				



# TOTAL DISSOLVED SOLIDS, TDS

TDS, mg/L =

$$(A-B) \times 10000 \times PF$$

where:

A = weight in grams of dish + residue after drying  
 B = weight of dish in grams  
 PF = 100/volume of sample used in mL

	vol of sample (mL)	weight of dish in grams (B)	weight in grams of dish + residue after drying (A)	(A-B)*10000	prep fact (PF)	TDS, mg/L	CONDUCTIVITY	RATIO	Sample Type
Date Finished:									
9/11/2018									
MB-70585	100	68.1459	68.146	1	1	1			MBLK
LCS-70585	100	68.9443	69.0414	971	1	971			LCS
N031976-001B	40	49.3351	49.4288	937	2.5	2342.5	3950	0.593	SAMP
N031976-002B	20	46.0351	46.1228	877	5	4385	7630	0.575	SAMP
N031976-002BDUP	20	49.3472	49.4327	855	5	4275	7630	0.560	DUP
N031998-001A	50	60.2804	60.3988	1184	2	2368	2720	0.871	SAMP

*Julia Ramit* 9/12/2018



# EPA 200.7 Dissolved



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70588  
 ASSET #: N031976

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 9/18/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)			X			X
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)		X			X	
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits		X			X	
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X			X	X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

%RSD of Fe in N031947-002EMS failed. For rerun.  
 %Rec of Ca in N031947-002EMS/MSD failed. However, LCS passed criteria.

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer Jimmy 9/25/2018

Date: 9/25/18  
 Date: \_\_\_\_\_



**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70588  
 ASSET #: N031976

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 9/19/2018X

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)			X			X
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			<del>X</del>		X
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			<del>X</del>		X
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			<del>X</del>		X
24. LCS compounds within control limits.	X			<del>X</del>		X
25. MS/MSD, RPD's are within control limits	X			X		
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented			X			X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

For Fe rerun only. / for N031947-002E-MS1

	Yes	No	N/A
1. All assigned sample(s) analyzed	X		
2. Matrix / units correct	X		
3. Does batch meet QC requirements?	X		
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)	X		
5. Is first level review correct and complete?	X		

1st Level Reviewer CEI  
 2nd Level Reviewer Handwritten Signature 9/25/2018

Date: 9/25/18  
 Date: \_\_\_\_\_



**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70588  
 ASSET #: N031976

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 9/18/2018  
 19

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)			X			X
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			<del>X</del>		X
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			<del>X</del>		X
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits		X			X	
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X		<del>X</del>		X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

%Rec of Na in N031976-001DMS/MSD failed. However, LCS passed criteria.

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer Handy 9/25/2018

Date: 9/25/18  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## SAMPLE CALCULATION

**METHOD:** EPA 6010B  
**TEST NAME:** Heavy Metals by ICP  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Calcium concentration, in ug/L , in the original sample as follows:

$$\text{Calcium , ug/L} = A * DF * PF * CF$$

where:

A = mg/L, calculated concentration  
DF = Dilution Factor  
PF = Final Volume of Digestate, mL / Amount of Sample, mL  
CF= Conversion Factor from mg/L to ug/L, 1000

For Sample **N031976-001D** , the concentration in ug/L is calculated as follows:

$$\text{Calcium , ug/L} = 172.669 * 1 * (25/25) * 1000$$

$$\text{Calcium , ug/L} = 172669$$

Reporting results in two significant figures,

$$\text{Calcium , ug/L} = 170000$$

# % RSD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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RSD SUMMARY: 180918B

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Ca	0	9.073	15	PASS
Standard1	ICAL	1	Ca	0.2	10.15	15	PASS
Standard2	ICAL	1	Ca	1	3.079	15	PASS
Standard3	ICAL	1	Ca	2	0.25	15	PASS
Standard4	ICAL	1	Ca	5	0.36	15	PASS
Standard5	ICAL	1	Ca	7.5	0.31	15	PASS
Standard6	ICAL	1	Ca	10	0.41	15	PASS
Standard7	ICAL	1	Ca	20	0.59	15	PASS
ICV	ICV	1	Ca	9.93	0.65	15	PASS
ICB	ICB	1	Ca	0.0022	603.44	15	<PQL
ICB	ICB	1	Ca	0.0073	275.86	15	<PQL
LLICV	CCV1	1	Ca	0.19	10.53	20	PASS
ICSA1	ICSA	1	Ca	460.62	0.22	15	PASS
ICSAB1	ICSAB	1	Ca	549.4	0.7	15	PASS
LLICV	CCV1	1	Ca	0.2	9.85	20	PASS
CCV1	CCV	1	Ca	9.93	0.26	15	PASS
CCB1	CCB	1	Ca	0.018	140.91	15	<PQL
MB-70588	MBLK	1	Ca	0.016	149.0018	15	<PQL
LCS1-70588	LCS	1	Ca	5.09	0.22	15	PASS
CCV2	CCV	1	Ca	10.12	0.47	15	PASS
CCB2	CCB	1	Ca	0.02	92.82	15	<PQL
N031947-002E	SAMP	1	Ca	158.46	0.53	15	PASS
N031947-002E	SAMP	5	Ca	32.86	0.41	15	PASS
N031947-002E-PS	PS	1	Ca	163.75	0.75	15	PASS
N031947-002E-MS1	MS	1	Ca	163.11	0.39	15	PASS
N031947-002E-MSD1	MSD	1	Ca	163.5	0.52	15	PASS
N031976-001D	SAMP	1	Ca	172.36	0.44	15	PASS
N031976-002D	SAMP	1	Ca	201.79	0.89	15	PASS
CCV3	CCV	1	Ca	9.9	0.42	15	PASS
CCB3	CCB	1	Ca	0.024	180.95	15	<PQL
ICSA2	ICSA	1	Ca	459.62	0.88	15	PASS
ICSAB2	ICSAB	1	Ca	549.45	0.46	15	PASS
MB-70588	MBLK	1	Ca	0.032	37	15	<PQL
LCS1-70588	LCS	1	Ca	3.46	80.92	15	NR!
CCV4	CCV	1	Ca	10.15	0.56	15	PASS
CCB4	CCB	1	Ca	0.033	71.036	15	<PQL
N031947-002E	SAMP	1	Ca	159.23	0.47	15	PASS
N031947-002E	SAMP	5	Ca	33.022	0.25	15	PASS
N031947-002E-PS	PS	1	Ca	163.34	0.11	15	PASS
N031947-002E-MS1	MS	1	Ca	162.67	0.68	15	PASS
N031947-002E-MSD1	MSD	1	Ca	161.99	0.4	15	PASS
N031976-001D	SAMP	1	Ca	172.67	0.73	15	PASS

NR

NR



RSD SUMMARY: 180918B

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
N031976-002D	SAMP	1	Ca	201.11	0.43	15	PASS
LCS1-70588	LCS	1	Ca	5.073	0.4	15	PASS
CCV5	CCV	1	Ca	9.95	0.29	15	PASS
CCB5	CCB	1	Ca	0.018	22.95	15	<PQL
ICSA3	ICSA	1	Ca	452.59	0.031	15	PASS
ICSAB3	ICSAB	1	Ca	541.17	0.041	15	PASS
CaIBlk	IBLK	1	Fe	0	17.059	15	<PQL
Standard1	ICAL	1	Fe	0.02	3.2	15	PASS
Standard2	ICAL	1	Fe	0.05	0.4	15	PASS
Standard3	ICAL	1	Fe	2	0.35	15	PASS
Standard4	ICAL	1	Fe	5	0.45	15	PASS
Standard5	ICAL	1	Fe	7.5	0.21	15	PASS
Standard6	ICAL	1	Fe	10	0.025	15	PASS
Standard7	ICAL	1	Fe	20	0.17	15	PASS
ICV	ICV	1	Fe	10.082	0.17	15	PASS
ICB	ICB	1	Fe	-0.0049	15.58	15	<PQL
ICB	ICB	1	Fe	-0.0055	13.18	15	PASS
LLICV	CCV1	1	Fe	0.014	8.19	20	PASS
ICSA1	ICSA	1	Fe	191.87	0.19	15	PASS
ICSAB1	ICSAB	1	Fe	183.6	0.073	15	PASS
LLICV	CCV1	1	Fe	0.019	9.83	20	PASS
CCV1	CCV	1	Fe	10.084	0.068	15	PASS
CCB1	CCB	1	Fe	-0.0054	10.92	15	PASS
MB-70588	MBLK	1	Fe	-0.0062	7.72	15	PASS
LCS1-70588	LCS	1	Fe	0.096	1.85	15	PASS
CCV2	CCV	1	Fe	10.49	0.035	15	PASS
CCB2	CCB	1	Fe	-0.0052	4.86	15	PASS
N031947-002E	SAMP	1	Fe	0.0067	1.055	15	PASS
N031947-002E	SAMP	5	Fe	-0.0043	15.12	15	<PQL
N031947-002E-PS	PS	1	Fe	0.11	1.078	15	PASS
N031947-002E-MS1	MS	1	Fe	0.12	0.31	15	PASS
N031947-002E-MSD1	MSD	1	Fe	0.12	0.98	15	PASS
N031976-001D	SAMP	1	Fe	1.3	0.38	15	PASS
N031976-002D	SAMP	1	Fe	0.0015	23.75	15	<PQL
CCV3	CCV	1	Fe	10.054	0.099	15	PASS
CCB3	CCB	1	Fe	-0.0051	6	15	PASS
ICSA2	ICSA	1	Fe	179.3	0.056	15	PASS
ICSAB2	ICSAB	1	Fe	182.79	0.092	15	PASS
MB-70588	MBLK	1	Fe	-0.006	1.51	15	PASS
LCS1-70588	LCS	1	Fe	0.064	84.65	15	NR!
CCV4	CCV	1	Fe	10.37	0.48	15	PASS
CCB4	CCB	1	Fe	-0.0054	2.17	15	PASS

NR

NR

RSD SUMMARY: 180918B

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
N031947-002E	SAMP	1	Fe	0.007	6.38	15	PASS
N031947-002E	SAMP	5	Fe	-0.0047	11.99	15	PASS
N031947-002E-PS	PS	1	Fe	0.11	0.7	15	PASS
N031947-002E-MS1	MS	1	Fe	0.085	63.073	15	NR!
N031947-002E-MSD1	MSD	1	Fe	0.11	0.61	15	PASS
N031976-001D	SAMP	1	Fe	1.3	0.68	15	PASS
N031976-002D	SAMP	1	Fe	0.0017	27.28	15	<PQL
LCS1-70588	LCS	1	Fe	0.096	0.48	15	PASS
CCV5	CCV	1	Fe	10.012	0.21	15	PASS
CCB5	CCB	1	Fe	-0.0056	4.75	15	PASS
ICSA3	ICSA	1	Fe	175.09	0.34	15	PASS
ICSAB3	ICSAB	1	Fe	179.32	0.52	15	PASS
CalBlk	IBLK	1	Mg	0	6.65	15	PASS
Standard1	ICAL	1	Mg	0.1	0.41	15	PASS
Standard2	ICAL	1	Mg	1	0.18	15	PASS
Standard3	ICAL	1	Mg	2	0.12	15	PASS
Standard4	ICAL	1	Mg	5	0.29	15	PASS
Standard5	ICAL	1	Mg	7.5	0.12	15	PASS
Standard6	ICAL	1	Mg	10	0.18	15	PASS
Standard7	ICAL	1	Mg	20	0.2	15	PASS
ICV	ICV	1	Mg	10.029	0.093	15	PASS
ICB	ICB	1	Mg	-0.0041	14.37	15	PASS
ICB	ICB	1	Mg	-0.0043	11.64	15	PASS
LLICV	CCV1	1	Mg	0.086	0.59	20	PASS
ICSA1	ICSA	1	Mg	436.89	0.097	15	PASS
ICSAB1	ICSAB	1	Mg	523.91	0.13	15	PASS
LLICV	CCV1	1	Mg	0.088	2.24	20	PASS
CCV1	CCV	1	Mg	9.89	0.1	15	PASS
CCB1	CCB	1	Mg	-0.0039	28.83	15	<PQL
MB-70588	MBLK	1	Mg	-0.00077	113.55	15	<PQL
LCS1-70588	LCS	1	Mg	4.83	0.39	15	PASS
CCV2	CCV	1	Mg	10.32	0.037	15	PASS
CCB2	CCB	1	Mg	-0.0018	135.41	15	<PQL
N031947-002E	SAMP	1	Mg	26.11	0.23	15	PASS
N031947-002E	SAMP	5	Mg	5.7	0.7	15	PASS
N031947-002E-PS	PS	1	Mg	30.77	0.027	15	PASS
N031947-002E-MS1	MS	1	Mg	30.79	0.2	15	PASS
N031947-002E-MSD1	MSD	1	Mg	30.67	0.1	15	PASS
N031976-001D	SAMP	1	Mg	42.33	0.13	15	PASS
N031976-002D	SAMP	1	Mg	26.76	0.079	15	PASS
CCV3	CCV	1	Mg	9.94	0.061	15	PASS
CCB3	CCB	1	Mg	-0.0036	42.17	15	<PQL

NR

NR

**RSD SUMMARY: 180918B**

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
ICSA2	ICSA	1	Mg	436.44	0.11	15	PASS
ICSAB2	ICSAB	1	Mg	521.78	0.11	15	PASS
MB-70588	MBLK	1	Mg	-0.002	19.76	15	<PQL
LCS1-70588	LCS	1	Mg	3.82	45.27	15	NR!
CCV4	CCV	1	Mg	10.29	0.37	15	PASS
CCB4	CCB	1	Mg	-0.0046	19.27	15	<PQL
N031947-002E	SAMP	1	Mg	26.058	0.26	15	PASS
N031947-002E	SAMP	5	Mg	5.73	0.51	15	PASS
N031947-002E-PS	PS	1	Mg	30.65	0.17	15	PASS
N031947-002E-MS1	MS	1	Mg	30.7	0.12	15	PASS
N031947-002E-MSD1	MSD	1	Mg	30.66	0.12	15	PASS
N031976-001D	SAMP	1	Mg	42.26	0.25	15	PASS
N031976-002D	SAMP	1	Mg	26.99	0.14	15	PASS
LCS1-70588	LCS	1	Mg	4.89	0.31	15	PASS
CCV5	CCV	1	Mg	9.98	0.19	15	PASS
CCB5	CCB	1	Mg	-0.0041	10.54	15	PASS
ICSA3	ICSA	1	Mg	429.25	0.28	15	PASS
ICSAB3	ICSAB	1	Mg	513.53	0.69	15	PASS

**RSD SUMMARY: 180919C**

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Fe	0	21.86	15	<PQL
Standard1	ICAL	1	Fe	0.02	4.39	15	PASS
Standard2	ICAL	1	Fe	0.05	0.5	15	PASS
Standard3	ICAL	1	Fe	2	0.25	15	PASS
Standard4	ICAL	1	Fe	5	0.069	15	PASS
Standard5	ICAL	1	Fe	7.5	0.16	15	PASS
Standard6	ICAL	1	Fe	10	0.051	15	PASS
Standard7	ICAL	1	Fe	20	0.13	15	PASS
ICV	ICV	1	Fe	10.087	0.073	15	PASS
ICB	ICB	1	Fe	-0.0034	29.82	15	<PQL
LLICV1	CCV1	1	Fe	0.022	5.96	20	PASS
ICSA1	ICSA	1	Fe	177.32	0.099	15	PASS
ICSAB1	ICSAB	1	Fe	188.71	0.077	15	PASS
N031947-002E-MS1	MS	1	Fe	0.11	0.85	15	PASS
CCV1	CCV	1	Fe	10.34	0.049	15	PASS
CCB1	CCB	1	Fe	-0.0041	10.35	15	PASS
ICSA2	ICSA	1	Fe	179.15	0.068	15	PASS
ICSAB2	ICSAB	1	Fe	189.94	0.012	15	PASS

**RSD SUMMARY: 180919D**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Na	0	4.33	15	PASS
Standard1	ICAL	1	Na	0.1	9.16	15	PASS
Standard2	ICAL	1	Na	1	1.77	15	PASS
Standard3	ICAL	1	Na	5	0.59	15	PASS
Standard4	ICAL	1	Na	10	0.27	15	PASS
Standard5	ICAL	1	Na	20	0.28	15	PASS
Standard6	ICAL	1	Na	40	0.29	15	PASS
ICV	ICV	1	Na	9.43	0.42	15	PASS
ICV	ICV	1	Na	9.77	0.53	15	PASS
ICB	ICB	1	Na	-0.027	22.033	15	<PQL
ICSA1	ICSA	1	Na	-0.033	12.13	15	PASS
ICSAB1	ICSAB	1	Na	9.43	0.32	15	PASS
MB-70588	MBLK	1	Na	-0.023	44.3	15	<PQL
LCS2-70588	LCS	1	Na	19.72	0.22	15	PASS
N031976-001D	SAMP	25	Na	26.24	0.37	15	PASS
N031976-001D	SAMP	125	Na	4.91	0.32	15	PASS
N031976-001D-PS	PS	25	Na	27	0.091	15	PASS
N031976-001D-MS2	MS	25	Na	26.74	0.13	15	PASS
N031976-001D-MSD2	MSD	25	Na	26.34	0.22	15	PASS
N031976-002D	SAMP	50	Na	27.12	0.5	15	PASS
CCV1	CCV	1	Na	9.31	0.22	15	PASS
CCB1	CCB	1	Na	-0.032	15.83	15	<PQL
ICSA2	ICSA	1	Na	-0.04	35.57	15	<PQL
ICSAB2	ICSAB	1	Na	9.35	0.55	15	PASS

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENTAL INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**INJECTION LOG: 180918B**

**Instrument ID: ICP-02**

<b>STANDARD CODE</b>	
Standard1	MWST-180420A,0.5<50mL
Standard2	MWST-180601F
Standard3	MWST-180601J,5<50mL
Standard4	MWST-180601J,12.5<50mL
Standard5	MWST-180601J,15<40mL
Standard6	MWST-180601J,25<50mL
Standard7	MWST-180601J
ICV	MWST-180430E
CCV	MWST-180601J,25<50mL
ICSA/ICSAB	MWST-180420F/ -180730A
Int. Std. (Y)	MSST-180420B/A
PS Spike	MWST-180517E/ -180430F/ -180601B

<b>A/S Loc</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq Date</b>	<b>Acq Time</b>
1	CalBlk	IBLK	1	09/18/2018	09:37:25 PM
2	Standard1	ICAL	1	09/18/2018	09:43:27 PM
3	Standard2	ICAL	1	09/18/2018	09:49:28 PM
11	Standard3	ICAL	1	09/18/2018	09:55:30 PM
12	Standard4	ICAL	1	09/18/2018	10:01:35 PM
6	Standard5	ICAL	1	09/18/2018	10:09:40 PM
7	Standard6	ICAL	1	09/18/2018	10:17:42 PM
8	Standard7	ICAL	1	09/18/2018	10:25:18 PM
9	ICV	ICV	1	09/18/2018	10:29:25 PM
1	ICB	ICB	1	09/18/2018	10:40:52 PM
1	ICB	ICB	1	09/18/2018	10:44:37 PM
2	LLICV	CCV1	1	09/18/2018	10:53:54 PM
4	ICSA1	ICSA	1	09/18/2018	10:59:56 PM
5	ICSAB1	ICSAB	1	09/18/2018	11:06:22 PM
2	LLICV	CCV1	1	09/18/2018	11:12:18 PM
38	MB-70475	MBLK	1	09/18/2018	11:17:26 PM
39	LCS1-70475	LCS	1	09/18/2018	11:22:57 PM
40	N031905-001A	SAMP	5	09/18/2018	11:32:00 PM
41	N031905-001A	SAMP	25	09/18/2018	11:41:05 PM
42	N031905-001A-PS	PS	5	09/18/2018	11:50:08 PM
43	N031905-001A-MS1	MS	5	09/18/2018	11:59:15 PM
44	N031905-001A-MSD1	MSD	5	09/19/2018	12:08:23 AM
45	N031905-002A	SAMP	25	09/19/2018	12:17:31 AM
46	N031905-003A	SAMP	5	09/19/2018	12:26:36 AM
47	N031905-004A	SAMP	5	09/19/2018	12:35:42 AM
7	CCV1	CCV	1	09/19/2018	12:44:54 AM
1	CCB1	CCB	1	09/19/2018	12:53:32 AM
48	N031905-005A	SAMP	25	09/19/2018	12:59:33 AM

NR

NR

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
49	N031905-006A	SAMP	1	09/19/2018	01:08:40 AM
50	N031905-007A	SAMP	1	09/19/2018	01:17:53 AM
51	N031905-007A	SAMP	5	09/19/2018	01:27:02 AM
52	N031905-008A	SAMP	25	09/19/2018	01:36:06 AM
53	N031905-009A	SAMP	25	09/19/2018	01:45:14 AM
54	N031905-010A	SAMP	5	09/19/2018	01:54:19 AM
55	N031905-011A	SAMP	25	09/19/2018	02:03:27 AM
56	MB-70588	MBLK	1	09/19/2018	02:12:32 AM
57	LCS1-70588	LCS	1	09/19/2018	02:18:36 AM
7	CCV2	CCV	1	09/19/2018	02:27:39 AM
1	CCB2	CCB	1	09/19/2018	02:36:44 AM
58	N031947-002E	SAMP	1	09/19/2018	02:42:44 AM
59	N031947-002E	SAMP	5	09/19/2018	02:51:49 AM
60	N031947-002E-PS	PS	1	09/19/2018	02:57:53 AM
61	N031947-002E-MS1	MS	1	09/19/2018	03:06:58 AM
62	N031947-002E-MSD1	MSD	1	09/19/2018	03:16:03 AM
63	N031976-001D	SAMP	1	09/19/2018	03:25:08 AM
64	N031976-002D	SAMP	1	09/19/2018	03:34:12 AM
65	MB-70589	MBLK	1	09/19/2018	03:43:16 AM
66	LCS-70589	LCS	1	09/19/2018	03:49:19 AM
67	N031978-001B	SAMP	1	09/19/2018	03:58:22 AM
7	CCV3	CCV	1	09/19/2018	04:07:27 AM
1	CCB3	CCB	1	09/19/2018	04:16:04 AM
4	ICSA2	ICSA	1	09/19/2018	04:22:04 AM
5	ICSAB2	ICSAB	1	09/19/2018	04:31:14 AM
68	N031978-001B	SAMP	5	09/19/2018	04:40:24 AM
69	N031978-001B-PS	PS	1	09/19/2018	04:46:28 AM
70	N031978-001B-MS	MS	1	09/19/2018	04:55:33 AM
71	N031978-001B-MSD	MSD	1	09/19/2018	05:04:38 AM
72	N031978-002B	SAMP	1	09/19/2018	05:13:45 AM
73	N031978-003B	SAMP	1	09/19/2018	05:22:50 AM
74	N031978-005B	SAMP	1	09/19/2018	05:31:54 AM
75	N031978-006B	SAMP	1	09/19/2018	05:37:58 AM
56	MB-70588	MBLK	1	09/19/2018	05:47:03 AM
57	LCS1-70588	LCS	1	09/19/2018	05:52:35 AM
7	CCV4	CCV	1	09/19/2018	05:58:38 AM
1	CCB4	CCB	1	09/19/2018	06:07:44 AM
58	N031947-002E	SAMP	1	09/19/2018	06:13:44 AM
59	N031947-002E	SAMP	5	09/19/2018	06:22:49 AM
60	N031947-002E-PS	PS	1	09/19/2018	06:28:53 AM
61	N031947-002E-MS1	MS	1	09/19/2018	06:37:57 AM
62	N031947-002E-MSD1	MSD	1	09/19/2018	06:47:02 AM
63	N031976-001D	SAMP	1	09/19/2018	06:56:07 AM
64	N031976-002D	SAMP	1	09/19/2018	07:05:11 AM
57	LCS1-70588	LCS	1	09/19/2018	07:13:17 AM
76	N031905-006A	SAMP	5	09/19/2018	07:22:21 AM



<b>A/S Loc</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq Date</b>	<b>Acq Time</b>
77	N031905-008A	SAMP	250	09/19/2018	07:31:26 AM
7	CCV5	CCV	1	09/19/2018	07:40:31 AM
1	CCB5	CCB	1	09/19/2018	07:49:09 AM
4	ICSA3	ICSA	1	09/19/2018	07:55:09 AM
5	ICSAB3	ICSAB	1	09/19/2018	08:04:25 AM

**INJECTION LOG: 180919C**

**Instrument ID: ICP-02**

<b>STANDARD CODE</b>	
Standard1	MWST-180420A,0.5<50mL
Standard2	MWST-180601F
Standard3	MWST-180601J,5<50mL
Standard4	MWST-180601J,12.5<50mL
Standard5	MWST-180601J,15<40mL
Standard6	MWST-180601J,25<50mL
Standard7	MWST-180601J
ICV	MWST-180430E
CCV	MWST-180601J,25<50mL
ICSA/ICSAB	MWST-180420F/ -180730A
Int. Std. (Y)	MSST-180420B/A
PS Spike	MWST-180517E/ -180430F/ -180601B

<b>A/S Loc</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq Date</b>	<b>Acq Time</b>
1	CalBlk	IBLK	1	09/19/2018	07:37:11 PM
2	Standard1	ICAL	1	09/19/2018	07:41:42 PM
3	Standard2	ICAL	1	09/19/2018	07:45:43 PM
11	Standard3	ICAL	1	09/19/2018	07:49:45 PM
12	Standard4	ICAL	1	09/19/2018	07:53:49 PM
6	Standard5	ICAL	1	09/19/2018	07:57:53 PM
7	Standard6	ICAL	1	09/19/2018	08:01:23 PM
8	Standard7	ICAL	1	09/19/2018	08:04:54 PM
9	ICV	ICV	1	09/19/2018	08:08:30 PM
1	ICB	ICB	1	09/19/2018	08:12:02 PM
2	LLICV1	CCV1	1	09/19/2018	08:35:27 PM
4	ICSA1	ICSA	1	09/19/2018	08:39:28 PM
5	ICSAB1	ICSAB	1	09/19/2018	08:44:20 PM
61	N031947-002E-MS1	MS	1	09/19/2018	08:49:13 PM
7	CCV1	CCV	1	09/19/2018	08:53:17 PM
1	CCB1	CCB	1	09/19/2018	08:56:49 PM
4	ICSA2	ICSA	1	09/19/2018	09:00:49 PM
5	ICSAB2	ICSAB	1	09/19/2018	09:05:42 PM

**INJECTION LOG: 180919D**

**Instrument ID: ICP-02**

STANDARD CODE	
Standard1	MWST-180601K0.025<50mL
Standard2	MWST-180601K,0.25<50mL
Standard3	MWST-180601K,1.25<50mL
Standard4	MWST-180601K,2.5<50mL
Standard5	MWST-180601K,5<50mL
Standard6	MWST-180601K,10<50mL
ICV	MWST-180615A
CCV	MWST-180601K,2.5<50mL
ICSA/ICSAB	MWST-180420F/ MWST-180601L
Int. Std. (Sc):	MSST-180420B/A
PS Spike	MSST-140120B/ -130329E/ -170116A

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	09/19/2018	09:16:07 PM
26	Standard1	ICAL	1	09/19/2018	09:19:06 PM
27	Standard2	ICAL	1	09/19/2018	09:22:06 PM
28	Standard3	ICAL	1	09/19/2018	09:25:05 PM
29	Standard4	ICAL	1	09/19/2018	09:28:35 PM
30	Standard5	ICAL	1	09/19/2018	09:32:05 PM
31	Standard6	ICAL	1	09/19/2018	09:35:36 PM
32	ICV	ICV	1	09/19/2018	09:39:09 PM
32	ICV	ICV	1	09/19/2018	09:42:43 PM
1	ICB	ICB	1	09/19/2018	09:46:14 PM
33	ICSA1	ICSA	1	09/19/2018	09:49:17 PM
34	ICSAB1	ICSAB	1	09/19/2018	09:52:17 PM
98	MB-70588	MBLK	1	09/19/2018	09:55:50 PM
99	LCS2-70588	LCS	1	09/19/2018	10:01:23 PM
100	N031976-001D	SAMP	25	09/19/2018	10:04:57 PM
101	N031976-001D	SAMP	125	09/19/2018	10:08:00 PM
102	N031976-001D-PS	PS	25	09/19/2018	10:11:03 PM
103	N031976-001D-MS2	MS	25	09/19/2018	10:14:36 PM
104	N031976-001D-MSD2	MSD	25	09/19/2018	10:18:08 PM
105	N031976-002D	SAMP	50	09/19/2018	10:21:40 PM
29	CCV1	CCV	1	09/19/2018	10:24:42 PM
1	CCB1	CCB	1	09/19/2018	10:28:13 PM
33	ICSA2	ICSA	1	09/19/2018	10:31:12 PM
34	ICSAB2	ICSAB	1	09/19/2018	10:34:13 PM

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 9/11/2018 8:00:00 A

Reviewed/ Date: *Marky* 9/25/2018

Page: 1 of 1

Prep End Date: 9/11/2018 11:00:00

Initials/ Date: for

Prep Factor Units

Temp. (°C):

Location:

Prep Batch 70588 Prep Code: 200.7\_PR

Technician: Mark Gesmundo

mL / mL

95

Db-2-1

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS1-70588	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
LCS2-70588	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70588	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N031947-002E	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031947-002E-MS	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031947-002E-MS	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031976-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031976-001D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031976-001D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031976-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
10131	NITRIC ACID
10135	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MSST-130329D	Sodium	LCS,MS,MSD	0.05
MSST-130329E	Potassium	LCS,MS,MSD	0.05
MSST-170116A	Strontium	LCS,MS,MSD	0.125
MWST-180430F	ICP Solution B	LCS,MS,MSD	0.5
MWST-180517E	ICP Solution A	LCS,MS,MSD	0.5
MWST-180601B	ICP Solution C	LCS,MS,MSD	0.5

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**INITIAL CALIBRATION SUMMARY: 180918B**

**Instrument ID: ICP-02**

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
<b>Magnesium</b>								
CalBlk	09/18/2018	09:37:25 PM	Mg	279.079	249	0.00	mg/L	
Standard1	09/18/2018	09:43:27 PM	Mg	279.079	1181	0.1000	mg/L	
Standard2	09/18/2018	09:49:28 PM	Mg	279.079	13010	1.000	mg/L	
Standard3	09/18/2018	09:55:30 PM	Mg	279.079	27208	2.000	mg/L	
Standard4	09/18/2018	10:01:35 PM	Mg	279.079	66888	5.000	mg/L	
Standard5	09/18/2018	10:09:40 PM	Mg	279.079	100593	7.500	mg/L	
Standard6	09/18/2018	10:17:42 PM	Mg	279.079	131105	10.000	mg/L	
Standard7	09/18/2018	10:25:18 PM	Mg	279.079	259561	20.000	mg/L	0.9999
<b>Calcium</b>								
CalBlk	09/18/2018	09:37:25 PM	Ca	227.546	-146	0.00	mg/L	
Standard1	09/18/2018	09:43:27 PM	Ca	227.546	60	0.2000	mg/L	
Standard2	09/18/2018	09:49:28 PM	Ca	227.546	349	1.000	mg/L	
Standard3	09/18/2018	09:55:30 PM	Ca	227.546	703	2.000	mg/L	
Standard4	09/18/2018	10:01:35 PM	Ca	227.546	1753	5.000	mg/L	
Standard5	09/18/2018	10:09:40 PM	Ca	227.546	2639	7.500	mg/L	
Standard6	09/18/2018	10:17:42 PM	Ca	227.546	3486	10.000	mg/L	
Standard7	09/18/2018	10:25:18 PM	Ca	227.546	6993	20.000	mg/L	1.0000
<b>Iron</b>								
CalBlk	09/18/2018	09:37:25 PM	Fe	273.953	-194	0.00	mg/L	
Standard1	09/18/2018	09:43:27 PM	Fe	273.953	392	0.0200	mg/L	
Standard2	09/18/2018	09:49:28 PM	Fe	273.953	1586	0.050	mg/L	
Standard3	09/18/2018	09:55:30 PM	Fe	273.953	53059	2.000	mg/L	
Standard4	09/18/2018	10:01:35 PM	Fe	273.953	131568	5.000	mg/L	
Standard5	09/18/2018	10:09:40 PM	Fe	273.953	197782	7.500	mg/L	
Standard6	09/18/2018	10:17:42 PM	Fe	273.953	257447	10.000	mg/L	
Standard7	09/18/2018	10:25:18 PM	Fe	273.953	508547	20.000	mg/L	0.9999

**INITIAL CALIBRATION SUMMARY: 180919C**

**Instrument ID: ICP-02**

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
<b>Iron</b>								
CalBlk	09/19/2018	07:37:11 PM	Fe	273.953	-197	0.00	mg/L	
Standard1	09/19/2018	07:41:42 PM	Fe	273.953	373	0.0200	mg/L	
Standard2	09/19/2018	07:45:43 PM	Fe	273.953	1487	0.050	mg/L	
Standard3	09/19/2018	07:49:45 PM	Fe	273.953	50741	2.000	mg/L	
Standard4	09/19/2018	07:53:49 PM	Fe	273.953	127248	5.000	mg/L	
Standard5	09/19/2018	07:57:53 PM	Fe	273.953	191241	7.500	mg/L	
Standard6	09/19/2018	08:01:23 PM	Fe	273.953	256080	10.000	mg/L	
Standard7	09/19/2018	08:04:54 PM	Fe	273.953	509272	20.000	mg/L	1.0000



**INITIAL CALIBRATION SUMMARY: 180919D**

**Instrument ID: ICP-02**

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
<b>Sodium</b>								
CalBlk	09/19/2018	09:16:07 PM	Na	589.594	329	0.00	mg/L	
Standard1	09/19/2018	09:19:06 PM	Na	589.594	121	0.1000	mg/L	
Standard2	09/19/2018	09:22:06 PM	Na	589.594	1104	1.000	mg/L	
Standard3	09/19/2018	09:25:05 PM	Na	589.594	5777	5.000	mg/L	
Standard4	09/19/2018	09:28:35 PM	Na	589.594	11869	10.000	mg/L	
Standard5	09/19/2018	09:32:05 PM	Na	589.594	24708	20.000	mg/L	
Standard6	09/19/2018	09:35:36 PM	Na	589.594	52324	40.000	mg/L	0.9995

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/18/2018</b>	SeqNo: <b>3142889</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9934.589	500	10000	0	99.3	90	110				
Iron	10081.558	20	10000	0	101	90	110				
Magnesium	10028.998	100	10000	0	100	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/18/2018</b>	SeqNo: <b>3142895</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	197.191	500	200.0	0	98.6	80	120				
Iron	18.678	20	20.00	0	93.4	80	120				
Magnesium	87.725	100	100.0	0	87.7	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142905</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9929.813	500	10000	0	99.3	90	110				
Iron	10083.603	20	10000	0	101	90	110				
Magnesium	9893.085	100	10000	0	98.9	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142917</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	10122.582	500	10000	0	101	90	110				
Iron	10487.372	20	10000	0	105	90	110				
Magnesium	10322.256	100	10000	0	103	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142929</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9902.905	500	10000	0	99.0	90	110				
Iron	10054.153	20	10000	0	101	90	110				
Magnesium	9939.209	100	10000	0	99.4	90	110				

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142943</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	10149.896	500	10000	0	101	90	110				
Iron	10369.374	20	10000	0	104	90	110				
Magnesium	10293.406	100	10000	0	103	90	110				

Sample ID <b>CCV5</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142955</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9945.007	500	10000	0	99.5	90	110				
Iron	10012.095	20	10000	0	100	90	110				
Magnesium	9979.370	100	10000	0	99.8	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127711</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127711</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143698</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium	9766.402	500	10000	0	97.7	90	110
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Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127711</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127711</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143710</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium	9313.917	500	10000	0	93.1	90	110
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127717</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127717</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3144279</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10086.807	20	10000	0	101	90	110				

Sample ID <b>LLICV1</b>	SampType: <b>CCV1</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127717</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127717</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3144281</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	22.301	20	20.00	0	112	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127717</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127717</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3144285</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10342.017	20	10000	0	103	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/18/2018</b>	SeqNo: <b>3142891</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	7.315	500									
Iron	-5.503827	20									
Magnesium	-4.338235	100									

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142906</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	18.259	500									
Iron	-5.360556	20									
Magnesium	-3.898108	100									

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142918</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	19.977	500									
Iron	-5.184281	20									
Magnesium	-1.820281	100									

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142930</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	23.984	500									
Iron	-5.071044	20									
Magnesium	-3.616203	100									

**Qualifiers:**

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  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142944</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	32.610	500									
Iron	-5.364338	20									
Magnesium	-4.622208	100									

Sample ID <b>CCB5</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142956</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	17.719	500									
Iron	-5.54991	20									
Magnesium	-4.06758	100									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127711</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R127711</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143699</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium	-26.735629	500
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Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127711</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127711</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143711</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium	-32.154916	500
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127717</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R127717</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3144280</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron	-3.40097	20
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Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127717</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127717</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3144286</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron	-4.073115	20
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
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*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/18/2018</b>	SeqNo: <b>3142893</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	455825.246	50	500000	0	91.2	80	120				
Calcium	460619.654	500	500000	0	92.1	80	120				
Iron	191868.911	20	200000	0	95.9	80	120				
Magnesium	436885.358	100	500000	0	87.4	80	120				

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/18/2018</b>	SeqNo: <b>3142894</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	545213.383	50	500000	0	109	80	120				
Calcium	549398.111	500	500000	0	110	80	120				
Iron	183596.674	20	200000	0	91.8	80	120				
Magnesium	523911.242	100	500000	0	105	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142931</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	456269.403	50	500000	0	91.3	80	120				
Calcium	459617.495	500	500000	0	91.9	80	120				
Iron	179295.712	20	200000	0	89.6	80	120				
Magnesium	436436.353	100	500000	0	87.3	80	120				

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142932</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	544972.748	50	500000	0	109	80	120				
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  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>ICSAB2</b>	SampType: <b>ICSAB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142932</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	549450.806	500	500000	0	110	80	120				
Iron	182794.554	20	200000	0	91.4	80	120				
Magnesium	521782.783	100	500000	0	104	80	120				

Sample ID <b>ICSA3</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142957</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	459476.935	50	500000	0	91.9	80	120				
Calcium	452594.565	500	500000	0	90.5	80	120				
Iron	175088.012	20	200000	0	87.5	80	120				
Magnesium	429249.242	100	500000	0	85.8	80	120				

Sample ID <b>ICSAB3</b>	SampType: <b>ICSAB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R127688</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142958</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	550216.450	50	500000	0	110	80	120				
Calcium	541171.621	500	500000	0	108	80	120				
Iron	179323.065	20	200000	0	89.7	80	120				
Magnesium	513530.694	100	500000	0	103	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127711</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127711</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143700</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	-33.022432	500									

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127711</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127711</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143701</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9432.426	500	10000	0	94.3	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127711</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127711</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143712</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	-40.498043	500									

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127711</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127711</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143713</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9348.668	500	10000	0	93.5	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127717</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127717</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3144282</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron	177324.749	20	200000	0	88.7	80	120				
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127717</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127717</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3144282</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron	188710.406	20	200000	0	94.4	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127717</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127717</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3144287</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron	179148.566	20	200000	0	89.6	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127717</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127717</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3144288</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron	189936.179	20	200000	0	95.0	80	120				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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INTERNAL STANDARD: 180918B

Instrument ID: ICP-02

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
CalBlk	IBLK	1	1	100	65-125	PASS
Standard1	ICAL	1	1	99.87	65-125	PASS
Standard2	ICAL	1	1.011	101.13	65-125	PASS
Standard3	ICAL	1	0.98	98.067	65-125	PASS
Standard4	ICAL	1	0.98	97.59	65-125	PASS
Standard5	ICAL	1	0.97	96.9	65-125	PASS
Standard6	ICAL	1	0.96	96.39	65-125	PASS
Standard7	ICAL	1	0.95	95	65-125	PASS
ICV	ICV	1	0.96	96.27	65-125	PASS
ICB	ICB	1	1	99.86	65-125	PASS
ICB	ICB	1	1	99.92	65-125	PASS
LLICV	CCV1	1	1	99.87	65-125	PASS
ICSA1	ICSA	1	0.95	95	65-125	PASS
ICSAB1	ICSAB	1	0.79	78.82	65-125	PASS
LLICV	CCV1	1	1	99.84	65-125	PASS
CCV1	CCV	1	0.96	96.33	65-125	PASS
CCB1	CCB	1	1.0074	100.74	65-125	PASS
MB-70588	MBLK	1	1	99.99	65-125	PASS
LCS1-70588	LCS	1	0.94	93.96	65-125	PASS
CCV2	CCV	1	0.97	96.67	65-125	PASS
CCB2	CCB	1	1.0087	100.87	65-125	PASS
N031947-002E	SAMP	1	0.82	82.36	65-125	PASS
N031947-002E	SAMP	5	0.89	88.92	65-125	PASS
N031947-002E-PS	PS	1	0.8	80.46	65-125	PASS
N031947-002E-MS1	MS	1	0.82	81.56	65-125	PASS
N031947-002E-MSD1	MSD	1	0.82	81.69	65-125	PASS
N031976-001D	SAMP	1	0.86	86.29	65-125	PASS
N031976-002D	SAMP	1	0.81	81.32	65-125	PASS
CCV3	CCV	1	0.99	98.76	65-125	PASS
CCB3	CCB	1	1.026	102.61	65-125	PASS
ICSA2	ICSA	1	0.96	96.5	65-125	PASS
ICSAB2	ICSAB	1	0.8	80.015	65-125	PASS
MB-70588	MBLK	1	1.0063	100.63	65-125	PASS
LCS1-70588	LCS	1	0.95	94.64	65-125	PASS
CCV4	CCV	1	0.98	98.085	65-125	PASS
CCB4	CCB	1	1.017	101.69	65-125	PASS
N031947-002E	SAMP	1	0.84	83.62	65-125	PASS
N031947-002E	SAMP	5	0.9	89.79	65-125	PASS
N031947-002E-PS	PS	1	0.82	81.92	65-125	PASS
N031947-002E-MS1	MS	1	0.83	82.58	65-125	PASS
N031947-002E-MSD1	MSD	1	0.83	82.96	65-125	PASS

NR

NR

INTERNAL STANDARD: 180918B

Instrument ID: ICP-02

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
N031976-001D	SAMP	1	0.87	87.27	65-125	PASS
N031976-002D	SAMP	1	0.82	82.23	65-125	PASS
LCS1-70588	LCS	1	0.94	93.9	65-125	PASS
CCV5	CCV	1	0.98	98.2	65-125	PASS
CCB5	CCB	1	1.018	101.79	65-125	PASS
ICSA3	ICSA	1	0.97	97.42	65-125	PASS
ICSAB3	ICSAB	1	0.81	81.16	65-125	PASS

**INTERNAL STANDARD: 180919C**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
CalBlk	IBLK	1	1	100	65-125	PASS
Standard1	ICAL	1	1.0011	100.11	65-125	PASS
Standard2	ICAL	1	1.052	105.19	65-125	PASS
Standard3	ICAL	1	0.99	99.33	65-125	PASS
Standard4	ICAL	1	0.98	98.17	65-125	PASS
Standard5	ICAL	1	1.012	101.17	65-125	PASS
Standard6	ICAL	1	0.98	98.21	65-125	PASS
Standard7	ICAL	1	0.98	97.92	65-125	PASS
ICV	ICV	1	0.99	99.18	65-125	PASS
ICB	ICB	1	1.0049	100.49	65-125	PASS
LLICV1	CCV1	1	1.0032	100.32	65-125	PASS
ICSA1	ICSA	1	0.87	86.68	65-125	PASS
ICSAB1	ICSAB	1	0.8	80.48	65-125	PASS
N031947-002E-MS1	MS	1	0.82	82.29	65-125	PASS
CCV1	CCV	1	1.013	101.31	65-125	PASS
CCB1	CCB	1	1.021	102.14	65-125	PASS
ICSA2	ICSA	1	0.89	89.29	65-125	PASS
ICSAB2	ICSAB	1	0.83	83.092	65-125	PASS

**INTERNAL STANDARD: 180919D**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
CalBlk	IBLK	1	1	100	65-125	PASS
Standard1	ICAL	1	0.99	99.003	65-125	PASS
Standard2	ICAL	1	0.99	99.19	65-125	PASS
Standard3	ICAL	1	0.98	98.12	65-125	PASS
Standard4	ICAL	1	0.96	95.87	65-125	PASS
Standard5	ICAL	1	0.96	95.93	65-125	PASS
Standard6	ICAL	1	0.95	94.52	65-125	PASS
ICV	ICV	1	0.94	94.49	65-125	PASS
ICV	ICV	1	0.94	94.31	65-125	PASS
ICB	ICB	1	0.95	95.062	65-125	PASS
ICSA1	ICSA	1	0.98	97.56	65-125	PASS
ICSAB1	ICSAB	1	0.94	93.55	65-125	PASS
MB-70588	MBLK	1	0.95	95.2	65-125	PASS
LCS2-70588	LCS	1	0.93	92.91	65-125	PASS
N031976-001D	SAMP	25	0.95	95.056	65-125	PASS
N031976-001D	SAMP	125	0.96	95.83	65-125	PASS
N031976-001D-PS	PS	25	0.96	95.75	65-125	PASS
N031976-001D-MS2	MS	25	0.97	96.59	65-125	PASS
N031976-001D-MSD2	MSD	25	0.97	96.57	65-125	PASS
N031976-002D	SAMP	50	0.97	96.86	65-125	PASS
CCV1	CCV	1	0.96	95.6	65-125	PASS
CCB1	CCB	1	0.98	98.13	65-125	PASS
ICSA2	ICSA	1	0.99	99.4	65-125	PASS
ICSAB2	ICSAB	1	0.95	94.95	65-125	PASS

# SERIAL DILUTION/ POST DIGESTION SPIKE



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-Metals in Water**

Work Order No.: N031976  
 Test Method: EPA 6010  
 Analysis Date: 9/18/2018  
9/19/2018

**Dilution Test Summary**

Matrix: Groundwater  
 Batch No.: 70588

Instrument ID: ICP-02  
 Instrument Description: Perkin Elmer Optima DV Series

Comments:


Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Fe. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N0321947-002E DT 5X	Calcium	ug/L	165111.7	PASS	159228.6	3.69%	10
N0321947-002E DT 5X	Iron	ug/L	0	NA	0		10
N0321947-002E DT 5X	Magnesium	ug/L	28639.44	PASS	26058.25	9.91%	10

Note: NA - Not applicable

N031976-001D DT 125X Sodium ug/L 613848.6 PASS 656107.6 6.4%

 9/25/2018  
 FOR

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>N031947-002E-PS</b>	SampType: <b>PS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127688</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3142947</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Calcium	163339.946	500	5000	159200	82.2	80	120				
Iron	107.477	20	100.0	0	107	80	120				
Magnesium	30648.394	100	5000	26060	91.8	80	120				

Sample ID <b>N031976-001D-PS</b>	SampType: <b>PS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127711</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70588</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3143706</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium	674960.402	12000	20000	656100	94.3	80	120				
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values



# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Metals by ICP**  
 Method Number: EPA 200.7/ 6010  
 Analysis Date(s): 10/6, 10/7,11/10/17  
 Analyst: Mary Claire Ignacio

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **ICP-02**

Acceptance Criteria: MDL < spike < 10XMDL

Analyte	Wavelength	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	MDL	PQL
Ag	328.069	0.0033	0.0031	0.0033	0.0033	0.0031	0.0030	0.0047	0.003	0.00061604	<b>0.001936</b>	0.003
Al	237.312	0.0664	0.0603	0.0656	0.0650	0.0658	0.0660	0.0946	0.050	0.01254823	<b>0.039439</b>	0.050
As	188.983	0.0131	0.0089	0.0120	0.0089	0.0060	0.0102	0.0080	0.010	0.00223806	<b>0.007034</b>	0.010
B	249.679	0.1491	0.1267	0.1281	0.1467	0.1261	0.1195	0.1015	0.100	0.01801843	<b>0.056632</b>	0.100
Ba	233.529	0.0033	0.0031	0.0033	0.0031	0.0032	0.0030	0.0024	0.003	0.00033070	<b>0.001039</b>	0.003
Be	313.104	0.0012	0.0011	0.0012	0.0012	0.0011	0.0011	0.0011	0.001	0.00006873	<b>0.000216</b>	0.001
Ca	227.546	0.2381	0.2231	0.2559	0.2299	0.2194	0.2473	0.2691	0.200	0.02202408	<b>0.069222</b>	0.200
Cd	214.437	0.0031	0.0029	0.0031	0.0032	0.0031	0.0031	0.0025	0.003	0.00027049	<b>0.000850</b>	0.003
Co	228.614	0.0030	0.0028	0.0030	0.0031	0.0031	0.0031	0.0027	0.003	0.00014491	<b>0.000455</b>	0.003
Cr	267.719	0.0009	0.0008	0.0009	0.0012	0.0012	0.0013	0.0009	0.001	0.00017120	<b>0.000538</b>	0.001
Fe	273.953	0.0255	0.0226	0.0242	0.0255	0.0252	0.0248	0.0387	0.020	0.00552308	<b>0.017359</b>	0.020
Mg	279.079	0.1124	0.1052	0.1129	0.1315	0.1305	0.1314	0.1435	0.100	0.01532024	<b>0.048152</b>	0.100
Mn	257.607	0.0119	0.0111	0.0120	0.0122	0.0121	0.0122	0.0099	0.010	0.00098403	<b>0.003093</b>	0.010
Mo	202.03	0.0079	0.0068	0.0067	0.0065	0.0065	0.0062	0.0057	0.005	0.00083918	<b>0.002638</b>	0.005
Ni	231.604	0.0061	0.0056	0.0062	0.0060	0.0060	0.0062	0.0045	0.005	0.00062690	<b>0.001970</b>	0.005
Pb	220.351	0.0124	0.0117	0.0127	0.0115	0.0120	0.0118	0.0090	0.010	0.00126325	<b>0.003970</b>	0.010
Sb	206.836	0.0102	0.0095	0.0104	0.0112	0.0117	0.0111	0.0080	0.010	0.00117407	<b>0.003690</b>	0.010
Se	196.025	0.0102	0.0087	0.0114	0.0136	0.0144	0.0136	0.0075	0.010	0.00251341	<b>0.007900</b>	0.010
Sn	189.927	0.0095	0.0084	0.0090	0.0124	0.0126	0.0129	0.0099	0.010	0.00175765	<b>0.005524</b>	0.010
Ti	334.943	0.0114	0.0106	0.0115	0.0115	0.0115	0.0115	0.0098	0.010	0.00074093	<b>0.002329</b>	0.010
Tl	190.794	0.0170	0.0150	0.0165	0.0171	0.0180	0.0168	0.0151	0.015	0.00116288	<b>0.003655</b>	0.015
V	292.404	0.0025	0.0024	0.0025	0.0032	0.0032	0.0032	0.0027	0.003	0.00038496	<b>0.001210</b>	0.003
Zn	206.201	0.0109	0.0100	0.0107	0.0125	0.0124	0.0124	0.0095	0.010	0.00123731	<b>0.003889</b>	0.010



**ASSET LABORATORIES**

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 ELAP Cert 2921

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
 ELAP Cert 2676 | NV Cert NV00922 | ORELAP/NELAP 4046

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## METHOD DETECTION LIMIT 2017

Method Name: **Metals by ICP**  
 Method Number: EPA 200.7/ 6010  
 Analysis Date(s): 10/6, 10/7, 11/10/17  
 Analyst: Mary Claire Ignacio

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **ICP-02**

Analyte	ICP-02 MDL	MDL Blank	Higher MDL	LOD	PQL
Ag	0.001936	0.002362	0.002362	0.002	0.003
Al	0.039439	0.039859	0.039859	0.04	0.5
As	0.007034	0.007672	0.007672	0.0075	0.01
B	0.056632	0.074419	0.074419	0.075	0.1
Ba	0.001039	0.000433	0.001039	0.001	0.003
Be	0.000216	0.000311	0.000311	0.0005	0.003
Ca	0.069222	0.084832	0.084832	0.1	0.5
Cd	0.000850	0.000592	0.000850	0.001	0.003
Co	0.000455	0.001902	0.001902	0.001	0.003
Cr	0.000538	0.000527	0.000538	0.001	0.003
Fe	0.017359	0.017751	0.017751	0.018	0.1
Mg	0.048152	0.043017	0.048152	0.05	0.1
Mn	0.003093	0.000782	0.003093	0.005	0.5
Mo	0.002638	0.002482	0.002638	0.0025	0.005
Ni	0.001970	0.000822	0.001970	0.0025	0.005
Pb	0.003970	0.002762	0.003970	0.005	0.005
Sb	0.003690	0.004504	0.004504	0.005	0.01
Se	0.007900	0.008549	0.008549	0.008	0.01
Sn	0.005524	0.003415	0.005524	0.0075	0.05
Ti	0.002329	0.001493	0.002329	0.005	0.05
Tl	0.003655	0.005987	0.005987	0.005	0.015
V	0.001210	0.000749	0.001210	0.002	0.003
Zn	0.003889	0.007683	0.007683	0.008	0.01



**Method Detection Limit**

**Analytical Method:** EPA 6010B / 200.7  
**Digestion Method:** EPA 200.7  
**Date of Analysis:** 4/26/2018,4/27/18, 4/28/18  
**Instrument Name:** ICP2  
**Analysts:** MEI

**Matrix:** Water  
**Amount of Sample:** 25 mL  
**Units:** mg/L

Analyte	1	2	3	4	5	6	7	SD	Ave	AMT SPIKED	MDL	PQL
Potassium	0.52047	0.51468	0.50982	0.46507	0.46016	0.45873	0.49093	0.02710	0.48855	0.5000	0.08509	0.5
Sodium	0.55314	0.5464	0.5354	0.4861	0.49466	0.48423	0.49053	0.03061	0.51292	0.5000	0.09611	0.5
Strontium	0.0543	0.05418	0.05429	0.05295	0.05353	0.05251	0.05341	0.00070	0.05360	0.0250	0.00220	0.05

MBLK

Analyte	1	2	3	4	5	6	7	SD	Ave	MDL
Potassium	0.046	0.02365	0.01213	-0.00541	-0.0022	-0.00535	0.03047	0.02002	0.01418	0.0771
Sodium	0.04731	0.03661	0.02294	-0.0006	-0.00135	-0.00646	-0.00911	0.02270	0.01276	0.0841
Strontium	0.00006	-0.0006	-0.0002	0.00003	-0.00002	0.00001	0.00035	0.00029	-0.00005	0.0009

Note: MDL spike is used since its value is greater than the MDL blank.

### LOD & PQL VERIFICATION

Analytical Method: EPA 6010B / 200.7  
Date of Analysis: 4/30/2018  
Instrument Name: ICP2  
Analyst: MI

Matrix: Water  
Units: mg/L

Compound	MDL	LOD		PQL		
		Spike	Recovered	Spike	Recovered	% Recovery
Potassium	0.08509	0.250	0.304	0.500	0.544	108.9
Sodium	0.09611	0.250	0.274	0.500	0.521	104.1
Strontium	0.00220	0.025	0.027	0.050	0.054	108.0



# EPA 200.8 Dissolved



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
REV 2.1  
072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70574  
ASSET #: N031976

Instrument ID: ICPMS-02  
Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 9/11/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits		X		X	X	
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X			X	
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

~~%RPD of Mn in N032002-001CDUP failed. However, LCS passed criteria.~~

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
2nd Level Reviewer Henry 9/19/2018

Date: 9/19/18  
Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## SAMPLE CALCULATION

**METHOD:** EPA 6020  
**TEST NAME:** Heavy Metals by ICP-MS  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Chromium concentration, in ug/L in the original sample as follows:

$$\text{Chromium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = Dilution Factor

PF = Final Volume of Digestate, mL / Amount of Sample, mL

For Sample **N031976-002D**, the concentration in ug/L is calculated as follows:

$$\text{Chromium, ug/L} = 102.362 * 5 * (25/25)$$

$$\text{Chromium, ug/L} = 511.81$$

Reporting results in two significant figures,

$$\text{Chromium, ug/L} = \mathbf{510}$$

# % RSD SUMMARY



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ANALYTICAL SERVICES FOR THE ENVIRONMENTAL TECHNOLOGY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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PERCENT RSD SUMMARY: 180911A

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.1	21.79	15	<PQL	0.089	24.85	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.51	5.0029	15	PASS	0.53	4.23	15	PASS
Std3-5/50 ppb	ICAL	1	5.15	2.99	15	PASS	5.071	2.023	15	PASS
Std4-10/100 ppb	ICAL	1	10.033	1.79	15	PASS	9.85	1.29	15	PASS
Std5-20/200 ppb	ICAL	1	20.14	0.92	15	PASS	20.19	1.6	15	PASS
Std6-40/400 ppb	ICAL	1	40.44	2.025	15	PASS	40.45	2.36	15	PASS
Std7-100/1000 ppb	ICAL	1	100.043	0.36	15	PASS	100.21	0.32	15	PASS
Std8-200/2000 ppb	ICAL	1	199.87	1.64	15	PASS	199.79	1.13	15	PASS
ICV	ICV	1	10.21	0.75	15	PASS	105.9	1.8	15	PASS
ICB	ICB	1	0.011	14.78	15	PASS	<0.000	N/A	15	<PQL
LLICV	CCV1	1	1.037	3.36	20	PASS	0.57	1.11	20	PASS
ICSA1	ICSA	1	0.017	30.25	15	<PQL	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	20.42	1.49	15	PASS	16.83	2.85	15	PASS
MB-70574	MBLK	1	0.0019	377.71	15	<PQL	0.004	327.2	15	<PQL
LCS-70574	LCS	1	10.15	2.011	15	PASS	105.76	0.42	15	PASS
N031979-001A	SAMP	1	1.41	3.86	15	PASS	5.89	0.7	15	PASS
N031980-001A	SAMP	1	2.72	0.7	15	PASS	33.069	0.35	15	PASS
N031976-001D	SAMP	1	<0.000	N/A	15	<PQL	466.7	1.1	15	PASS
N031976-001D	SAMP	5	<0.000	N/A	15	<PQL	94.93	0.094	15	PASS
N031976-002D	SAMP	1	500.69	0.1	15	PASS	34.1	0.67	15	PASS
N031976-002D	SAMP	5	102.36	1.14	15	PASS	4.15	3.25	15	PASS
CCV1	CCV	1	20.37	1.26	15	PASS	20.3	1.087	15	PASS
CCB1	CCB	1	0.028	35.17	15	<PQL	<0.000	N/A	15	<PQL
N032002-001C	SAMP	1	<0.000	N/A	15	<PQL	2.041	8.9	15	PASS
N032002-001C	SAMP	5	<0.000	N/A	15	<PQL	0.47	15.65	15	<PQL
N032002-001C-DUP	DUP	1	<0.000	N/A	15	<PQL	3.64	4	15	PASS
N032002-001C-PS	PS	1	9.32	0.61	15	PASS	102.56	0.83	15	PASS
N032002-001C-MS	MS	1	9.52	2.43	15	PASS	101.67	0.87	15	PASS
N032002-001C-MSD	MSD	1	9.64	0.58	15	PASS	102.52	1	15	PASS
CCV2	CCV	1	20.098	0.75	15	PASS	20.49	1.77	15	PASS
CCB2	CCB	1	0.0087	102.73	15	<PQL	<0.000	N/A	15	<PQL
CCV3	CCV	1	19.75	2.12	15	PASS	20.5	2.76	15	PASS
CCB3	CCB	1	0.0084	143.71	15	<PQL	<0.000	N/A	15	<PQL
CCV4	CCV	1	19.67	1.93	15	PASS	20.031	2.41	15	PASS
CCB4	CCB	1	<0.000	N/A	15	<PQL	0.0061	50.46	15	<PQL
ICSA2	ICSA	1	0.00013	1194.57	15	<PQL	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	20.23	0.52	15	PASS	16.6	1.63	15	PASS

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INJECTION LOG: 180911A**

**Instrument ID: ICPMS-02**

Data File	Sample Name	Type	DF	Acq. Date-Time
A0911001.D	RINSE	RINSE	1	09/11/18 11:46 AM
A0911002.D	Cal Blank	IBLK	1	09/11/18 11:51 AM
A0911003.D	Std1-0.1/1 ppb	ICAL	1	09/11/18 11:57 AM
A0911004.D	Std2-0.5/5 ppb	ICAL	1	09/11/18 12:03 PM
A0911005.D	Std3-5/50 ppb	ICAL	1	09/11/18 12:08 PM
A0911006.D	Std4-10/100 ppb	ICAL	1	09/11/18 12:14 PM
A0911007.D	Std5-20/200 ppb	ICAL	1	09/11/18 12:19 PM
A0911008.D	Std6-40/400 ppb	ICAL	1	09/11/18 12:25 PM
A0911009.D	Std7-100/1000 ppb	ICAL	1	09/11/18 12:30 PM
A0911010.D	Std8-200/2000 ppb	ICAL	1	09/11/18 12:36 PM
A0911011.D	ICV	ICV	1	09/11/18 12:42 PM
A0911012.D	ICB	ICB	1	09/11/18 12:47 PM
A0911013.D	LLICV	CCV1	1	09/11/18 12:53 PM
A0911014.D	ICSA1	ICSA	1	09/11/18 12:58 PM
A0911015.D	ICSAB1	ICSAB	1	09/11/18 1:04 PM
A0911016.D	N031860-005A	SAMP	5	09/11/18 1:09 PM
A0911017.D	N031860-005A	SAMP	5	09/11/18 1:15 PM
A0911018.D	MB-70574	MBLK	1	09/11/18 1:21 PM
A0911019.D	LCS-70574	LCS	1	09/11/18 1:26 PM
A0911020.D	N031979-001A	SAMP	1	09/11/18 1:32 PM
A0911021.D	N031980-001A	SAMP	1	09/11/18 1:37 PM
A0911022.D	N031976-001D	SAMP	1	09/11/18 1:43 PM
A0911023.D	N031976-001D	SAMP	5	09/11/18 1:49 PM
A0911024.D	N031976-002D	SAMP	1	09/11/18 1:54 PM
A0911025.D	N031976-002D	SAMP	5	09/11/18 2:00 PM
A0911026.D	CCV1	CCV	1	09/11/18 2:05 PM
A0911027.D	CCB1	CCB	1	09/11/18 2:11 PM
A0911028.D	N032002-001C	SAMP	1	09/11/18 2:17 PM
A0911029.D	N032002-001C	SAMP	5	09/11/18 2:22 PM
A0911030.D	N032002-001C-DUP	DUP	1	09/11/18 2:28 PM
A0911031.D	N032002-001C-PS	PS	1	09/11/18 2:34 PM
A0911032.D	N032002-001C-MS	MS	1	09/11/18 2:39 PM
A0911033.D	N032002-001C-MSD	MSD	1	09/11/18 2:45 PM
A0911034.D	MB-70575	MBLK	1	09/11/18 2:50 PM
A0911035.D	LCS-70575	LCS	1	09/11/18 2:56 PM
A0911036.D	N031956-001B	SAMP	1	09/11/18 3:02 PM
A0911037.D	N031956-001B	SAMP	5	09/11/18 3:07 PM
A0911038.D	CCV2	CCV	1	09/11/18 3:13 PM
A0911039.D	CCB2	CCB	1	09/11/18 3:18 PM
A0911040.D	N031956-001B-PS	PS	1	09/11/18 3:24 PM
A0911041.D	N031956-001B-MS	MS	1	09/11/18 3:30 PM
A0911042.D	N031956-001B-MSD	MSD	1	09/11/18 3:35 PM

**INJECTION LOG: 180911A**

**Instrument ID: ICPMS-02**

Data File	Sample Name	Type	DF	Acq. Date-Time
A0911043.D	N031957-001B	SAMP	1	09/11/18 3:41 PM
A0911044.D	N031977-001B	SAMP	1	09/11/18 3:46 PM
A0911045.D	N031977-002B	SAMP	1	09/11/18 3:52 PM
A0911046.D	N031977-003B	SAMP	1	09/11/18 3:58 PM
A0911047.D	N031978-001B	SAMP	1	09/11/18 4:03 PM
A0911048.D	N031978-002B	SAMP	1	09/11/18 4:09 PM
A0911049.D	N031978-003B	SAMP	1	09/11/18 4:14 PM
A0911050.D	CCV3	CCV	1	09/11/18 4:20 PM
A0911051.D	CCB3	CCB	1	09/11/18 4:26 PM
A0911052.D	N031978-005B	SAMP	1	09/11/18 4:31 PM
A0911053.D	N031978-006B	SAMP	1	09/11/18 4:37 PM
A0911054.D	N031978-001B	SAMP	10	09/11/18 4:42 PM
A0911055.D	N031978-006B	SAMP	5	09/11/18 4:48 PM
A0911056.D	MB-70596	MBLK	1	09/11/18 4:54 PM
A0911057.D	LCS-70596	LCS	1	09/11/18 4:59 PM
A0911058.D	N032034-001A	SAMP	1	09/11/18 5:05 PM
A0911059.D	N032034-002A	SAMP	1	09/11/18 5:10 PM
A0911060.D	N032034-002A	SAMP	5	09/11/18 5:16 PM
A0911061.D	N032034-002A-PS	PS	1	09/11/18 5:21 PM
A0911062.D	CCV4	CCV	1	09/11/18 5:27 PM
A0911063.D	CCB4	CCB	1	09/11/18 5:33 PM
A0911064.D	ICSA2	ICSA	1	09/11/18 5:38 PM
A0911065.D	ICSAB2	ICSAB	1	09/11/18 5:44 PM
A0911066.D	N032034-002A-MS	MS	1	09/11/18 5:49 PM
A0911067.D	N032034-002A-MSD	MSD	1	09/11/18 5:55 PM
A0911068.D	N032034-003A	SAMP	1	09/11/18 6:00 PM
A0911069.D	N032034-004A	SAMP	1	09/11/18 6:06 PM
A0911070.D	N032034-005A	SAMP	1	09/11/18 6:12 PM
A0911071.D	N032034-006A	SAMP	1	09/11/18 6:17 PM
A0911072.D	N032034-007A	SAMP	1	09/11/18 6:23 PM
A0911073.D	N032034-008A	SAMP	1	09/11/18 6:28 PM
A0911074.D	N032034-009A	SAMP	1	09/11/18 6:34 PM
A0911075.D	N032034-010A	SAMP	1	09/11/18 6:39 PM
A0911076.D	CCV5	CCV	1	09/11/18 6:45 PM
A0911077.D	CCB5	CCB	1	09/11/18 6:51 PM
A0911078.D	N032034-011A	SAMP	1	09/11/18 6:56 PM
A0911079.D	N032034-012A	SAMP	1	09/11/18 7:02 PM
A0911080.D	N032034-013A	SAMP	1	09/11/18 7:07 PM
A0911081.D	N032034-014A	SAMP	1	09/11/18 7:13 PM
A0911082.D	N032034-015A	SAMP	1	09/11/18 7:18 PM
A0911083.D	N032034-016A	SAMP	1	09/11/18 7:24 PM
A0911084.D	MB-70530	MBLK	1	09/11/18 7:30 PM

**INJECTION LOG: 180911A****Instrument ID: ICPMS-02**

<b>Data File</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq. Date-Time</b>
A0911085.D	LCS-70530	LCS	1	09/11/18 7:35 PM
A0911086.D	N031955-003A	SAMP	1	09/11/18 7:41 PM
A0911087.D	N031955-003A	SAMP	5	09/11/18 7:46 PM
A0911088.D	CCV6	CCV	1	09/11/18 7:52 PM
A0911089.D	CCB6	CCB	1	09/11/18 7:57 PM
A0911090.D	N031955-003A-PS	PS	1	09/11/18 8:03 PM
A0911091.D	N031955-003A-MS	MS	1	09/11/18 8:09 PM
A0911092.D	N031955-003A-MSD	MSD	1	09/11/18 8:14 PM
A0911093.D	N031955-004A	SAMP	1	09/11/18 8:20 PM
A0911094.D	N031955-005A	SAMP	1	09/11/18 8:25 PM
A0911095.D	N031955-006A	SAMP	1	09/11/18 8:31 PM
A0911096.D	N031955-007A	SAMP	1	09/11/18 8:36 PM
A0911097.D	N031955-008A	SAMP	1	09/11/18 8:42 PM
A0911098.D	N031955-009A	SAMP	1	09/11/18 8:48 PM
A0911099.D	N031955-010A	SAMP	1	09/11/18 8:53 PM
A0911100.D	CCV7	CCV	1	09/11/18 8:59 PM
A0911101.D	CCB7	CCB	1	09/11/18 9:04 PM
A0911102.D	ICSA3	ICSA	1	09/11/18 9:10 PM
A0911103.D	ICSAB3	ICSAB	1	09/11/18 9:15 PM
A0911104.D	N031955-011A	SAMP	1	09/11/18 9:21 PM
A0911105.D	N031955-012A	SAMP	1	09/11/18 9:27 PM
A0911106.D	N031955-013A	SAMP	1	09/11/18 9:32 PM
A0911107.D	N031955-013A-MS	MS	1	09/11/18 9:38 PM
A0911108.D	N031955-014A	SAMP	1	09/11/18 9:43 PM
A0911109.D	N031955-015A	SAMP	1	09/11/18 9:49 PM
A0911110.D	N031955-016A	SAMP	1	09/11/18 9:54 PM
A0911111.D	N031955-017A	SAMP	1	09/11/18 10:00 PM
A0911112.D	N031955-018A	SAMP	1	09/11/18 10:06 PM
A0911113.D	MB-70531	MBLK	1	09/11/18 10:11 PM
A0911114.D	CCV8	CCV	1	09/11/18 10:17 PM
A0911115.D	CCB8	CCB	1	09/11/18 10:22 PM
A0911116.D	LCS-70531	LCS	1	09/11/18 10:28 PM
A0911117.D	N031955-001A	SAMP	1	09/11/18 10:33 PM
A0911118.D	N031955-001A	SAMP	5	09/11/18 10:39 PM
A0911119.D	N031955-001A-PS	PS	1	09/11/18 10:45 PM
A0911120.D	N031955-001A-MS	MS	1	09/11/18 10:50 PM
A0911121.D	N031955-001A-MSD	MSD	1	09/11/18 10:56 PM
A0911122.D	N031955-002A	SAMP	1	09/11/18 11:01 PM
A0911123.D	CCV9	CCV	1	09/11/18 11:07 PM
A0911124.D	CCB9	CCB	1	09/11/18 11:13 PM
A0911125.D	ICSA4	ICSA	1	09/11/18 11:18 PM
A0911126.D	ICSAB4	ICSAB	1	09/11/18 11:24 PM

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**PREP BATCH REPORT**

Prep Start Date: **9/10/2018 8:08:13 A**

Reviewed/ Date: *Nancy* 9/19/2018

Page: 1 of 1

Prep End Date: **9/10/2018 1:00:00 P**

Initials/ Date: *[Signature]* 9/19/2018

Prep Factor Units  
mL / mL

Temp. (°C):  
**94.7**

Location:  
**02-19**

Prep Batch **70574** Prep Code: **200.8\_PR**

Technician: **Claire Ignacio**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70574	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70574	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N031976-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031976-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031979-001A	Drinking Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N031980-001A	Drinking Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032002-001C	Wastewater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032002-001C-DU	Wastewater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032002-001C-MS	Wastewater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032002-001C-MS	Wastewater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

# INSTRUMENT TUNING CHECK



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 11 Sep 2018 08:57:00 am  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	147304.00	0.00	
24 Mg	379154.00	0.00	
25 Mg	49628.50	0.00	
26 Mg	55390.20	0.00	
59 Co	292322.00	0.00	
115 In	407914.00	0.00	
206 Pb	137100.00	0.00	
207 Pb	120824.00	0.00	
208 Pb	297458.00	0.00	

## RSD (%)

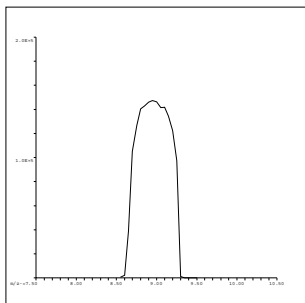
Element	Actual	Required	Flag
9 Be	2.54	5.00	
24 Mg	3.21	5.00	
25 Mg	3.47	5.00	
26 Mg	3.78	5.00	
59 Co	0.92	5.00	
115 In	0.50	5.00	
206 Pb	0.71	5.00	
207 Pb	0.53	5.00	
208 Pb	0.32	5.00	

## Ion Ratio

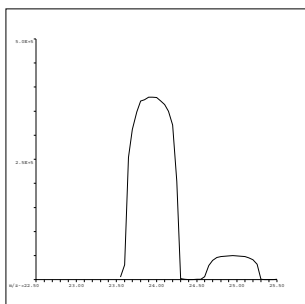
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

## Maximum Bkg. Count (CPS)

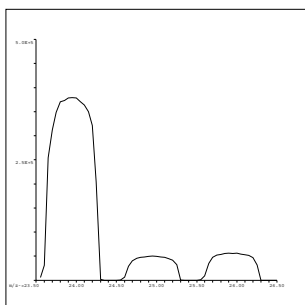
Element	Actual	Required	Flag
---------	--------	----------	------



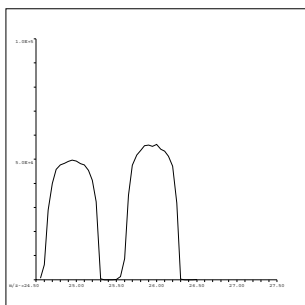
9 Be  
Mass Calib.  
Actual: 8.95  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



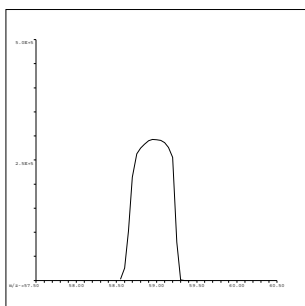
24 Mg  
Mass Calib.  
Actual: 23.95  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



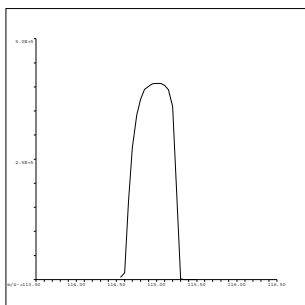
25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



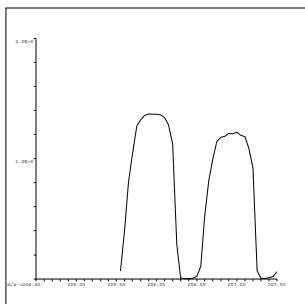
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



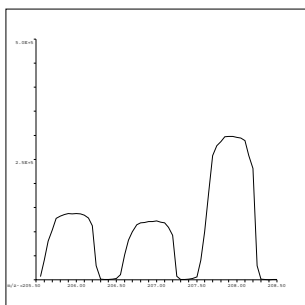
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



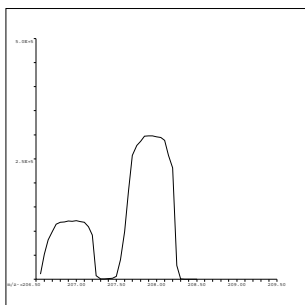
115 In  
Mass Calib.  
Actual: 115.00  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 205.95  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 206.95  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 207.95  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

QC Tune Result:Pass

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

INITIAL CALIBRATION SUMMARY: 180911A

Instrument ID: ICPMS-02

Analyte	Data File	A0911002.D	A0911004.D	A0911005.D	A0911006.D	A0911007.D	A0911008.D	A0911009.D	A0911010.D	
	Acq. Date-Time	09/11/2018 11:51 AM	09/11/2018 12:03 PM	09/11/2018 12:08 PM	09/11/2018 12:14 PM	09/11/2018 12:19 PM	09/11/2018 12:25 PM	09/11/2018 12:30 PM	09/11/2018 12:36 PM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L	R	
45 Sc ( ISTD ) [ 2 ]	CPS	52285.9	53606.7	53978.2	55825.2	54438.6	54325.8	53719.4	52184.5	
55 Mn [ 2 ]	CPS	118.7	1079	9362.9	18692.8	37223.7	74306.2	181861.2	352110	1.0000
52 Cr [ 2 ]	CPS	201.1	2071.3	19297	38647.3	75452.2	150956.6	369041.9	715989.9	1.0000

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MWST-180618C

Calibration Acceptance Criteria: > 0.995 Correlation

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137035</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	105.900	0.50	100.0	0	106	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137037</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.569	0.50	0.5000	0	114	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137050</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.299	0.50	20.00	0	101	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137062</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.489	0.50	20.00	0	102	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137074</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.503	0.50	20.00	0	103	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8\_WDISS**

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137086</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.031	0.50	20.00	0	100	90	110				

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>ICV</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136928</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	10.210	1.0	10.00	0	102 90 110

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136930</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	1.037	1.0	1.000	0	104 80 120

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>CCV</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136943</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	20.367	1.0	20.00	0	102 90 110

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>CCV</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136955</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	20.098	1.0	20.00	0	100 90 110

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>CCV</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136967</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	19.754	1.0	20.00	0	98.8 90 110

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136979</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	19.670	1.0	20.00	0	98.4	90	110				

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL • TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>ICB</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137036</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137051</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137063</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137075</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137087</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>ICB</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136929</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136944</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136956</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136968</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136980</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGISTS

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137038</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137039</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese 16.825 0.50 20.00 0 84.1 80 120

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137088</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137089</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese 16.602 0.50 20.00 0 83.0 80 120

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136931</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136931</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	20.416	1.0	20.00	0	102	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136981</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127538</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136982</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	20.234	1.0	20.00	0	101	80	120				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

INTERNAL STANDARD: 180911A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	52285.9	52285.9	100	PASS	70-125	30185.3	30185.3	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	52714.1	52285.9	100.82	PASS	70-125	30193.1	30185.3	100.03	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	53606.7	52285.9	102.53	PASS	70-125	30678.4	30185.3	101.63	PASS	70-125
Std3-5/50 ppb	ICAL	1	53978.2	52285.9	103.24	PASS	70-125	31370.9	30185.3	103.93	PASS	70-125
Std4-10/100 ppb	ICAL	1	55825.2	52285.9	106.77	PASS	70-125	31406.5	30185.3	104.05	PASS	70-125
Std5-20/200 ppb	ICAL	1	54438.6	52285.9	104.12	PASS	70-125	31587.9	30185.3	104.65	PASS	70-125
Std6-40/400 ppb	ICAL	1	54325.8	52285.9	103.9	PASS	70-125	31364.1	30185.3	103.91	PASS	70-125
Std7-100/1000 ppb	ICAL	1	53719.4	52285.9	102.74	PASS	70-125	30879.8	30185.3	102.3	PASS	70-125
Std8-200/2000 ppb	ICAL	1	52184.5	52285.9	99.81	PASS	70-125	29965	30185.3	99.27	PASS	70-125
ICV	ICV	1	53562.4	52285.9	102.44	PASS	70-125	31021.2	30185.3	102.77	PASS	70-125
ICB	ICB	1	51974.9	52285.9	99.41	PASS	70-125	30100.7	30185.3	99.72	PASS	70-125
LLICV	CCV1	1	54460.7	52285.9	104.16	PASS	70-125	31354.1	30185.3	103.87	PASS	70-125
ICSA1	ICSA	1	59181	52285.9	113.19	PASS	70-125	33026.3	30185.3	109.41	PASS	70-125
ICSAB1	ICSAB	1	64956.8	52285.9	124.23	PASS	70-125	35729.8	30185.3	118.37	PASS	70-125
MB-70574	MBLK	1	62942.5	52285.9	120.38	PASS	70-125	36982.7	30185.3	122.52	PASS	70-125
LCS-70574	LCS	1	59576.8	52285.9	113.94	PASS	70-125	34630.8	30185.3	114.73	PASS	70-125
N031979-001A	SAMP	1	53761.8	52285.9	102.82	PASS	70-125	31596.9	30185.3	104.68	PASS	70-125
N031980-001A	SAMP	1	53414	52285.9	102.16	PASS	70-125	31481.1	30185.3	104.29	PASS	70-125
N031976-001D	SAMP	1	56655.9	52285.9	108.36	PASS	70-125	32027.6	30185.3	106.1	PASS	70-125
N031976-001D	SAMP	5	61657.8	52285.9	117.92	PASS	70-125	35106.1	30185.3	116.3	PASS	70-125
N031976-002D	SAMP	1	61216.3	52285.9	117.08	PASS	70-125	33539.7	30185.3	111.11	PASS	70-125
N031976-002D	SAMP	5	65008.4	52285.9	124.33	PASS	70-125	37011.5	30185.3	122.61	PASS	70-125
CCV1	CCV	1	65138.9	52285.9	124.58	PASS	70-125	37588.4	30185.3	124.53	PASS	70-125
CCB1	CCB	1	53344.8	52285.9	102.03	PASS	70-125	31399.9	30185.3	104.02	PASS	70-125
N032002-001C	SAMP	1	54890.9	52285.9	104.98	PASS	70-125	30883.2	30185.3	102.31	PASS	70-125
N032002-001C	SAMP	5	54889.8	52285.9	104.98	PASS	70-125	32587.6	30185.3	107.96	PASS	70-125
N032002-001C-DUP	DUP	1	52786.3	52285.9	100.96	PASS	70-125	30695.2	30185.3	101.69	PASS	70-125
N032002-001C-PS	PS	1	55000.2	52285.9	105.19	PASS	70-125	31189.4	30185.3	103.33	PASS	70-125
N032002-001C-MS	MS	1	56498.8	52285.9	108.06	PASS	70-125	32766.9	30185.3	108.55	PASS	70-125
N032002-001C-MSD	MSD	1	56856.2	52285.9	108.74	PASS	70-125	32997.4	30185.3	109.32	PASS	70-125
CCV2	CCV	1	52523.2	52285.9	100.45	PASS	70-125	31629.2	30185.3	104.78	PASS	70-125
CCB2	CCB	1	51183.9	52285.9	97.89	PASS	70-125	30883.4	30185.3	102.31	PASS	70-125
CCV3	CCV	1	51668.5	52285.9	98.82	PASS	70-125	30838.6	30185.3	102.16	PASS	70-125
CCB3	CCB	1	49457.3	52285.9	94.59	PASS	70-125	29598.6	30185.3	98.056	PASS	70-125
CCV4	CCV	1	48053.5	52285.9	91.91	PASS	70-125	28483.2	30185.3	94.36	PASS	70-125
CCB4	CCB	1	46132.2	52285.9	88.23	PASS	70-125	27765.4	30185.3	91.98	PASS	70-125
ICSA2	ICSA	1	47637.6	52285.9	91.11	PASS	70-125	27638.6	30185.3	91.56	PASS	70-125
ICSAB2	ICSAB	1	52074.3	52285.9	99.6	PASS	70-125	30186.4	30185.3	100	PASS	70-125

# SERIAL DILUTION/ POST DIGESTION SPIKE



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N031976  
Test Method: EPA 200.8  
Analysis Date: 9/11/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70574

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

Comments:


Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cr and Mn. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
<del>N031976-001C DT 5X</del>	Chromium	ug/L	0	NA	0		10
<del>N031976-001C DT 5X</del>	Manganese	ug/L	2.328026	NA	2.0412	14.05%	10

N032002-001C DT 5x

Note: NA - Not applicable

 9/19/2018  
for

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>N032002-001C-PS</b>	SampType: <b>PS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3137055</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	102.563	0.50	100.0	2.041	101	80	120				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>N032002-001C-PS</b>	SampType: <b>PS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127538</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70574</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>9/11/2018</b>	SeqNo: <b>3136948</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.325	1.0	10.00	0	93.2	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Amount of Sample:** 25 mL  
**Units:** ug/L

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	LOD	PQL
ANTIMONY	0.50	0.525	0.514	0.473	0.500	0.492	0.486	0.530	0.0210	0.0660	0.100	0.50
ARSENIC	0.10	0.099	0.104	0.087	0.048	0.060	0.069	0.120	0.0259	0.0813	0.080	0.10
BARIUM	1.00	1.041	1.059	1.052	1.011	0.967	0.957	1.023	0.0403	0.1264	0.250	1.00
BERYLLIUM	0.50	0.469	0.476	0.473	0.495	0.480	0.488	0.507	0.0135	0.0424	0.100	0.50
CADMIUM	0.50	0.515	0.513	0.492	0.534	0.499	0.483	0.508	0.0168	0.0527	0.100	0.50
CHROMIUM	1.00	0.979	0.986	0.940	0.990	0.946	0.978	0.977	0.0197	0.0618	0.250	1.00
COBALT	0.50	0.499	0.489	0.486	0.488	0.465	0.502	0.505	0.0135	0.0424	0.100	0.50
COPPER	1.00	1.110	0.667	1.039	1.060	1.006	1.099	1.075	0.1544	0.4850	0.500	1.00
IRON	10.00	10.873	10.802	10.142	9.991	9.846	9.852	10.596	0.4463	1.4014	2.500	10.00
LEAD	1.00	0.928	0.931	0.899	0.996	0.990	0.987	0.997	0.0406	0.1274	0.250	1.00
MANGANESE	0.50	0.577	0.588	0.561	0.566	0.517	0.541	0.520	0.0276	0.0866	0.100	0.50
MOLYBDENUM	0.50	0.514	0.504	0.467	0.478	0.456	0.433	0.527	0.0338	0.1061	0.250	0.50
NICKEL	1.00	0.961	0.965	0.977	0.907	0.914	0.962	1.075	0.0551	0.1731	0.250	1.00
SELENIUM	0.50	0.450	0.478	0.419	0.693	0.707	0.495	0.555	0.1155	0.3628	0.400	0.50
SILVER	0.50	0.558	0.511	0.490	0.542	0.458	0.490	0.684	0.0745	0.2340	0.250	0.50
THALLIUM	0.50	0.437	0.428	0.408	0.538	0.446	0.438	0.525	0.0504	0.1583	0.250	0.50
URANIUM	0.50	0.478	0.467	0.461	0.517	0.510	0.521	0.521	0.0267	0.0838	0.100	0.50
VANADIUM	1.00	0.950	0.969	0.900	0.844	0.829	0.848	1.053	0.0820	0.2574	0.500	1.00
ZINC	10.00	11.259	11.279	10.915	9.620	9.849	9.745	10.241	0.7235	2.2717	2.500	10.00



**ASSET LABORATORIES**

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 ELAP Cert 2921

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
 ELAP Cert 2676 | NV Cert NV00922 | ORELAP/NELAP 4046

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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Units:** ug/L

Analyte	MDLs	MDLb	MDL	LOD	PQL
ANTIMONY	0.0660	0.1564	0.1564	0.300	0.50
ARSENIC	0.0813	0.0387	0.0813	0.080	0.10
BARIUM	0.1264	0.1497	0.1497	0.300	1.00
BERYLLIUM	0.0424	0.0153	0.0424	0.100	0.50
CADMIUM	0.0527	0.0060	0.0527	0.100	0.50
CHROMIUM	0.0618	0.1298	0.1298	0.300	1.00
COBALT	0.0424	0.0339	0.0424	0.100	0.50
COPPER	0.4850	0.5459	0.5459	0.600	1.00
IRON	1.4014	4.3484	4.3484	5.000	10.00
LEAD	0.1274	0.1008	0.1274	0.300	1.00
MANGANESE	0.0866	0.2552	0.2552	0.300	0.50
MOLYBDENUM	0.1061	0.2149	0.2149	0.300	0.50
NICKEL	0.1731	0.2606	0.2606	0.300	1.00
SELENIUM	0.3628	0.0953	0.3628	0.400	0.50
SILVER	0.2340	0.2023	0.2340	0.250	0.50
THALLIUM	0.1583	0.1924	0.1924	0.300	0.50
URANIUM	0.0838	0.0020	0.0838	0.100	0.50
VANADIUM	0.2574	0.2768	0.2768	0.600	1.00
ZINC	2.2717	0.4511	2.2717	3.000	10.00



# EPA 218.6



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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IC Technical Batch Review Checklist (ARCUS02)  
ASSET LABORATORIES - LAS VEGAS

IC ARCUS  
REV 2.0  
011416

QC Batch Number: R127506  
ASSET #: N031976

Instrument ID: IC-07  
Analyst: RBA  
Date Analyzed: 9/10/2018

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)	X					
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?	X					
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?	X					
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)	X					
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X					
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?	X					
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)	X					
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X					
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments:

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer *rba*  
2nd Level Reviewer *Nancy* 9/19/2018

Date: 9/15/2018  
Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 218.6  
**TEST NAME:** HEXAVALENT CHROMIUM BY IC  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Hexavalent Chromium concentration, in  $\mu\text{g/L}$ , in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

A =  $\mu\text{g/L}$ , IC Cr+6 calculated concentration

DF = dilution factor

For Sample **N031976-002A**, the concentration in  $\mu\text{g/L}$  is calculated as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = 5.0068 * 100$$

$$\text{Cr}^{+6}, \mu\text{g/L} = 500.6800$$

Reporting results in two significant figures,

$$\text{Cr}^{+6}, \mu\text{g/L} = 500$$

*rba* 9/15/2018

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691


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INJECTION LOG: 180827A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:10 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:21 AM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:30 AM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/27/18 11:08 AM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:20 AM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:29 AM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:38 AM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:48 AM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:57 AM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 12:07 PM	Reported
11	ICV	ICV	1	Hexavalent Chromium	08/27/18 12:41 PM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	08/27/18 12:53 PM	Reported
13	ICB	ICB	1	Hexavalent Chromium	08/27/18 1:02 PM	Reported

 9/5/2018


## Injection Log Summary

## Sequence Details

Name:	IC-07_180827A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	27/Aug/18 14:07:57
No. of Injections:	16	Updated By:	ics 5000

## Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/27/2018 10:10	Finished	BLANK
2	BLANK	2	1000	Unknown		08/27/2018 10:21	Finished	BLANK
3	BLANK	3	1000	Unknown		08/27/2018 10:30	Finished	BLANK
4	iBLANK	5	1000	Unknown		08/27/2018 11:08	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	6	1000	Calibration Standard	01	08/27/2018 11:20	Finished	0.2 ppb, IWST-180622A
6	STD2-1.0 ppb	7	1000	Calibration Standard	02	08/27/2018 11:29	Finished	1.0 ppb, IWST-180622A
7	STD3-5.0 ppb	8	1000	Calibration Standard	03	08/27/2018 11:38	Finished	5.0 ppb, IWST-180622A
8	STD4-10.0 ppb	9	1000	Calibration Standard	04	08/27/2018 11:48	Finished	10 ppb, IWST-180622A
9	STD5-15.0 ppb	10	1000	Calibration Standard	05	08/27/2018 11:57	Finished	15 ppb, IWST-180622A
10	STD6-20.0 ppb	11	1000	Calibration Standard	06	08/27/2018 12:07	Finished	20 ppb, IWST-180622A
11	ICV.ICV.1.	13	1000	Unknown		08/27/2018 12:41	Finished	ICV @5ppb, IWST-180622B
12	PQL@0.2ppb.CCV2.	14	1000	Unknown		08/27/2018 12:53	Finished	PQL @ 0.2ppb
13	ICB.ICB.1.	15	1000	Unknown		08/27/2018 13:02	Finished	ICB R180806A
14	SHUTDOWN	17	1000	Unknown		08/27/2018 13:45	Finished	
15	Eluent: R180824A	18	1000	Unknown		n.a.	Finished	Eluent
16	PCR: R180824B	19	1000	Unknown		n.a.	Finished	Post-Column Reagent



**rba** 9/5/2018

**INJECTION LOG: 180910A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:10 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:21 AM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:30 AM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/27/18 11:08 AM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:20 AM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:29 AM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:38 AM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:48 AM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:57 AM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 12:07 PM	Reported
11	BLANK	BLANK	1	Hexavalent Chromium	09/10/18 11:20 AM	Not Reported
12	BLANK	BLANK	1	Hexavalent Chromium	09/10/18 11:31 AM	Not Reported
13	CCV-1	CCV	1	Hexavalent Chromium	09/10/18 11:41 AM	Reported
14	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/10/18 11:50 AM	Reported
15	CCB-1	CCB	1	Hexavalent Chromium	09/10/18 12:23 PM	Reported
16	MB-R127506	MBLK	1	Hexavalent Chromium	09/10/18 12:34 PM	Reported
17	LCS-R127506	LCS	1	Hexavalent Chromium	09/10/18 12:44 PM	Reported
18	N031977-001A	SAMP	1	Hexavalent Chromium	09/10/18 12:53 PM	Reported
19	N031977-002A	SAMP	1	Hexavalent Chromium	09/10/18 1:03 PM	Reported
20	N031977-003A	SAMP	1	Hexavalent Chromium	09/10/18 1:12 PM	Reported
21	N031977-004A	SAMP	1	Hexavalent Chromium	09/10/18 1:22 PM	Reported
22	N031977-005A	SAMP	1	Hexavalent Chromium	09/10/18 1:31 PM	Reported
23	N031978-001A	SAMP	1	Hexavalent Chromium	09/10/18 1:41 PM	Reported
24	N031978-002A	SAMP	1	Hexavalent Chromium	09/10/18 1:50 PM	Reported
25	N031978-003A	SAMP	5	Hexavalent Chromium	09/10/18 1:59 PM	Reported
26	CCV-2	CCV1	1	Hexavalent Chromium	09/10/18 2:09 PM	Reported
27	CCB-2	CCB	1	Hexavalent Chromium	09/10/18 2:18 PM	Reported
28	N031978-005A	SAMP	1	Hexavalent Chromium	09/10/18 2:28 PM	Reported
29	N031978-006A	SAMP	1	Hexavalent Chromium	09/10/18 2:37 PM	Not Reported
30	N031976-001A	SAMP	1	Hexavalent Chromium	09/10/18 2:47 PM	Reported
31	N031976-001AMS	MS	1	Hexavalent Chromium	09/10/18 2:56 PM	Reported
32	N031976-002A	SAMP	100	Hexavalent Chromium	09/10/18 3:06 PM	Reported
33	N031976-002AMS	MS	100	Hexavalent Chromium	09/10/18 3:15 PM	Reported
34	N031976-002AMSD	MSD	100	Hexavalent Chromium	09/10/18 3:25 PM	Reported
35	N031977-001ADUP	DUP	1	Hexavalent Chromium	09/10/18 3:34 PM	Reported
36	N031978-006A	SAMP	50	Hexavalent Chromium	09/10/18 3:44 PM	Reported
37	CCV-3	CCV	1	Hexavalent Chromium	09/10/18 3:53 PM	Reported
38	CCB-3	CCB	1	Hexavalent Chromium	09/10/18 4:02 PM	Reported

### Injection Log Summary

**Sequence Details**

Name:	IC-07_180910A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	10/Sep/18 16:33:16
No. of Injections:	41	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/27/2018 10:10	Finished	BLANK
2	BLANK	2	1000	Unknown		08/27/2018 10:21	Finished	BLANK
3	BLANK	3	1000	Unknown		08/27/2018 10:30	Finished	BLANK
4	BLANK	5	1000	Unknown		08/27/2018 11:08	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	6	1000	Calibration Standard	01	08/27/2018 11:20	Finished	0.2 ppb, IWST-180622A
6	STD2-1.0 ppb	7	1000	Calibration Standard	02	08/27/2018 11:29	Finished	1.0 ppb, IWST-180622A
7	STD3-5.0 ppb	8	1000	Calibration Standard	03	08/27/2018 11:38	Finished	5.0 ppb, IWST-180622A
8	STD4-10.0 ppb	9	1000	Calibration Standard	04	08/27/2018 11:48	Finished	10 ppb, IWST-180622A
9	STD5-15.0 ppb	10	1000	Calibration Standard	05	08/27/2018 11:57	Finished	15 ppb, IWST-180622A
10	STD6-20.0 ppb	11	1000	Calibration Standard	06	08/27/2018 12:07	Finished	20 ppb, IWST-180622A
11	BLANK	1	1000	Unknown		09/10/2018 11:20	Finished	BLANK
12	BLANK	2	1000	Unknown		09/10/2018 11:31	Finished	BLANK
13	CCV-1,CCV,1,	3	1000	Unknown		09/10/2018 11:41	Finished	CCV @5ppb, IWST-180622A
14	PQL@0.2ppb,CCV2,	4	1000	Unknown		09/10/2018 11:50	Finished	PQL @ 0.2ppb
15	CCB-1,CCB,1,	5	1000	Unknown		09/10/2018 12:23	Finished	CCB R180806A
16	MB-H2O,MBLK,1,	6	1000	Unknown		09/10/2018 12:34	Finished	MBLK R180806A
17	LCS-H2O,LCS,1,	7	1000	Unknown		09/10/2018 12:44	Finished	LCS @5ppb, IWST-180622B
18	N031977-001A,SAMF	8	1000	Unknown		09/10/2018 12:53	Finished	SAMP, 10mL
19	N031977-002A,SAMF	9	1000	Unknown		09/10/2018 13:03	Finished	SAMP, 10mL
20	N031977-003A,SAMF	10	1000	Unknown		09/10/2018 13:12	Finished	SAMP, 10mL
21	N031977-004A,SAMF	11	1000	Unknown		09/10/2018 13:22	Finished	SAMP, 10mL
22	N031977-005A,SAMF	12	1000	Unknown		09/10/2018 13:31	Finished	SAMP, 10mL
23	N031978-001A,SAMF	13	1000	Unknown		09/10/2018 13:41	Finished	SAMP, 10mL
24	N031978-002A,SAMF	14	1000	Unknown		09/10/2018 13:50	Finished	SAMP, 10mL
25	N031978-003A,SAMF	15	1000	Unknown		09/10/2018 13:59	Finished	SAMP,2> 10mL
26	CCV-2,CCV1,1,	16	1000	Unknown		09/10/2018 14:09	Finished	CCV @10ppb, IWST-180622A
27	CCB-2,CCB,1,	17	1000	Unknown		09/10/2018 14:18	Finished	CCB R180806A
28	N031978-005A,SAMF	18	1000	Unknown		09/10/2018 14:28	Finished	SAMP, 0.1>10mL
29	N031978-006A,SAMF	19	1000	Unknown		09/10/2018 14:37	Finished	MS (5ppb), IWST-180622B,0.1
30	N031976-001A,SAMF	20	1000	Unknown		09/10/2018 14:47	Finished	SAMP, 10mL
31	N031976-001AMS,MS	21	1000	Unknown		09/10/2018 14:56	Finished	MS (1ppb), IWST-180622B,10
32	N031976-002A,SAMF	22	1000	Unknown		09/10/2018 15:06	Finished	SAMP, 0.1>10mL
33	N031976-002AMS,MS	23	1000	Unknown		09/10/2018 15:15	Finished	MS (5ppb), IWST-180622B,0.1
34	N031976-002AMSD,MS	24	1000	Unknown		09/10/2018 15:25	Finished	MSD (5ppb), IWST-180622B,0.1
35	N031977-001ADUP,D	25	1000	Unknown		09/10/2018 15:34	Finished	DUP, 10mL
36	N031978-006A,SAMF	26	1000	Unknown		09/10/2018 15:44	Finished	SAMP, 0.2>10mL
37	CCV-3,CCV,1,	27	1000	Unknown		09/10/2018 15:53	Finished	CCV @5ppb, IWST-180622A
38	CCB-3,CCB,1,	28	1000	Unknown		09/10/2018 16:02	Finished	CCB R180806A
39	SHUTDOWN	29	1000	Unknown		09/10/2018 16:12	Finished	
40	Eluent: R180910A	30	1000	Unknown		n.a.	Finished	Eluent
41	PCR: R180907A	31	1000	Unknown		n.a.	Finished	Post-Column Reagent

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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### Hexavalent Chromium Preparation and Runlog

#### Sample Preparation

Date Prepared: 9/16/2018      Slope: 98.1%      Reagent ID: \_\_\_\_\_  
 Time Prepared: 0855H      pH 4: 4.00 @ 25.0°C      Sulfuric Acid: 10125  
 Prepared By: NSA      7: 7.00 @ 25.0°C      Diphenylcarbazide: CINV-180516A  
    10: 9.98 @ 25.0°C      NH4OH + NH4SO4 eluent: M80904  
    15: 7.01 @ 25.0°C      NH4OH + NH4SO4 buffer: N180606A

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N071947-001B	7.50	9.34	~250µl	~250µl	+5µl M80906A	
2)	2C	7.23	9.41			+5" "	
3)	N071950-001A	9.50	-				
4)	N071957-1A	9.30	-				
5)	2A	9.58	-				
6)							
7)							
8)							
9)							
10)							
11)							
12)							
13)							
14)							
15)							

#### Sample Preparation

Date Prepared: 9/15/18      Slope: 98.9%      Reagent ID: \_\_\_\_\_  
 Time Prepared: 1052H      pH 4: 4.00 @ 25.0°C      Sulfuric Acid: 10125  
 Prepared By: NSA      7: 7.01 @ 25.0°C      Diphenylcarbazide: CINV-180516A      G N NEWHA:  
    10: 9.99 @ 25.0°C      NH4OH + NH4SO4 eluent: M80904 10A      M80709C  
    15: 7.01 @ 25.0°C      NH4OH + NH4SO4 buffer: N180606A

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N071970-001A	9.00	9.49	~250µl	~250µl	+6µl M80906A	
2)	2A	9.04	9.50			+6" "	
3)	N071977-1A	8.99	9.34			+5" "	
4)	2A	9.00	9.45			+5" "	
5)	3A	9.05	9.32			+5" "	
6)	4A	9.42	-				
7)	5A	9.42	-				
8)	N071978-1A	8.98	9.41			+6" "	
9)	2A	9.06	9.33			+6" "	
10)	3A	8.99	9.32			+6" "	
11)	5A	9.01	9.36			+6" "	
12)	6A	9.05	9.40			+6" "	
13)							
14)							
15)							

*nsa* 9/15/2018

Logbook No. 15



ASSET LABORATORIES

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CALIFORNIA | P:562.219.7435 F:562.219.7436  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 ELAP Cert 2921  
 5 of 100 ID CA01638

NEVADA | P:702.307.2659 F:702.307.2691  
 3151 W. Post Rd., Las Vegas, NV 89118  
 ELAP Cert 2676 | NV Cert 100922  
 ORELAP/NELAP Cert 4046

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07  
Date Calibrated: 8/27/2018

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R <sup>2</sup>
Area,mAU*min	0.0542	0.2463	1.2679	2.5360	3.7695	5.0211	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST-170814H	IWST-180622A

Calibration Acceptance Criteria: > 0.999 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.



# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/27/2018</b>	SeqNo: <b>3135087</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.148	0.20	5.000	0	103	90	110				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/27/2018</b>	SeqNo: <b>3135088</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.219	0.20	0.2000	0	110	80	120				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135090</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.096	0.20	5.000	0	102	95	105				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135091</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.213	0.20	0.2000	0	107	80	120				

Sample ID <b>CCV-2</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135103</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.177	0.20	10.00	0	102	95	105				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135113</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.118	0.20	5.000	0	102	95	105				

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>
Client ID: <b>ICB</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/27/2018</b>	SeqNo: <b>3135089</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135092</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135104</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127506</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127506</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/10/2018</b>	SeqNo: <b>3135114</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 9/10/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.131	
CCV-1	4.115	
CCV-2	4.115	
CCV-3	4.115	

**Average** 4.115  
**Actual RT Window** 4.035 - 4.195  
**Applied RT Window** 3.915 - 4.315

MB-R127506	N.A.	N.A.
LCS-R127506	4.115	PASS
N031977-001A	4.073	PASS
N031977-002A	4.090	PASS
N031977-003A	4.106	PASS
N031977-004A	4.090	PASS
N031977-005A	4.073	PASS
N031978-001A	N.A.	N.A.
N031978-002A	4.098	PASS
N031978-003A	4.106	PASS
N031978-005A	4.098	PASS
N031978-006A	4.098	PASS
N031976-001A	N.A.	N.A.
N031976-001AMS	4.048	PASS
N031976-002A	4.115	PASS
N031976-002AMS	4.115	PASS
N031976-002AMSD	4.115	PASS
N031977-001ADUP	4.073	PASS
N031978-006A	4.115	PASS

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**  
 Method Number: EPA 218.6  
 Analysis Date(s): 5/5/2017, 5/8/2017, 5/9/2017, 5/10/2017, 5/11/2017, 5/12/2017, 5/15/2017  
 Analyst: Ria Abes

Matrix: **WATER**  
 Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

	Datafile	170505	170508	170509	170510	170511	170512	170515						
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	t <sub>(n-1)</sub> value	MDL	PQL	Remarks	
Hexavalent Chromium	0.1949	0.2135	0.1840	0.1828	0.2011	0.1936	0.1911	0.20	0.0105	3.143	<b>0.0331</b>	<b>0.20</b>	OK,meets criteria	

Students' t Values at 99% CL

#	t <sub>(n-1)</sub>
10	2.821
9	2.896
8	2.998
7	3.143



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ANALYTICAL SERVICES FOR ENVIRONMENTAL AND INDUSTRIAL APPLICATIONS

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

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## LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Hexavalent Chromium by IC**                      Matrix: **WATER**  
 Method Number: EPA Method 218.6/7199                      Unit:  $\mu\text{g/L}$   
 Analysis Date(s): 3/21/2018  
 Analyst: Ria Abes  
  
 Instrument Name: **IC-07**

Compound	MDL	LOD Spike Conc., $\mu\text{g/L}$	LOD actual Conc., $\mu\text{g/L}$
Hexavalent Chromium	0.0331	0.100	0.116

Compound	PQL	PQL Spike Conc., $\mu\text{g/L}$	PQL actual Conc., $\mu\text{g/L}$	% Recovery
Hexavalent Chromium	0.200	0.200	0.201	<u>100</u>



# RAW DATA



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ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691



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# INITIAL CALIBRATION



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INJECTION LOG: 180827A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:10 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:21 AM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:30 AM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/27/18 11:08 AM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:20 AM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:29 AM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:38 AM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:48 AM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:57 AM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 12:07 PM	Reported
11	ICV	ICV	1	Hexavalent Chromium	08/27/18 12:41 PM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	08/27/18 12:53 PM	Reported
13	ICB	ICB	1	Hexavalent Chromium	08/27/18 1:02 PM	Reported

*rba* 9/5/2018

*Nancy* 9/12/2018

IC-07 RBA 8/28/2018 5:31 PM

## Injection Log Summary

## Sequence Details

Name:	IC-07_180827A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	27/Aug/18 14:07:57
No. of Injections:	16	Updated By:	ics 5000

## Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/27/2018 10:10	Finished	BLANK
2	BLANK	2	1000	Unknown		08/27/2018 10:21	Finished	BLANK
3	BLANK	3	1000	Unknown		08/27/2018 10:30	Finished	BLANK
4	iBLANK	5	1000	Unknown		08/27/2018 11:08	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	6	1000	Calibration Standard	01	08/27/2018 11:20	Finished	0.2 ppb, IWST-180622A
6	STD2-1.0 ppb	7	1000	Calibration Standard	02	08/27/2018 11:29	Finished	1.0 ppb, IWST-180622A
7	STD3-5.0 ppb	8	1000	Calibration Standard	03	08/27/2018 11:38	Finished	5.0 ppb, IWST-180622A
8	STD4-10.0 ppb	9	1000	Calibration Standard	04	08/27/2018 11:48	Finished	10 ppb, IWST-180622A
9	STD5-15.0 ppb	10	1000	Calibration Standard	05	08/27/2018 11:57	Finished	15 ppb, IWST-180622A
10	STD6-20.0 ppb	11	1000	Calibration Standard	06	08/27/2018 12:07	Finished	20 ppb, IWST-180622A
11	ICV,ICV,1,	13	1000	Unknown		08/27/2018 12:41	Finished	ICV @5ppb, IWST-180622B
12	PQL@0.2ppb.CCV2,	14	1000	Unknown		08/27/2018 12:53	Finished	PQL @ 0.2ppb
13	ICB,ICB,1,	15	1000	Unknown		08/27/2018 13:02	Finished	ICB R180806A
14	SHUTDOWN	17	1000	Unknown		08/27/2018 13:45	Finished	
15	Eluent: R180824A	18	1000	Unknown		n.a.	Finished	Eluent
16	PCR: R180824B	19	1000	Unknown		n.a.	Finished	Post-Column Reagent

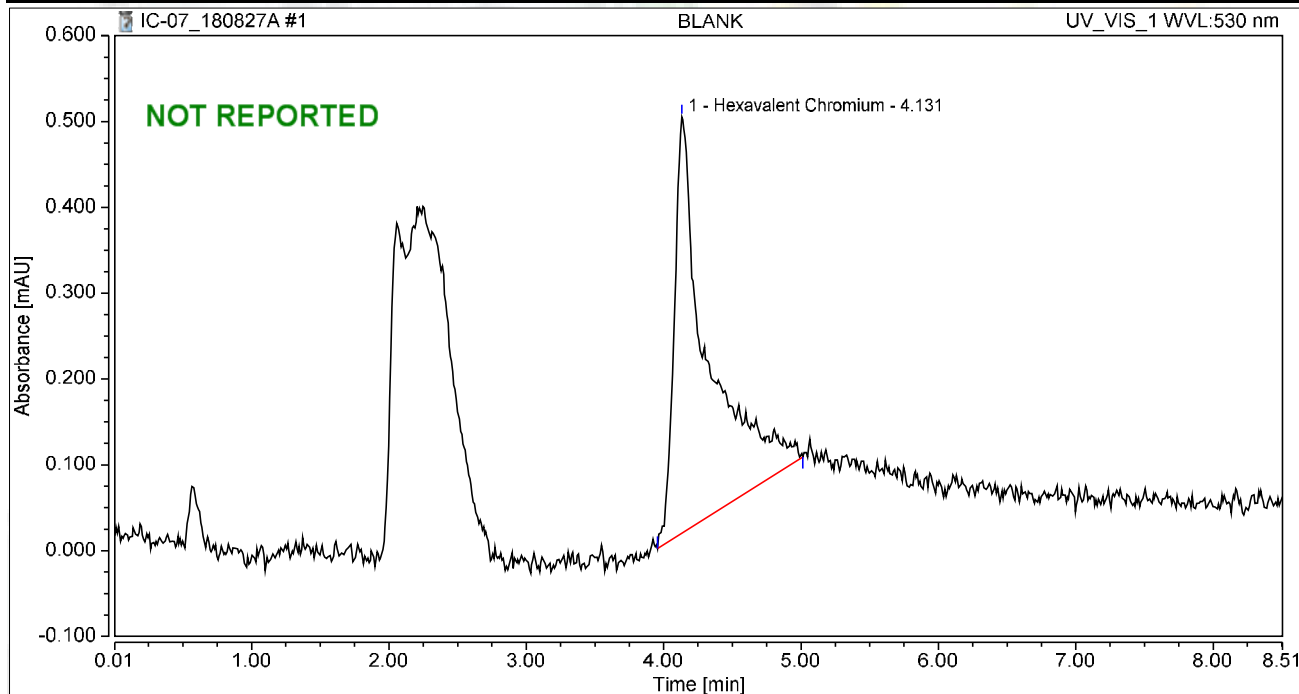
rba 9/5/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 10:10	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

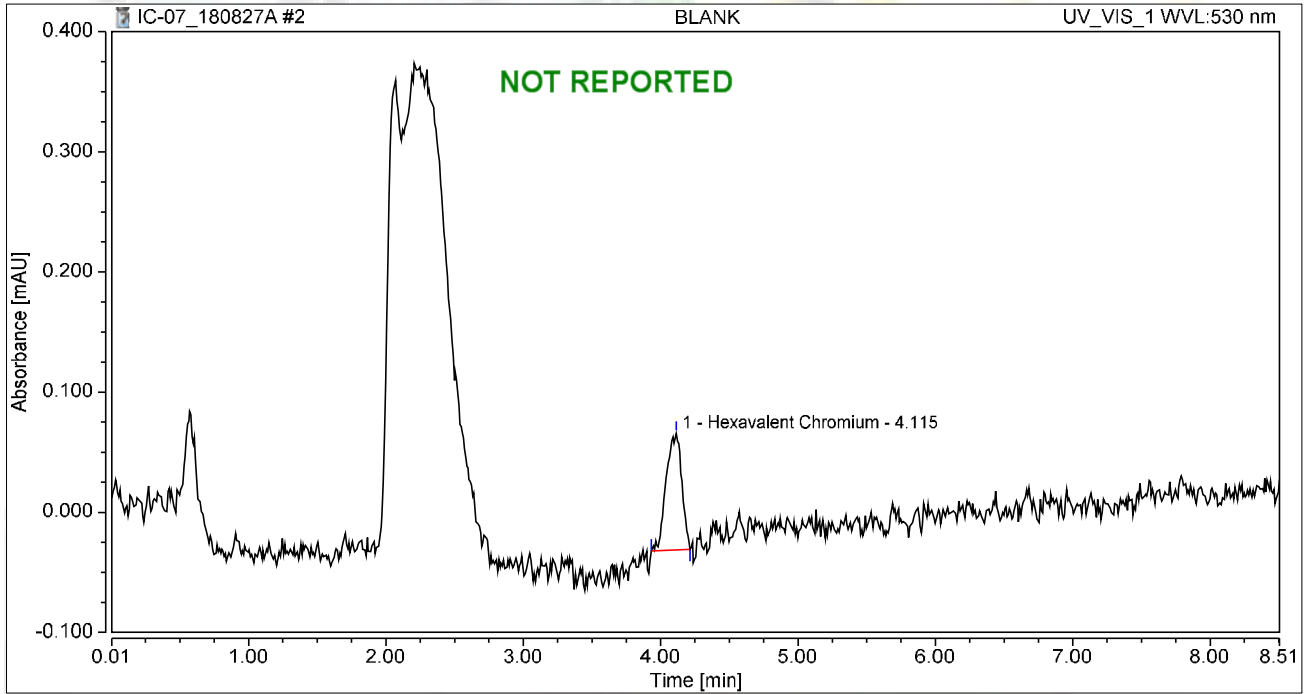
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.139	0.485	100.00	100.00	0.5516
<b>Total:</b>			<b>0.139</b>	<b>0.485</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 10:21	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.013	0.097	100.00	100.00	0.0500
<b>Total:</b>			<b>0.013</b>	<b>0.097</b>	<b>100.00</b>	<b>100.00</b>	

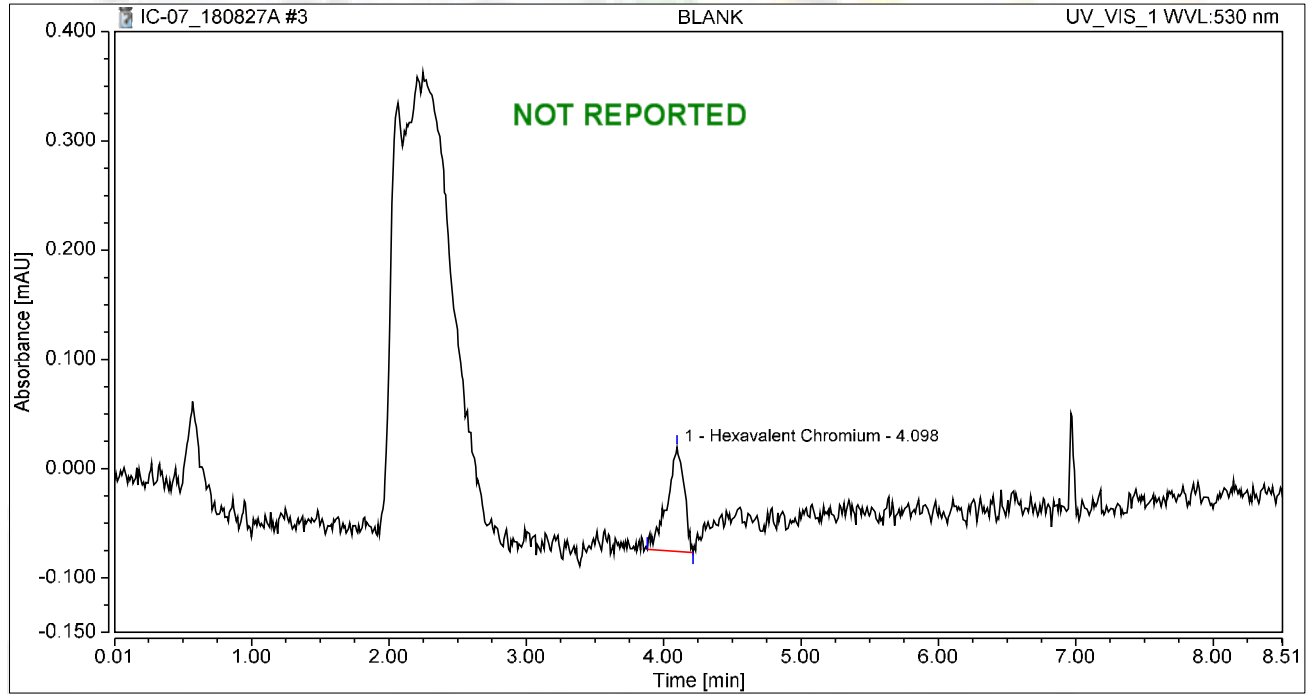


### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 10:30	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

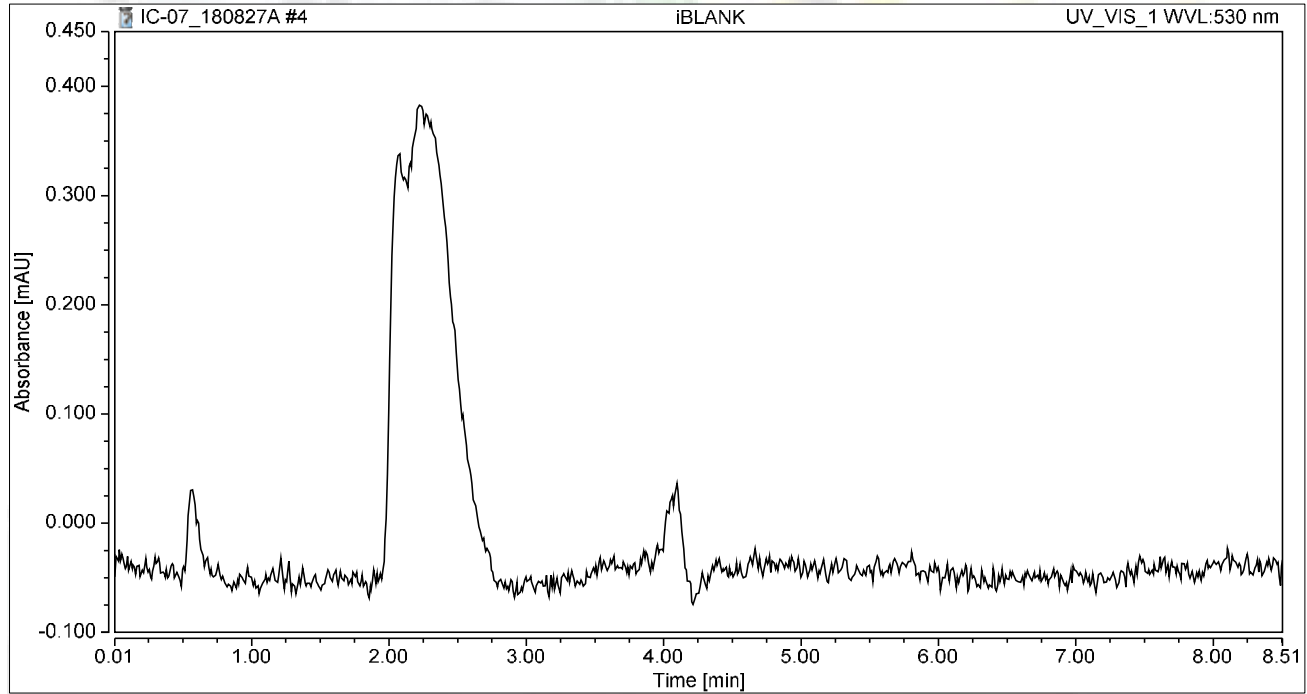
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.014	0.095	100.00	100.00	0.0543
<b>Total:</b>			<b>0.014</b>	<b>0.095</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	iBLANK	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:08	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

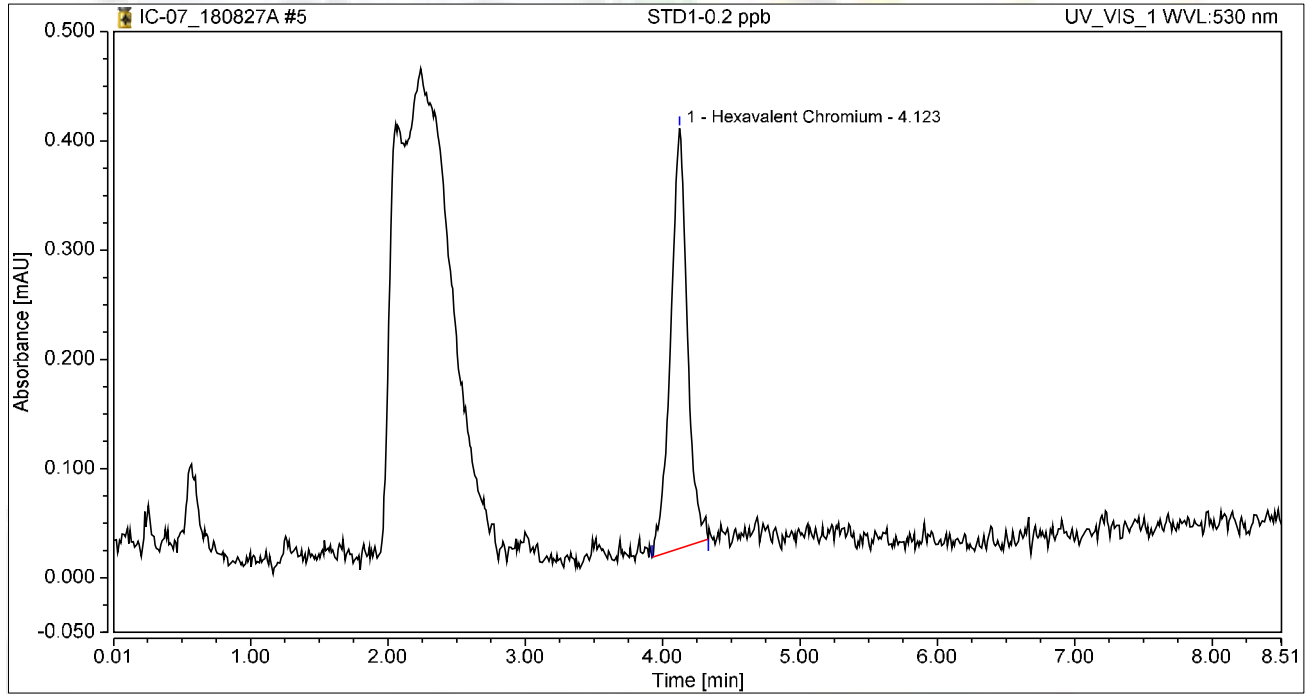
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:20	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

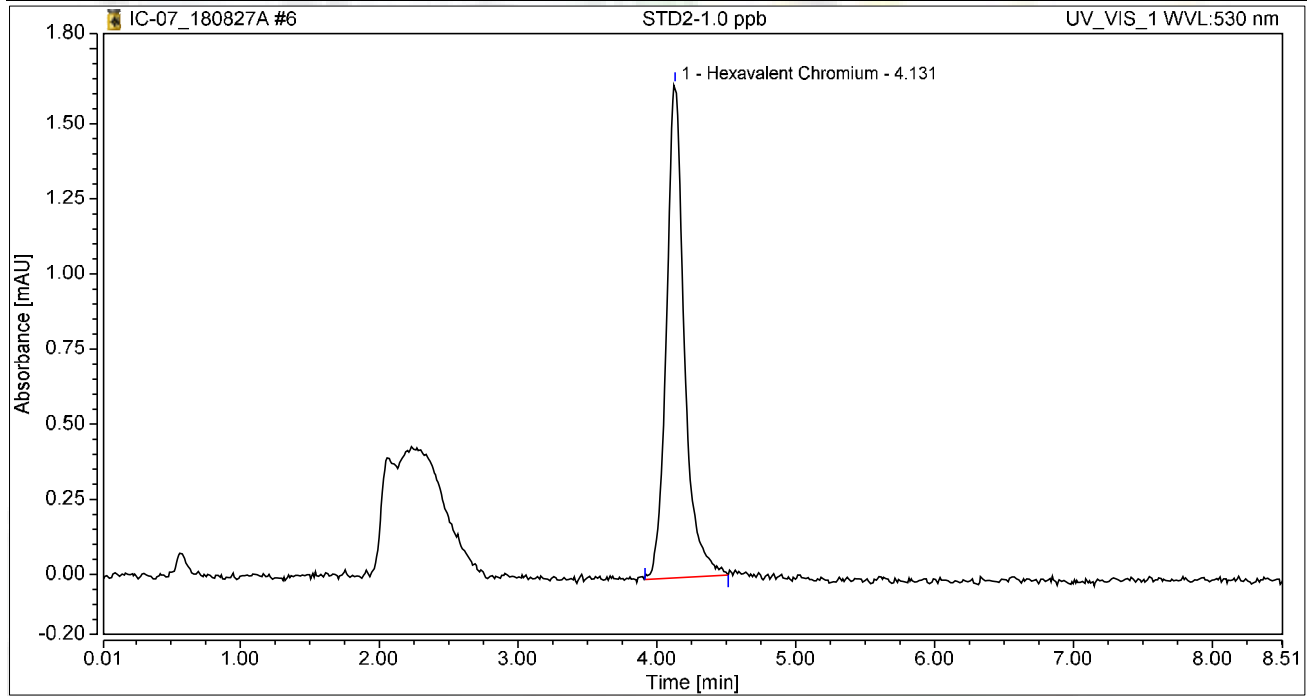
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.054	0.385	100.00	100.00	0.2156
<b>Total:</b>			<b>0.054</b>	<b>0.385</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD2-1.0 ppb	Run Time (min):	8.49
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	02	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:29	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

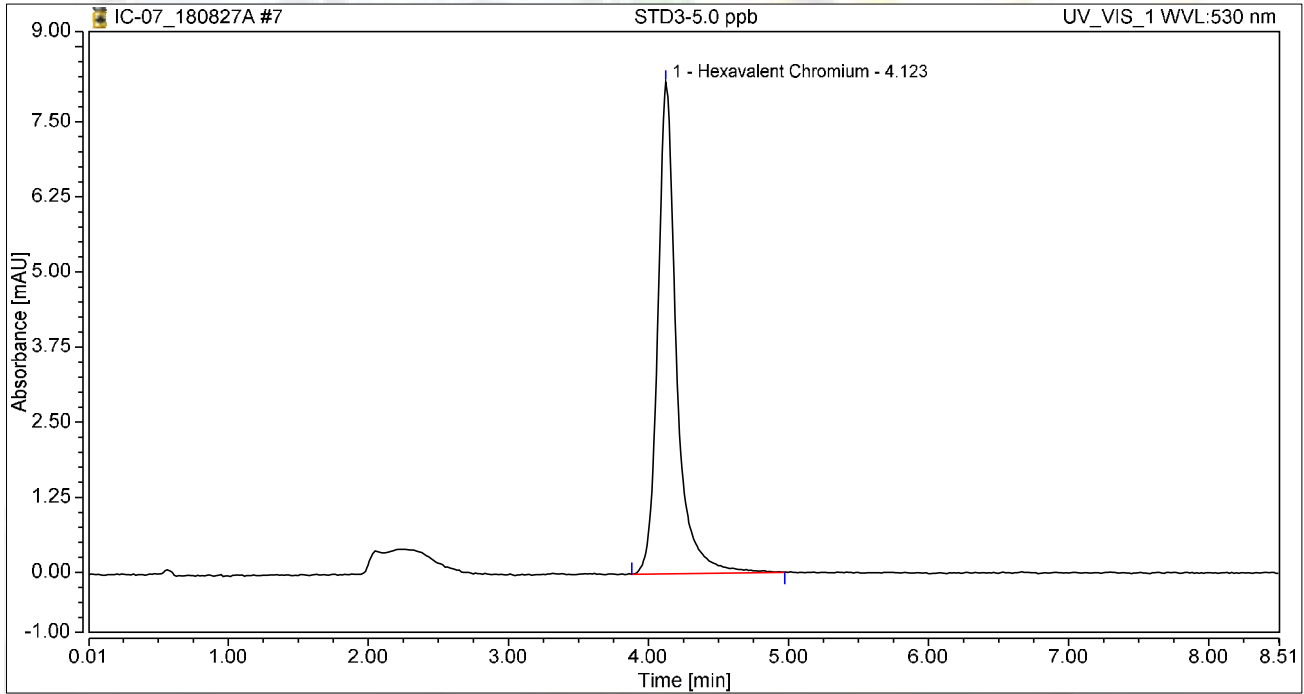
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.246	1.643	100.00	100.00	0.9792
<b>Total:</b>			<b>0.246</b>	<b>1.643</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD3-5.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	03	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

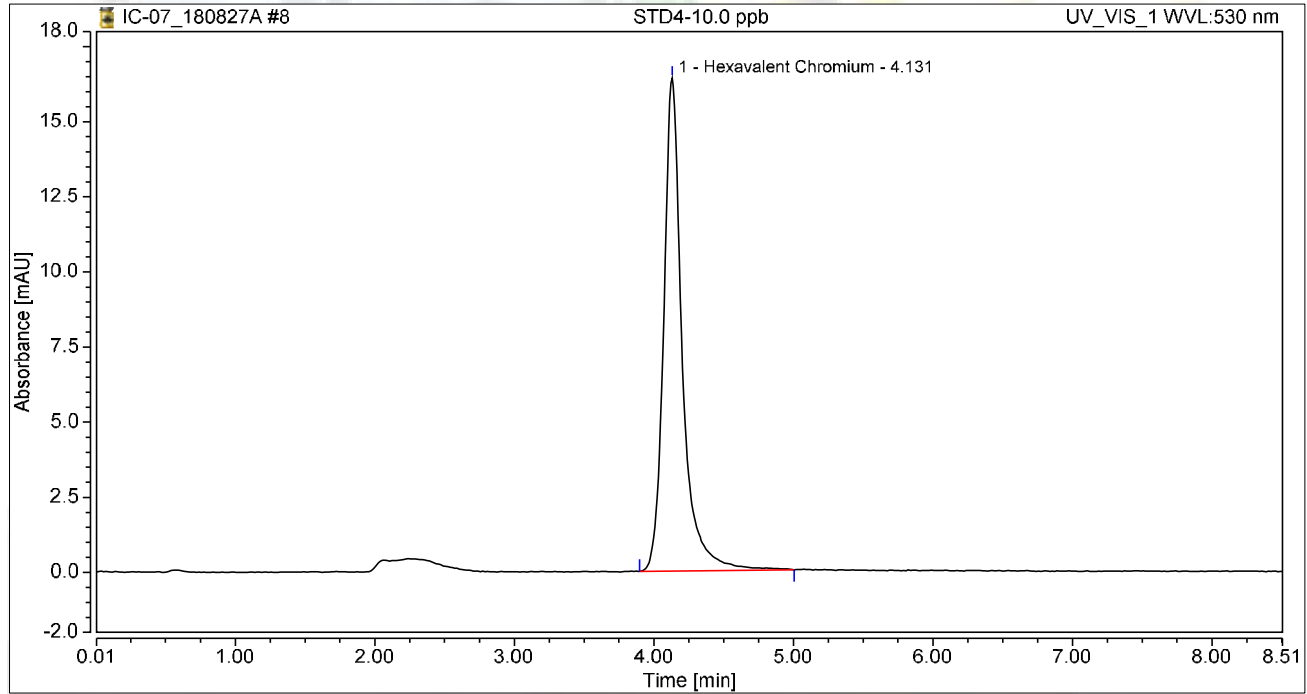
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	1.268	8.180	100.00	100.00	5.0404
<b>Total:</b>			<b>1.268</b>	<b>8.180</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:48	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

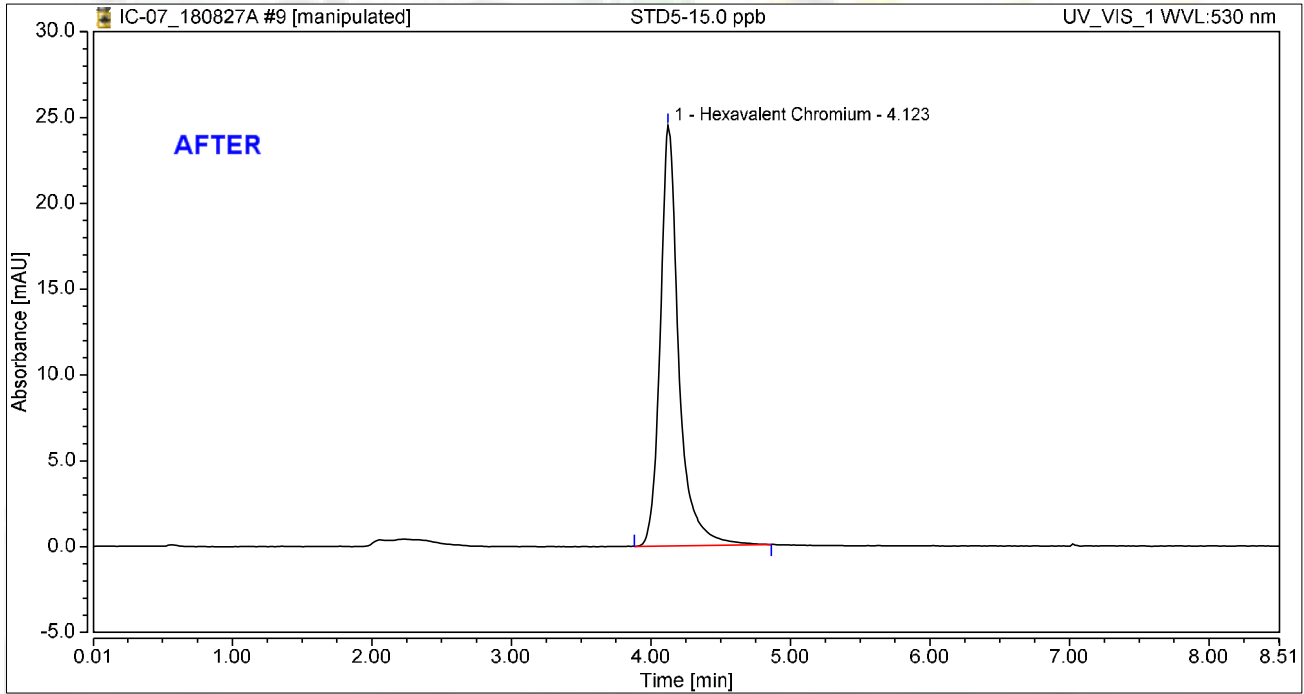
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.536	16.409	100.00	100.00	10.0817
<b>Total:</b>			<b>2.536</b>	<b>16.409</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	3.770	24.491	100.00	100.00	14.9855
<b>Total:</b>			<b>3.770</b>	<b>24.491</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/5/2018

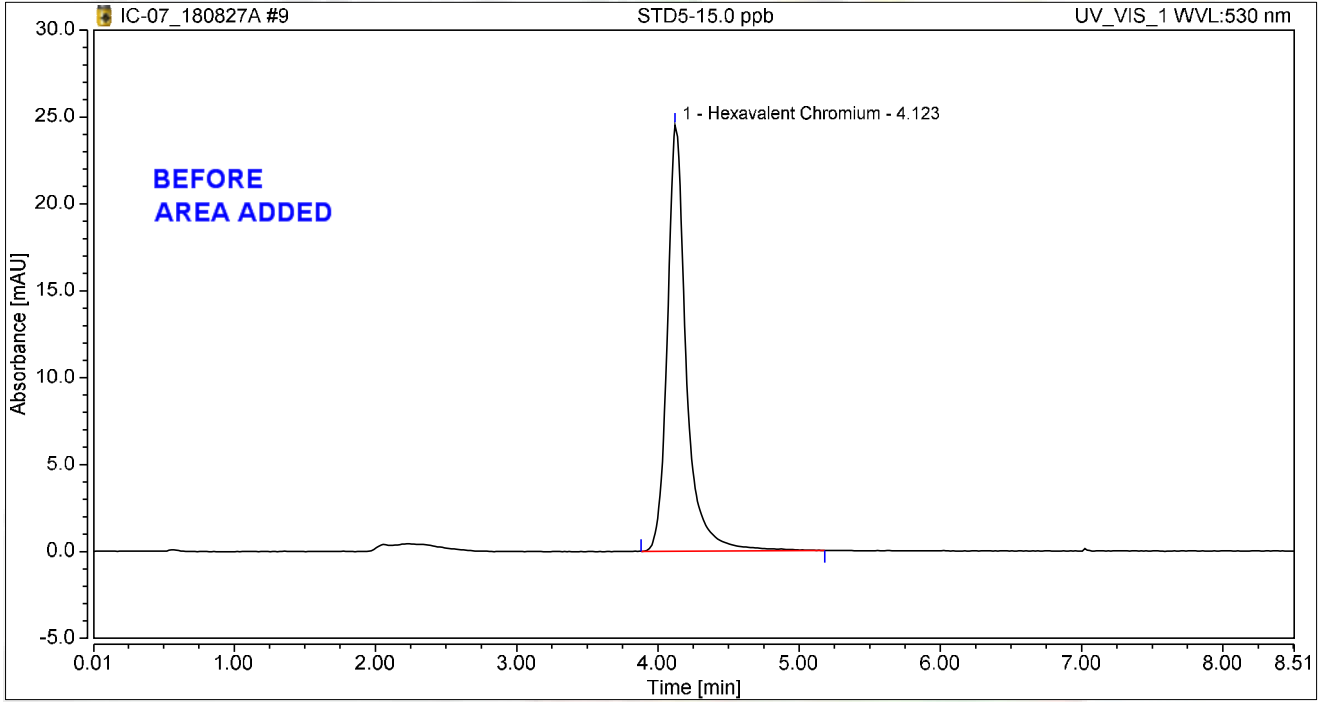
Reviewed by:  
*Nancy* 9/12/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	3.830	24.514	100.00	100.00	15.0503
<b>Total:</b>			<b>3.830</b>	<b>24.514</b>	<b>100.00</b>	<b>100.00</b>	

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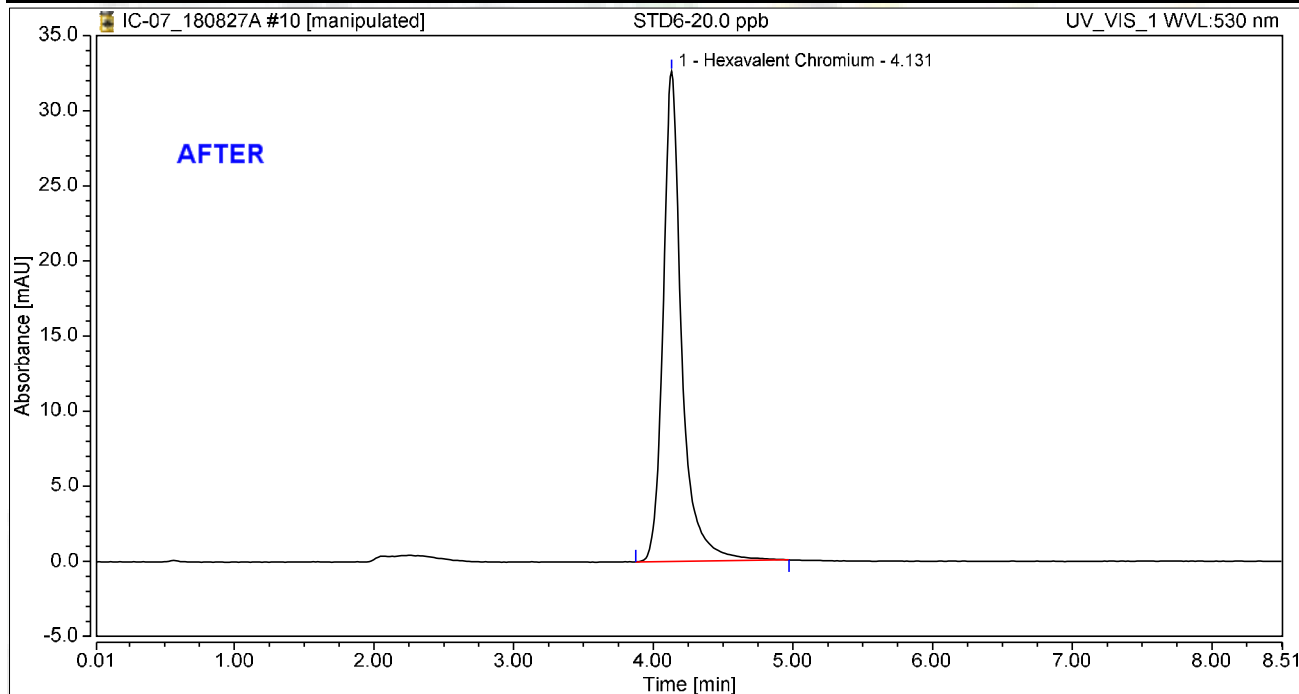


### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 12:07	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	5.021	32.611	100.00	100.00	19.9608
<b>Total:</b>			<b>5.021</b>	<b>32.611</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/5/2018

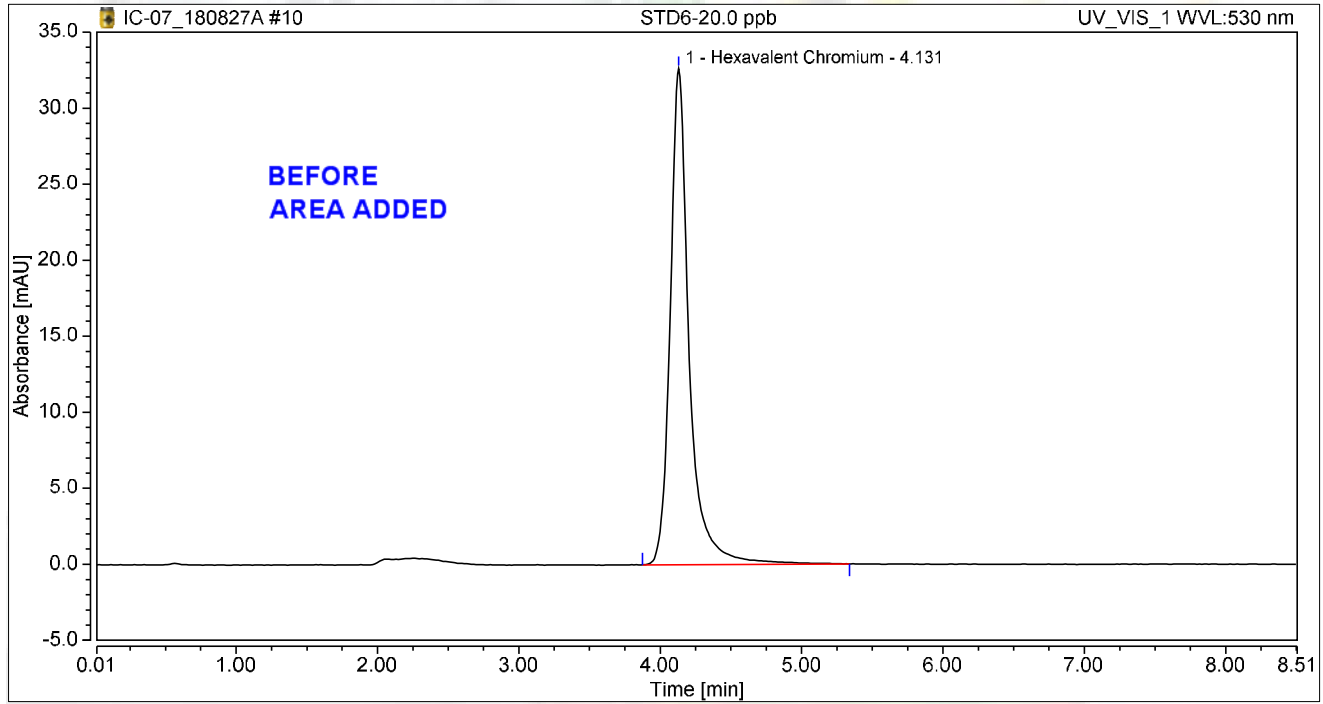
Reviewed by:  
My [Signature] 9/12/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 12:07	Sample Weight:	1.0000

**Chromatogram**

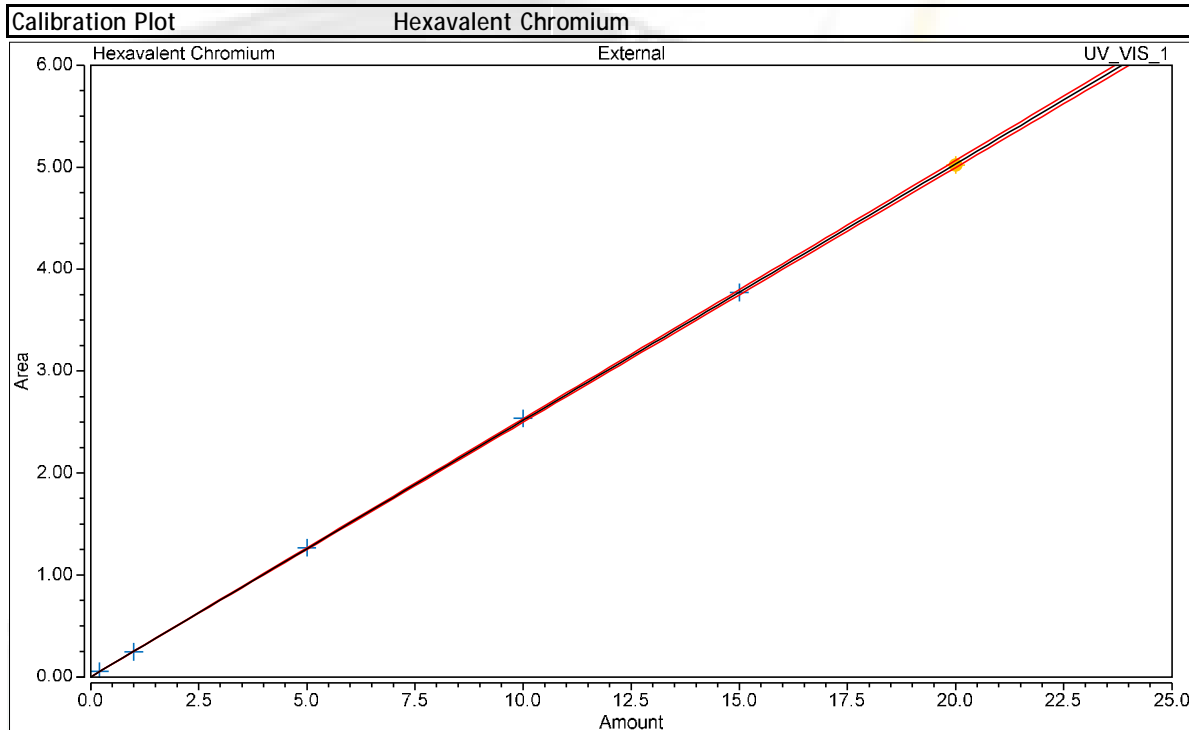


**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	5.085	32.631	100.00	100.00	19.9848
<b>Total:</b>			<b>5.085</b>	<b>32.631</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/5/2018

Initial Calibration Summary			
Calibration Details		Hexavalent Chromium	
Calibration Type	Lin	Offset (C0)	0.0000
Evaluation Type	Area	Slope (C1)	0.2515
Number of Calibration Points	6	Curve (C2)	0.0000
Number of disabled Calibration Points	0	R-Square	0.99997



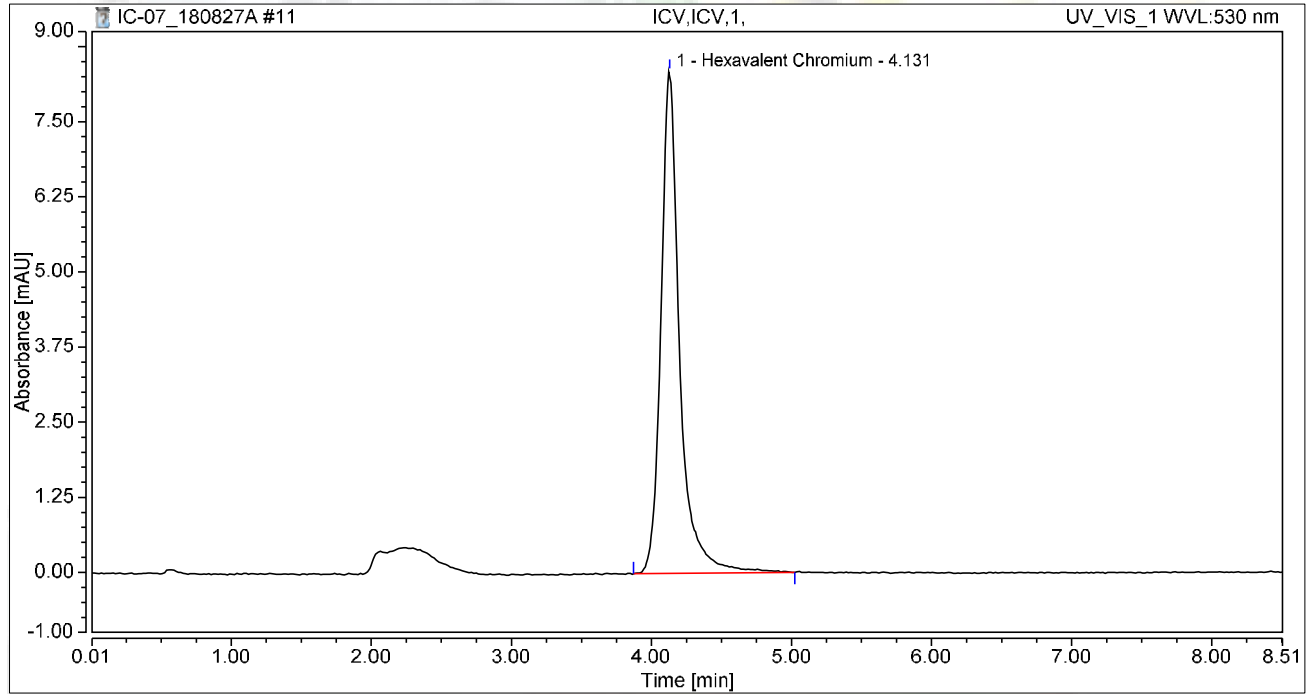
Calibration Results		Hexavalent Chromium				
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
5	STD1-0.2 ppb	01	0.2000	0.0542	0.054	0.385
6	STD2-1.0 ppb	02	1.0000	0.2463	0.246	1.643
7	STD3-5.0 ppb	03	5.0000	1.2679	1.268	8.180
8	STD4-10.0 ppb	04	10.0000	2.5360	2.536	16.409
9	STD5-15.0 ppb	05	15.0000	3.7695	3.770	24.491
10	STD6-20.0 ppb	06	20.0000	5.0211	5.021	32.611

### Chromatogram and Results

**Injection Details**

Injection Name:	ICV,ICV,1,	Run Time (min):	8.50
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 12:41	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

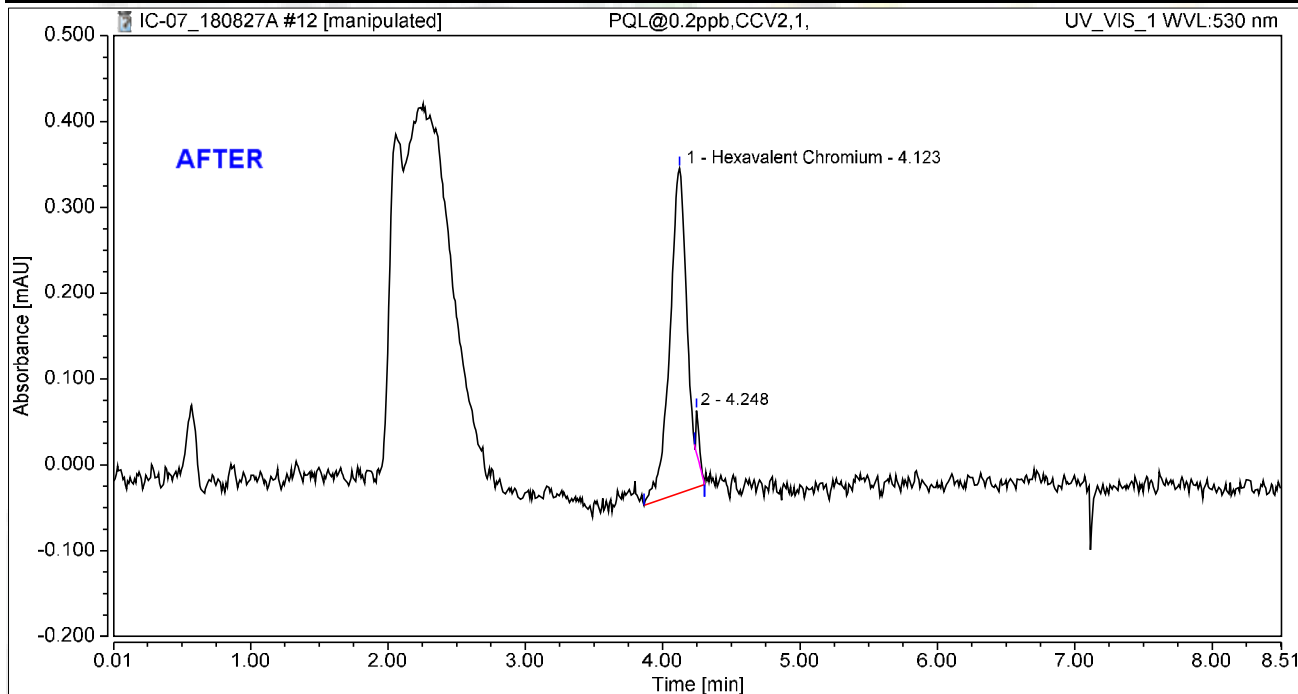
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.295	8.351	100.00	100.00	5.1484
<b>Total:</b>			<b>1.295</b>	<b>8.351</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 12:53	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.055	0.378	97.76	88.34	0.2190
2		4.248	0.001	0.050	2.24	11.66	n.a.
<b>Total:</b>			<b>0.056</b>	<b>0.428</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/5/2018

Reviewed by:

*Moncy* 9/12/2018

My first report/Integration

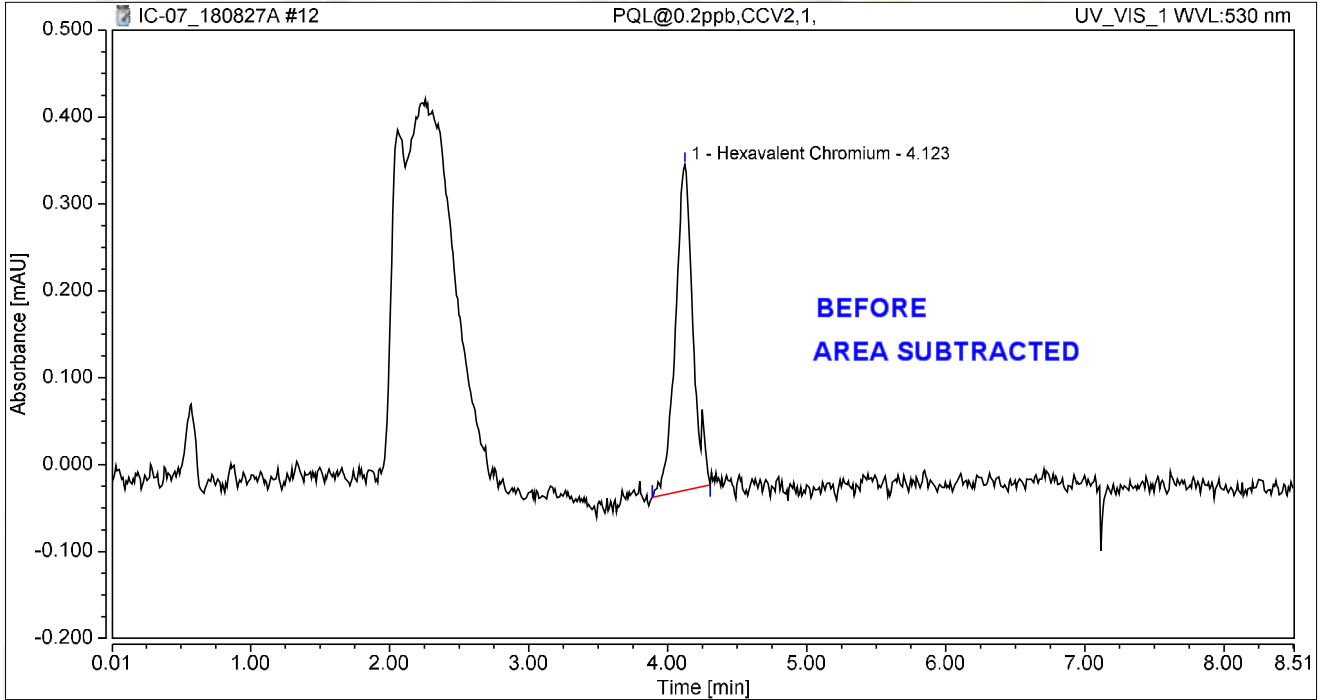
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 12:53	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.055	0.375	100.00	100.00	0.2143
<b>Total:</b>			<b>0.055</b>	<b>0.375</b>	<b>100.00</b>	<b>100.00</b>	

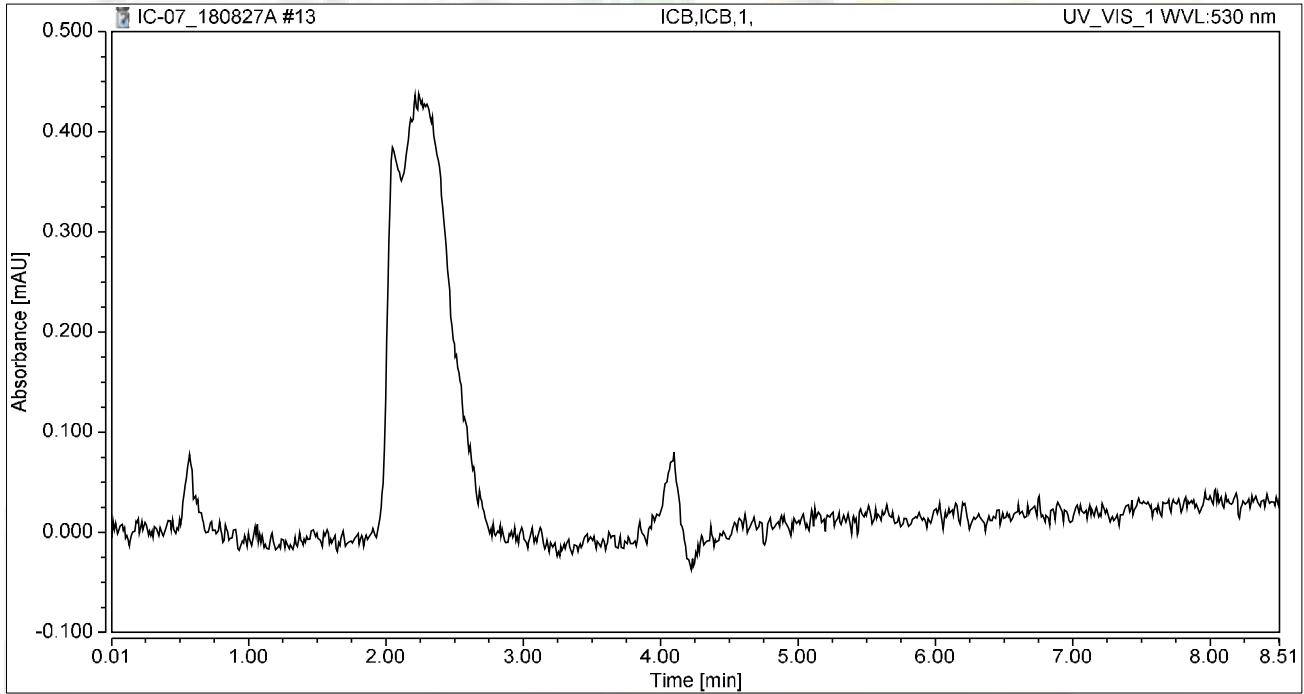
*rba* 9/5/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	ICB,ICB,1,	Run Time (min):	8.50
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 13:02	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89119  
P: 702.307.2659 F: 702.307.2659

*"Serving Clients with Passion and Professionalism"*





**INJECTION LOG: 180910A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:10 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:21 AM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:30 AM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/27/18 11:08 AM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:20 AM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:29 AM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:38 AM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:48 AM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:57 AM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 12:07 PM	Reported
11	BLANK	BLANK	1	Hexavalent Chromium	09/10/18 11:20 AM	Not Reported
12	BLANK	BLANK	1	Hexavalent Chromium	09/10/18 11:31 AM	Not Reported
13	CCV-1	CCV	1	Hexavalent Chromium	09/10/18 11:41 AM	Reported
14	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/10/18 11:50 AM	Reported
15	CCB-1	CCB	1	Hexavalent Chromium	09/10/18 12:23 PM	Reported
16	MB-R127506	MBLK	1	Hexavalent Chromium	09/10/18 12:34 PM	Reported
17	LCS-R127506	LCS	1	Hexavalent Chromium	09/10/18 12:44 PM	Reported
18	N031977-001A	SAMP	1	Hexavalent Chromium	09/10/18 12:53 PM	Reported
19	N031977-002A	SAMP	1	Hexavalent Chromium	09/10/18 1:03 PM	Reported
20	N031977-003A	SAMP	1	Hexavalent Chromium	09/10/18 1:12 PM	Reported
21	N031977-004A	SAMP	1	Hexavalent Chromium	09/10/18 1:22 PM	Reported
22	N031977-005A	SAMP	1	Hexavalent Chromium	09/10/18 1:31 PM	Reported
23	N031978-001A	SAMP	1	Hexavalent Chromium	09/10/18 1:41 PM	Reported
24	N031978-002A	SAMP	1	Hexavalent Chromium	09/10/18 1:50 PM	Reported
25	N031978-003A	SAMP	5	Hexavalent Chromium	09/10/18 1:59 PM	Reported
26	CCV-2	CCV1	1	Hexavalent Chromium	09/10/18 2:09 PM	Reported
27	CCB-2	CCB	1	Hexavalent Chromium	09/10/18 2:18 PM	Reported
28	N031978-005A	SAMP	1	Hexavalent Chromium	09/10/18 2:28 PM	Reported
29	N031978-006A	SAMP	1	Hexavalent Chromium	09/10/18 2:37 PM	Not Reported
30	N031976-001A	SAMP	1	Hexavalent Chromium	09/10/18 2:47 PM	Reported
31	N031976-001AMS	MS	1	Hexavalent Chromium	09/10/18 2:56 PM	Reported
32	N031976-002A	SAMP	100	Hexavalent Chromium	09/10/18 3:06 PM	Reported
33	N031976-002AMS	MS	100	Hexavalent Chromium	09/10/18 3:15 PM	Reported
34	N031976-002AMSD	MSD	100	Hexavalent Chromium	09/10/18 3:25 PM	Reported
35	N031977-001ADUP	DUP	1	Hexavalent Chromium	09/10/18 3:34 PM	Reported
36	N031978-006A	SAMP	50	Hexavalent Chromium	09/10/18 3:44 PM	Reported
37	CCV-3	CCV	1	Hexavalent Chromium	09/10/18 3:53 PM	Reported
38	CCB-3	CCB	1	Hexavalent Chromium	09/10/18 4:02 PM	Reported

*rba* 9/15/2018

*Nancy* 9/19/2018

IC7 RBA 9/13/2018 10:32 AM

### Injection Log Summary

**Sequence Details**

Name:	IC-07_180910A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	10/Sep/18 16:33:16
No. of Injections:	41	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/27/2018 10:10	Finished	BLANK
2	BLANK	2	1000	Unknown		08/27/2018 10:21	Finished	BLANK
3	BLANK	3	1000	Unknown		08/27/2018 10:30	Finished	BLANK
4	BLANK	5	1000	Unknown		08/27/2018 11:08	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	6	1000	Calibration Standard	01	08/27/2018 11:20	Finished	0.2 ppb, IWST-180622A
6	STD2-1.0 ppb	7	1000	Calibration Standard	02	08/27/2018 11:29	Finished	1.0 ppb, IWST-180622A
7	STD3-5.0 ppb	8	1000	Calibration Standard	03	08/27/2018 11:38	Finished	5.0 ppb, IWST-180622A
8	STD4-10.0 ppb	9	1000	Calibration Standard	04	08/27/2018 11:48	Finished	10 ppb, IWST-180622A
9	STD5-15.0 ppb	10	1000	Calibration Standard	05	08/27/2018 11:57	Finished	15 ppb, IWST-180622A
10	STD6-20.0 ppb	11	1000	Calibration Standard	06	08/27/2018 12:07	Finished	20 ppb, IWST-180622A
11	BLANK	1	1000	Unknown		09/10/2018 11:20	Finished	BLANK
12	BLANK	2	1000	Unknown		09/10/2018 11:31	Finished	BLANK
13	CCV-1,CCV,1,	3	1000	Unknown		09/10/2018 11:41	Finished	CCV @5ppb, IWST-180622A
14	PQL@0.2ppb,CCV2,	4	1000	Unknown		09/10/2018 11:50	Finished	PQL @ 0.2ppb
15	CCB-1,CCB,1,	5	1000	Unknown		09/10/2018 12:23	Finished	CCB R180806A
16	MB-H2O,MBLK,1,	6	1000	Unknown		09/10/2018 12:34	Finished	MBLK R180806A
17	LCS-H2O,LCS,1,	7	1000	Unknown		09/10/2018 12:44	Finished	LCS @5ppb, IWST-180622B
18	N031977-001A,SAMF	8	1000	Unknown		09/10/2018 12:53	Finished	SAMP, 10mL
19	N031977-002A,SAMF	9	1000	Unknown		09/10/2018 13:03	Finished	SAMP, 10mL
20	N031977-003A,SAMF	10	1000	Unknown		09/10/2018 13:12	Finished	SAMP, 10mL
21	N031977-004A,SAMF	11	1000	Unknown		09/10/2018 13:22	Finished	SAMP, 10mL
22	N031977-005A,SAMF	12	1000	Unknown		09/10/2018 13:31	Finished	SAMP, 10mL
23	N031978-001A,SAMF	13	1000	Unknown		09/10/2018 13:41	Finished	SAMP, 10mL
24	N031978-002A,SAMF	14	1000	Unknown		09/10/2018 13:50	Finished	SAMP, 10mL
25	N031978-003A,SAMF	15	1000	Unknown		09/10/2018 13:59	Finished	SAMP,2> 10mL
26	CCV-2,CCV1,1,	16	1000	Unknown		09/10/2018 14:09	Finished	CCV @10ppb, IWST-180622A
27	CCB-2,CCB,1,	17	1000	Unknown		09/10/2018 14:18	Finished	CCB R180806A
28	N031978-005A,SAMF	18	1000	Unknown		09/10/2018 14:28	Finished	SAMP, 0.1>10mL
29	N031978-006A,SAMF	19	1000	Unknown		09/10/2018 14:37	Finished	MS (5ppb), IWST-180622B,0.1
30	N031976-001A,SAMF	20	1000	Unknown		09/10/2018 14:47	Finished	SAMP, 10mL
31	N031976-001AMS,MS	21	1000	Unknown		09/10/2018 14:56	Finished	MS (1ppb), IWST-180622B,10
32	N031976-002A,SAMF	22	1000	Unknown		09/10/2018 15:06	Finished	SAMP, 0.1>10mL
33	N031976-002AMS,MS	23	1000	Unknown		09/10/2018 15:15	Finished	MS (5ppb), IWST-180622B,0.1
34	N031976-002AMSD,MS	24	1000	Unknown		09/10/2018 15:25	Finished	MSD (5ppb), IWST-180622B,0.1
35	N031977-001ADUP,D	25	1000	Unknown		09/10/2018 15:34	Finished	DUP, 10mL
36	N031978-006A,SAMF	26	1000	Unknown		09/10/2018 15:44	Finished	SAMP, 0.2>10mL
37	CCV-3,CCV,1,	27	1000	Unknown		09/10/2018 15:53	Finished	CCV @5ppb, IWST-180622A
38	CCB-3,CCB,1,	28	1000	Unknown		09/10/2018 16:02	Finished	CCB R180806A
39	SHUTDOWN	29	1000	Unknown		09/10/2018 16:12	Finished	
40	Eluent: R180910A	30	1000	Unknown		n.a.	Finished	Eluent
41	PCR: R180907A	31	1000	Unknown		n.a.	Finished	Post-Column Reagent

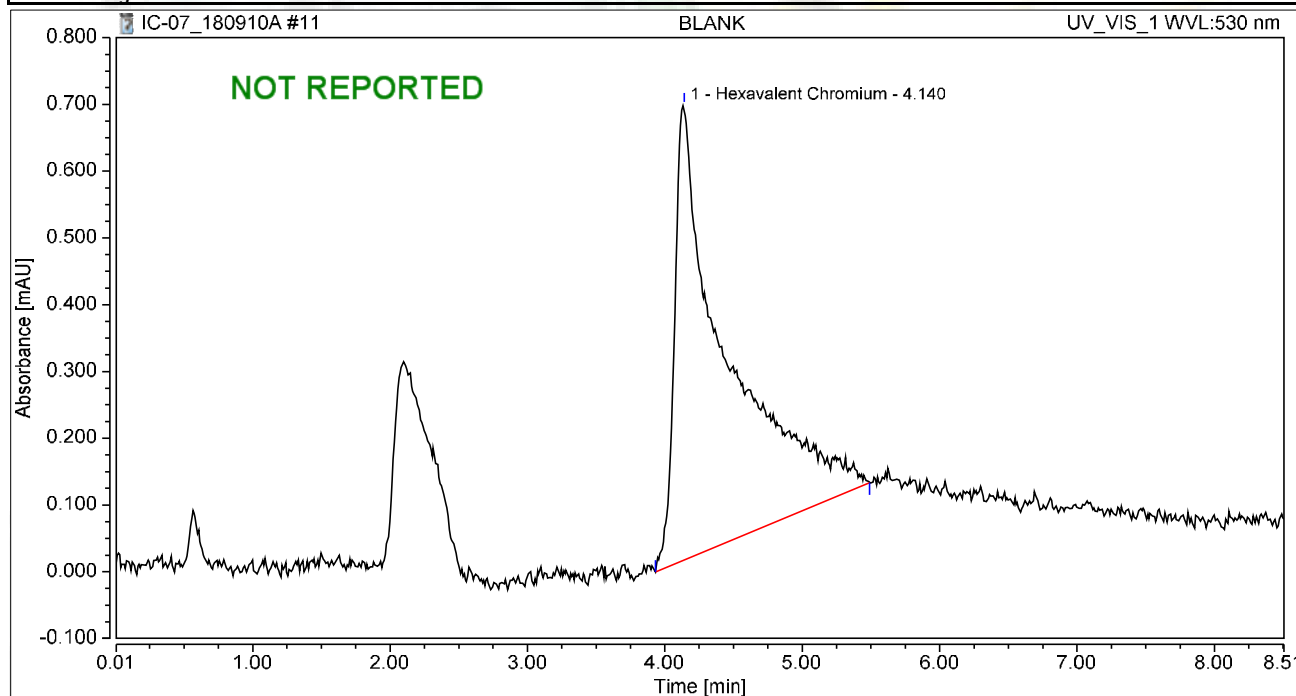
*rba* 9/15/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 11:20	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

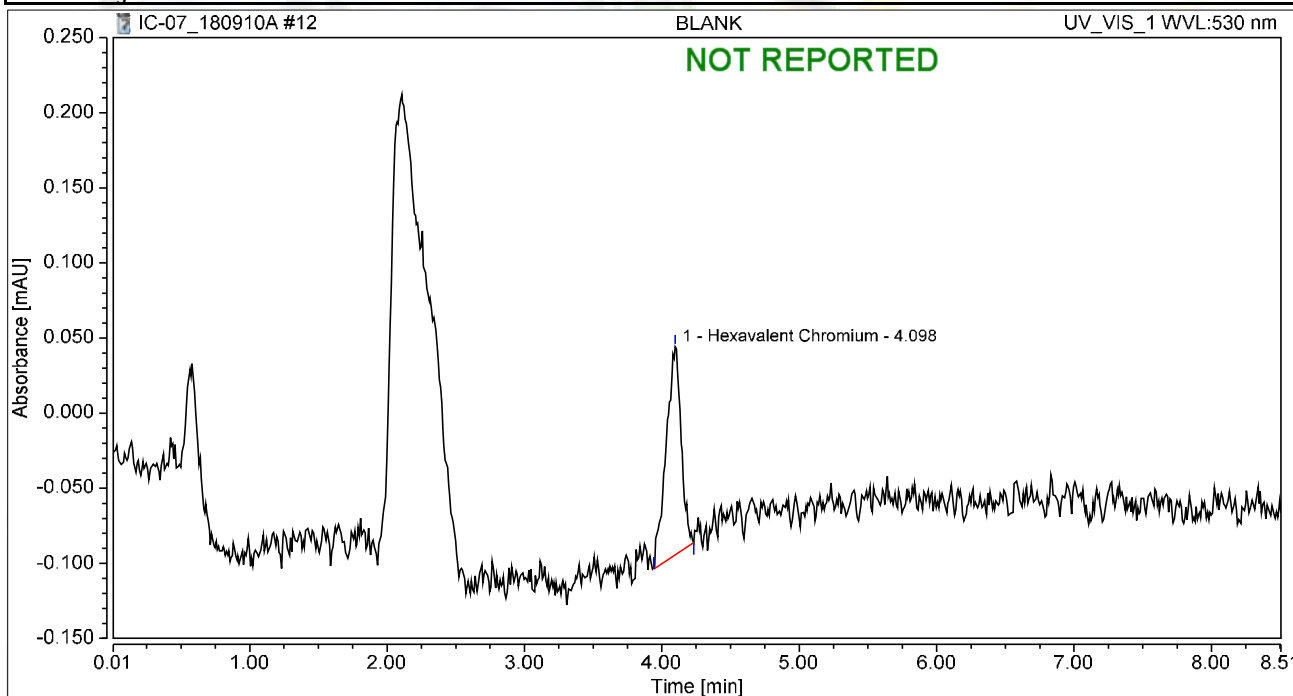
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	0.304	0.682	100.00	100.00	1.2082
Total:			0.304	0.682	100.00	100.00	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 11:31	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

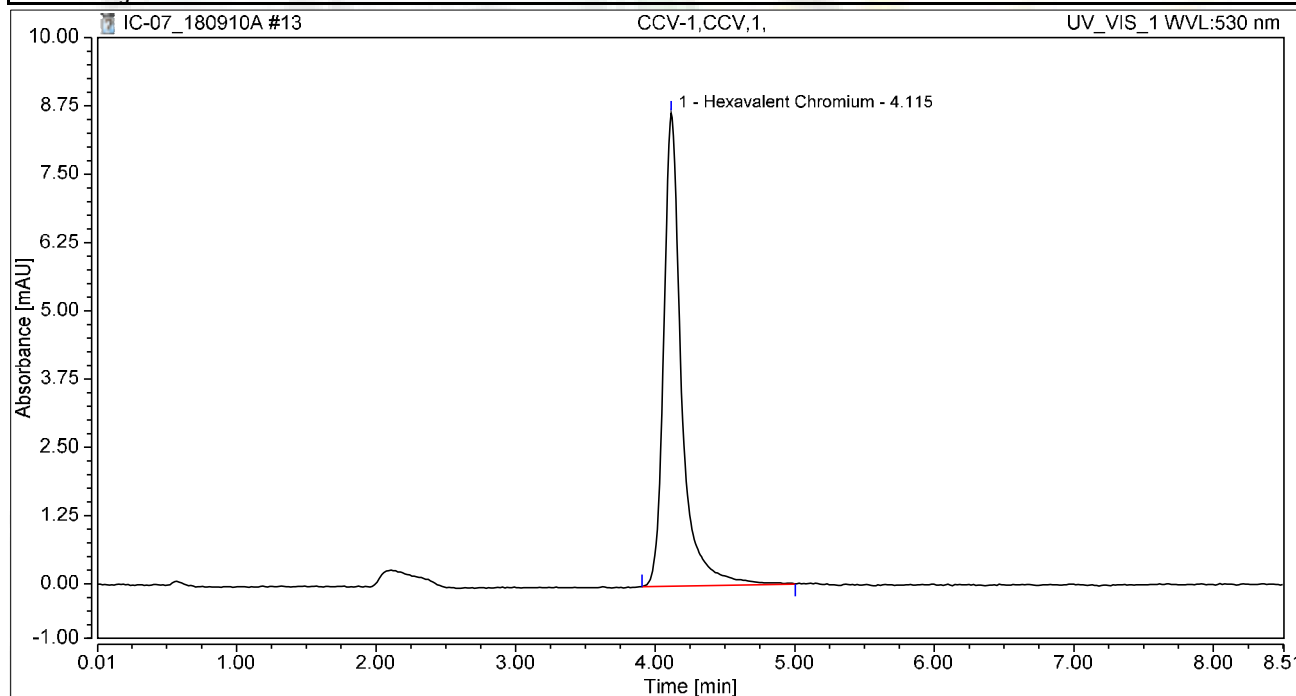
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.017	0.138	100.00	100.00	0.0694
<b>Total:</b>			<b>0.017</b>	<b>0.138</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-1,CCV,1,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 11:41	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

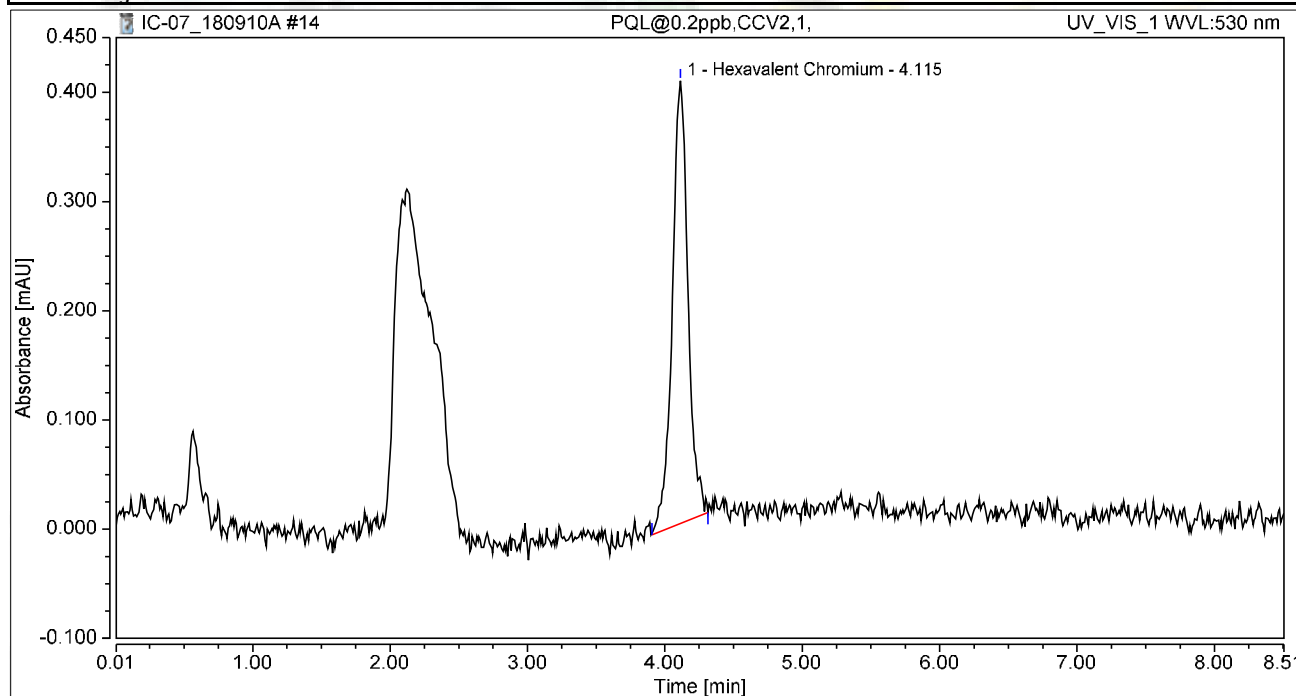
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.282	8.661	100.00	100.00	5.0955
<b>Total:</b>			<b>1.282</b>	<b>8.661</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 11:50	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

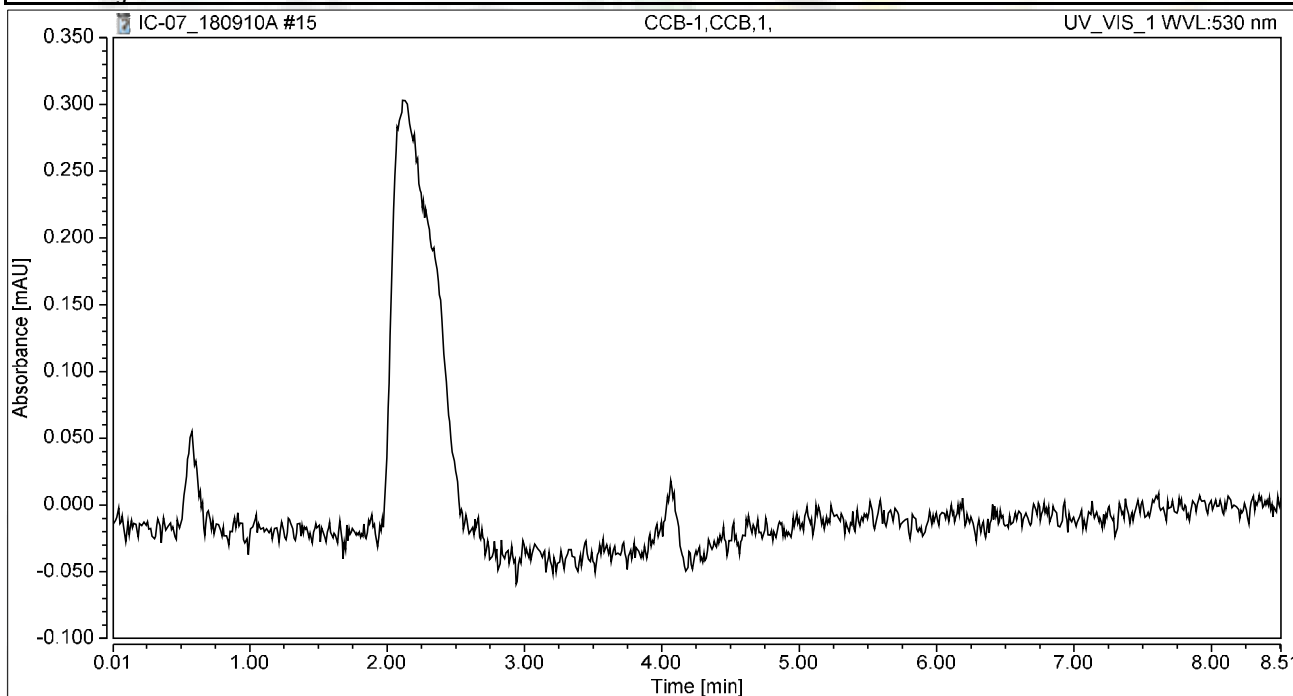
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.054	0.405	100.00	100.00	0.2131
<b>Total:</b>			<b>0.054</b>	<b>0.405</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-1,CCB,1,	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 12:23	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

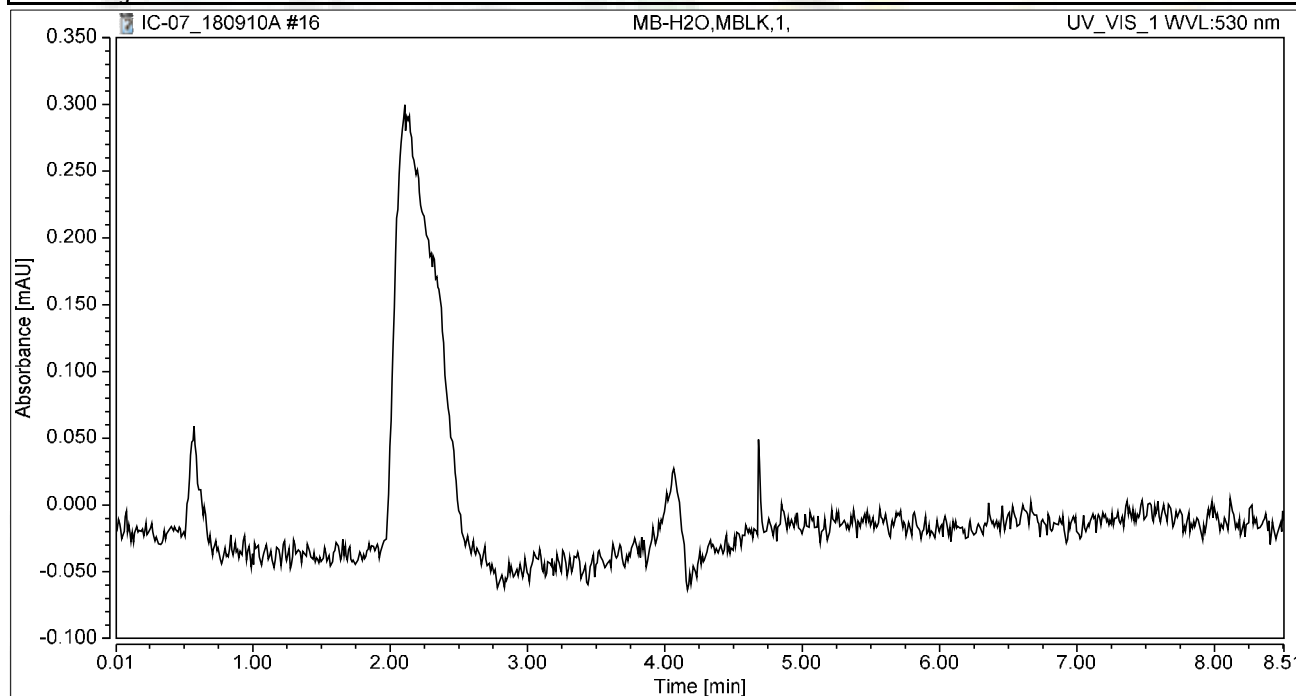
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	MB-H2O,MBLK,1,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 12:34	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

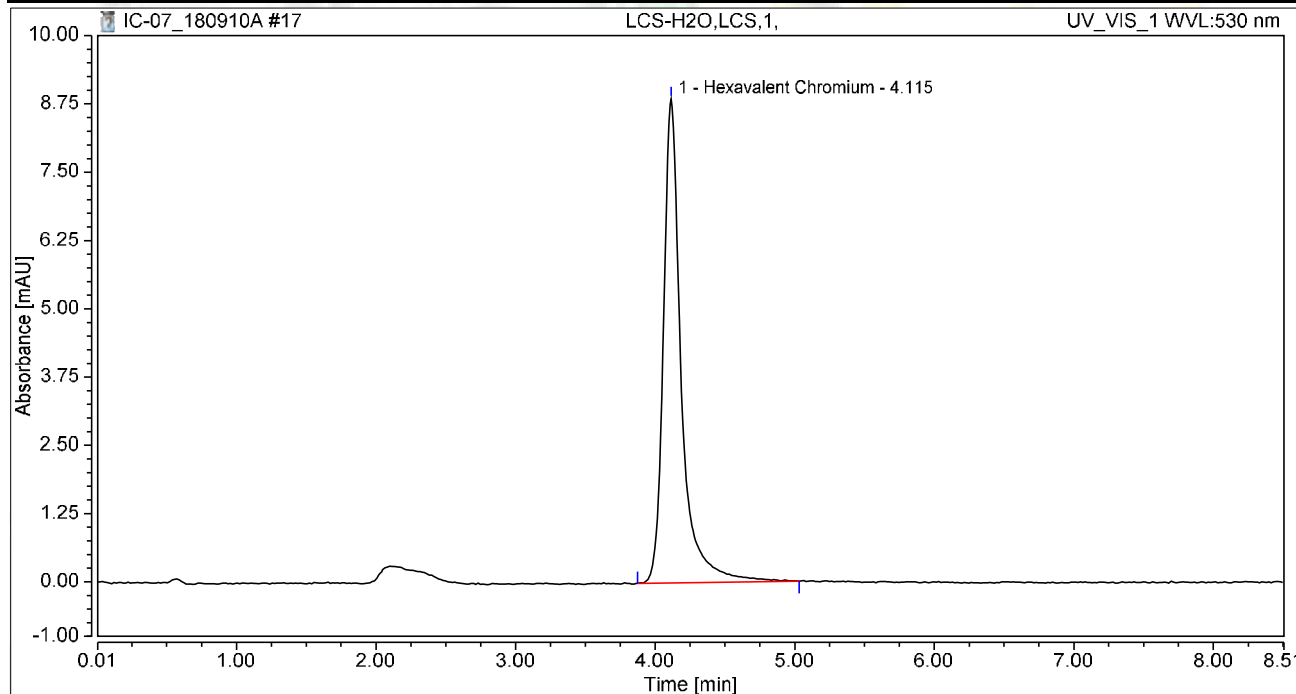


### Chromatogram and Results

**Injection Details**

Injection Name:	LCS-H2O,LCS,1,	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 12:44	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

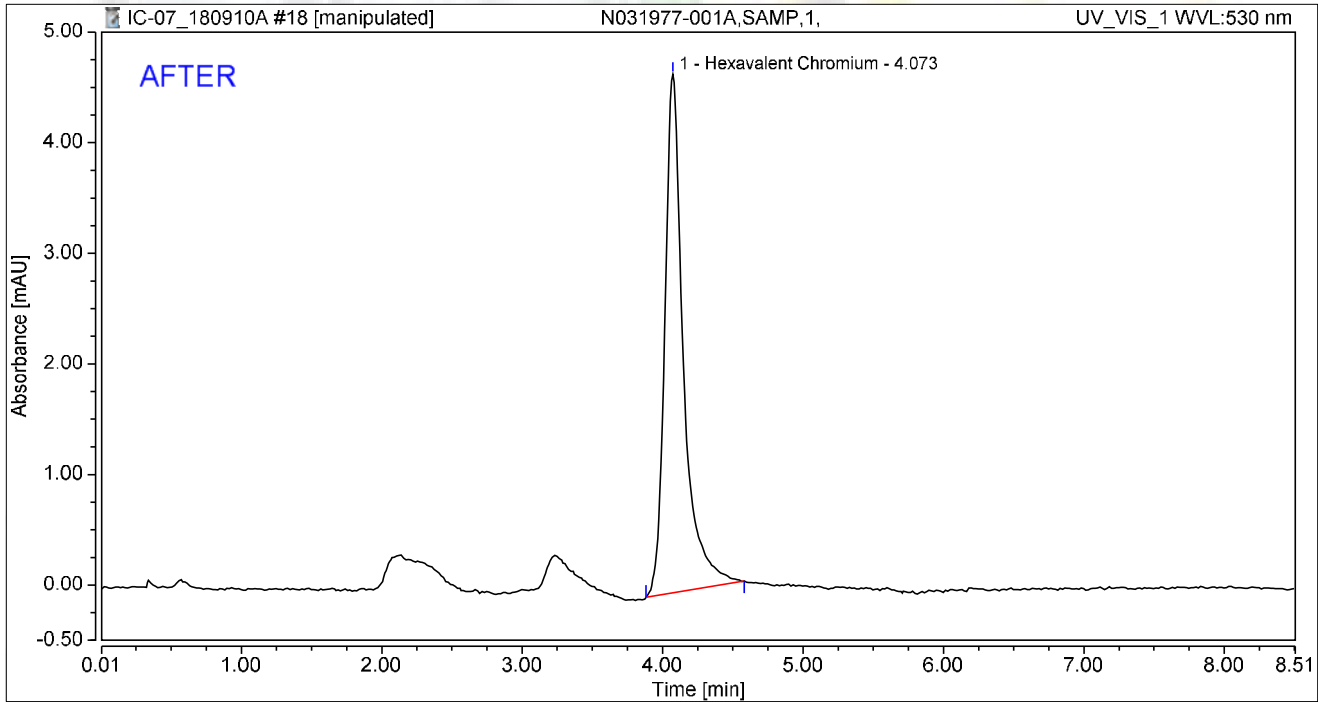
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.316	8.863	100.00	100.00	5.2327
<b>Total:</b>			<b>1.316</b>	<b>8.863</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031977-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 12:53	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.721	4.688	100.00	100.00	2.8682
<b>Total:</b>			<b>0.721</b>	<b>4.688</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/15/2018

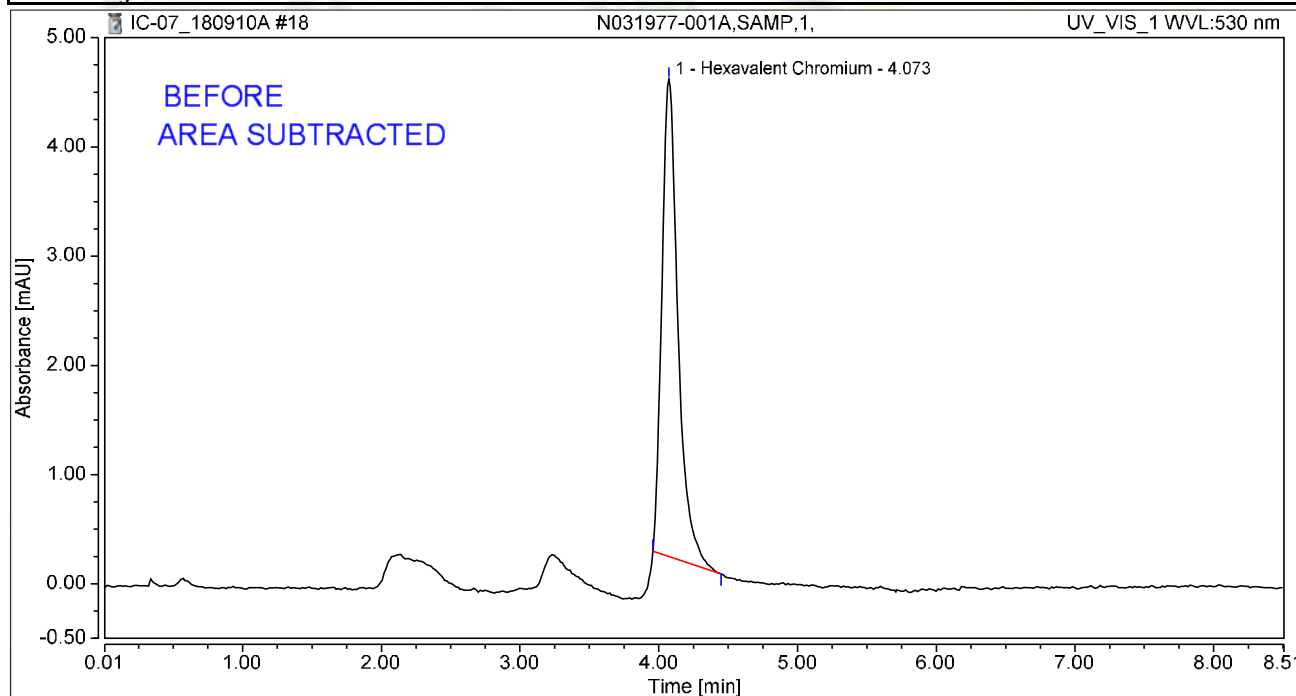
Reviewed by:  
*Money* 9/19/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031977-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 12:53	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.591	4.368	100.00	100.00	2.3496
<b>Total:</b>			<b>0.591</b>	<b>4.368</b>	<b>100.00</b>	<b>100.00</b>	

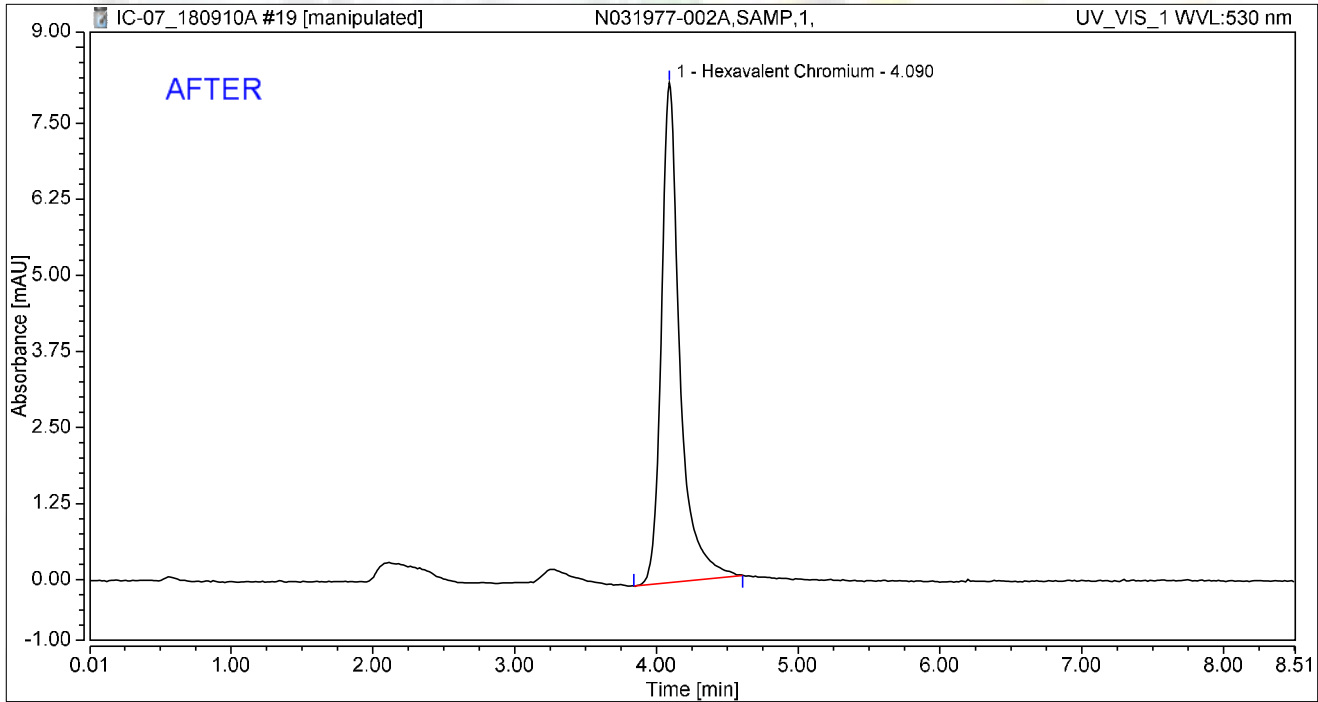
rba 9/15/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031977-002A,SAMP,1,	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 13:03	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	1.245	8.220	100.00	100.00	4.9512
<b>Total:</b>			<b>1.245</b>	<b>8.220</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/15/2018

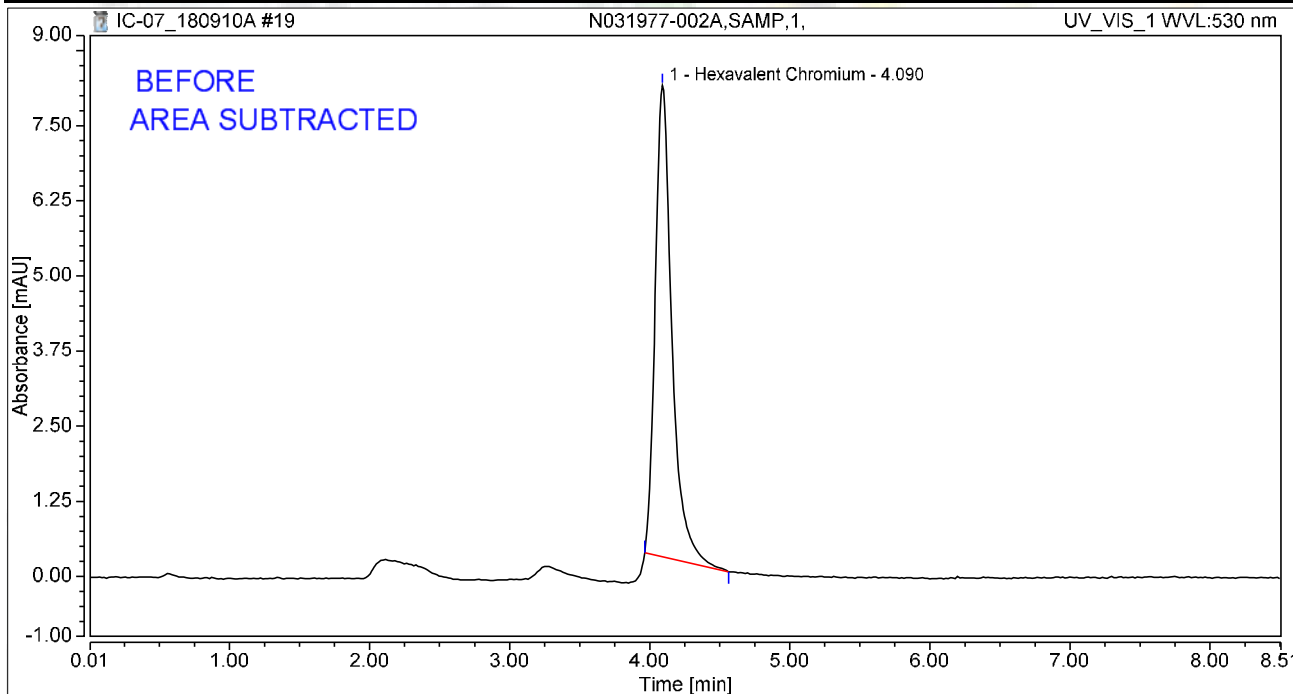
Reviewed by:  
My first report integration  
*Shoney* 9/19/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031977-002A,SAMP,1,	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 13:03	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	1.085	7.840	100.00	100.00	4.3132
<b>Total:</b>			<b>1.085</b>	<b>7.840</b>	<b>100.00</b>	<b>100.00</b>	

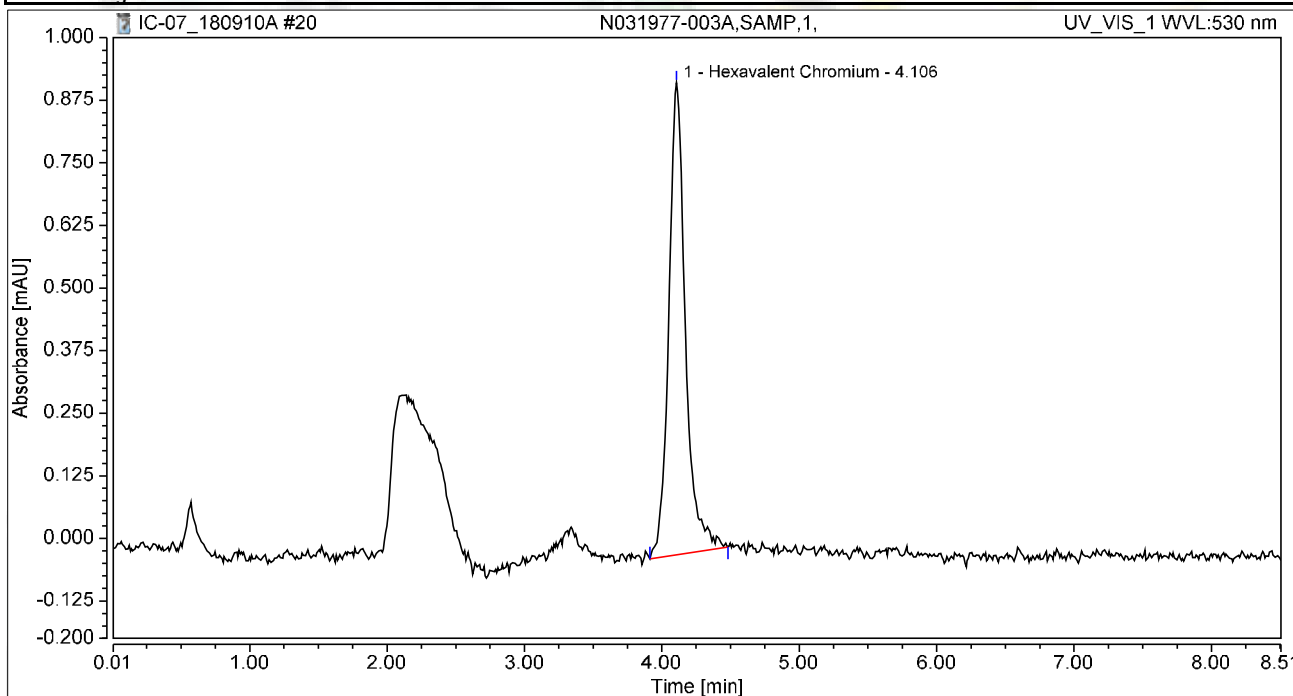
rba 9/15/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031977-003A,SAMP,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 13:12	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

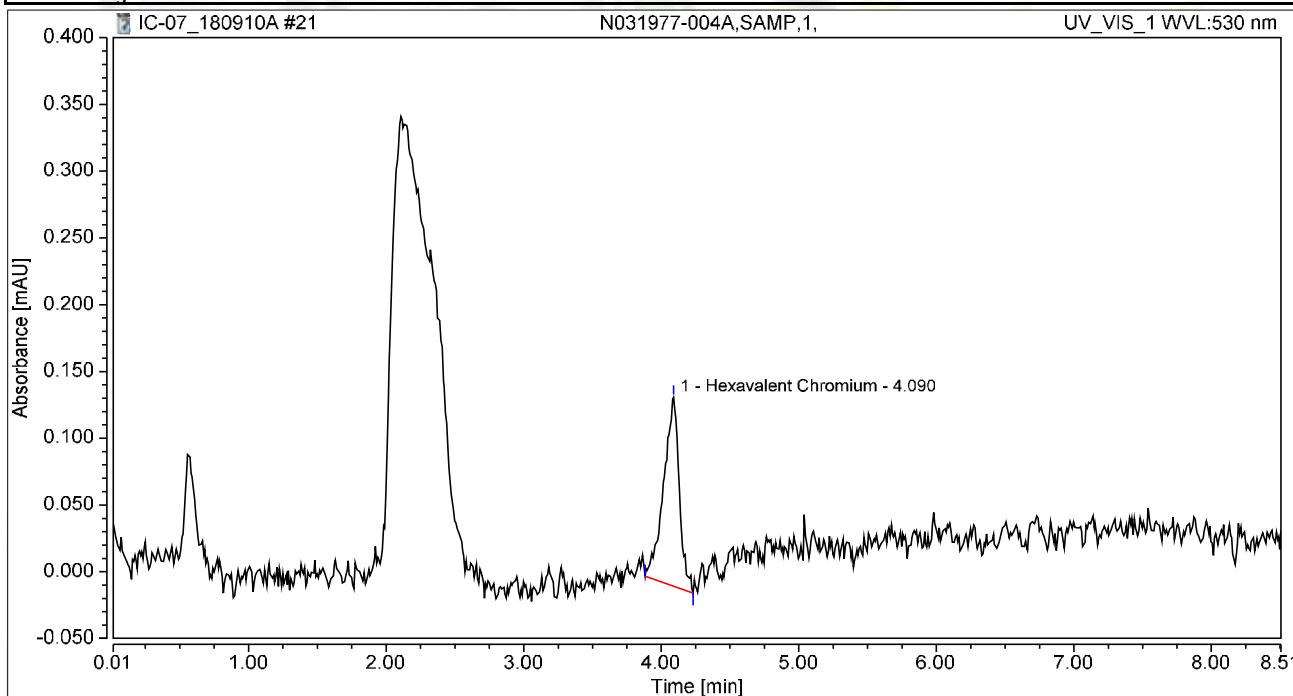
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.132	0.943	100.00	100.00	0.5250
<b>Total:</b>			<b>0.132</b>	<b>0.943</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031977-004A,SAMP,1,	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 13:22	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

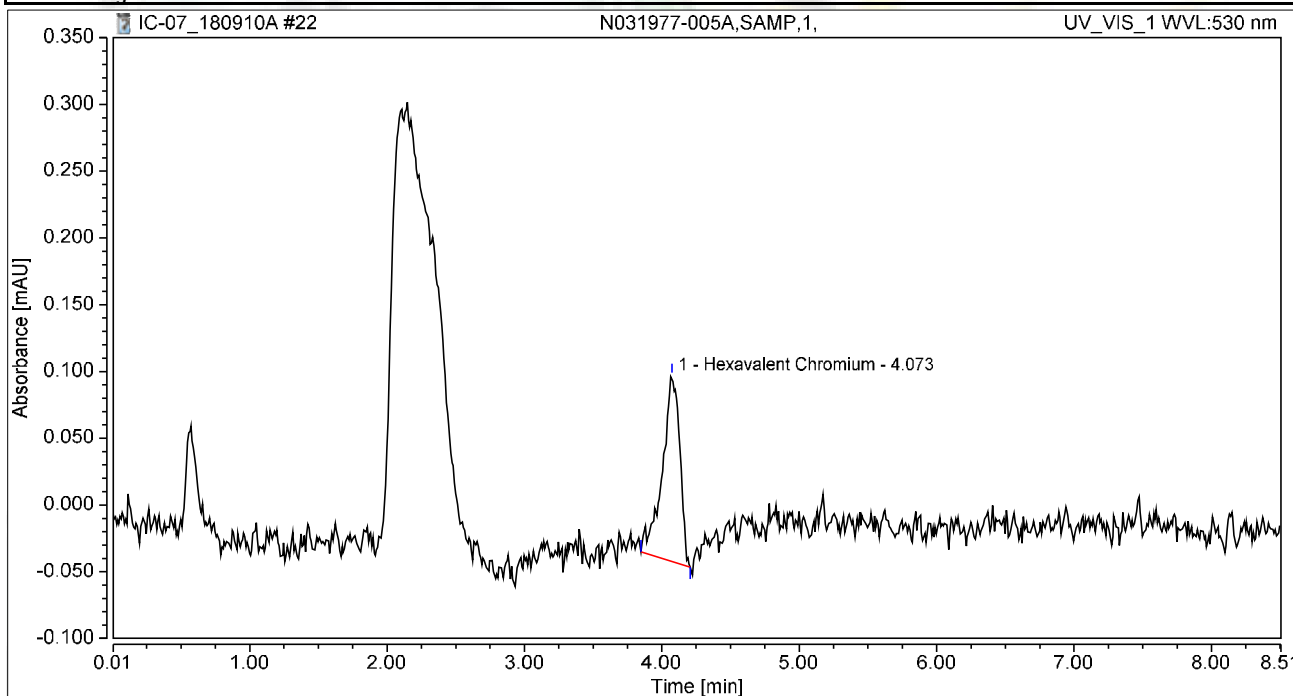
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	0.019	0.142	100.00	100.00	0.0741
<b>Total:</b>			<b>0.019</b>	<b>0.142</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031977-005A,SAMP,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 13:31	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.020	0.139	100.00	100.00	0.0813
<b>Total:</b>			<b>0.020</b>	<b>0.139</b>	<b>100.00</b>	<b>100.00</b>	

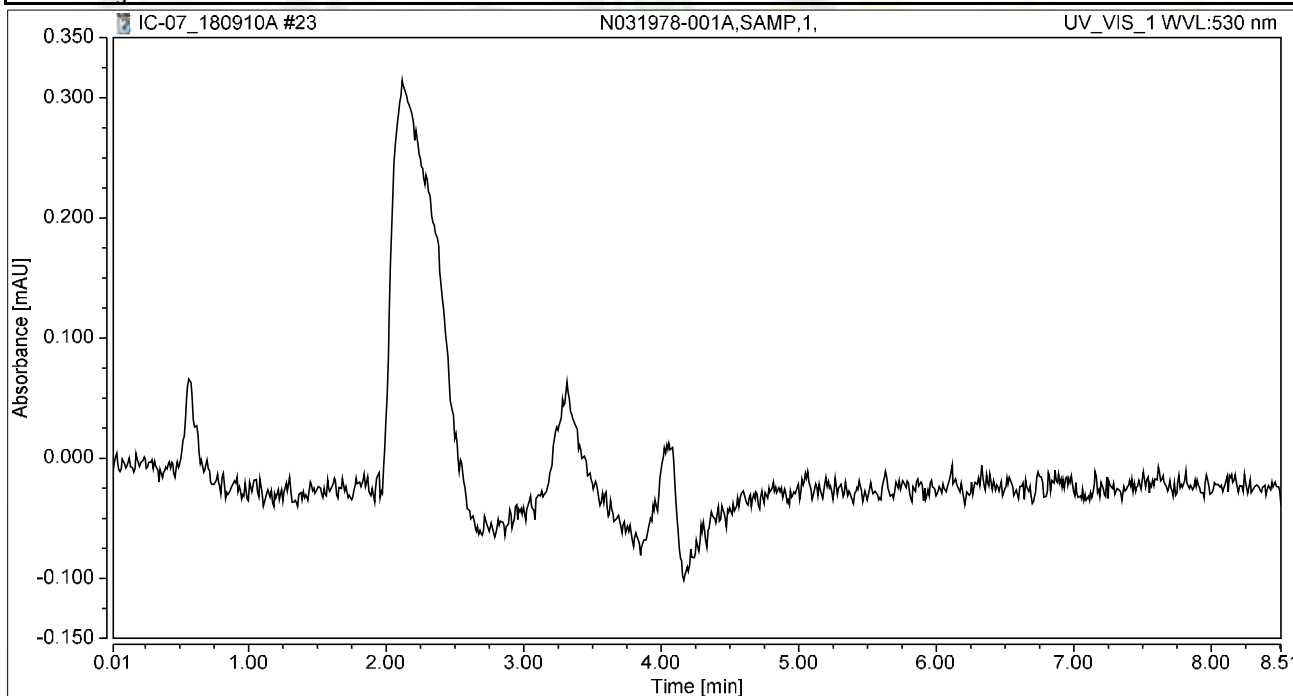


### Chromatogram and Results

**Injection Details**

Injection Name:	N031978-001A,SAMP,1,	Run Time (min):	8.49
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 13:41	Sample Weight:	1.0000

**Chromatogram**



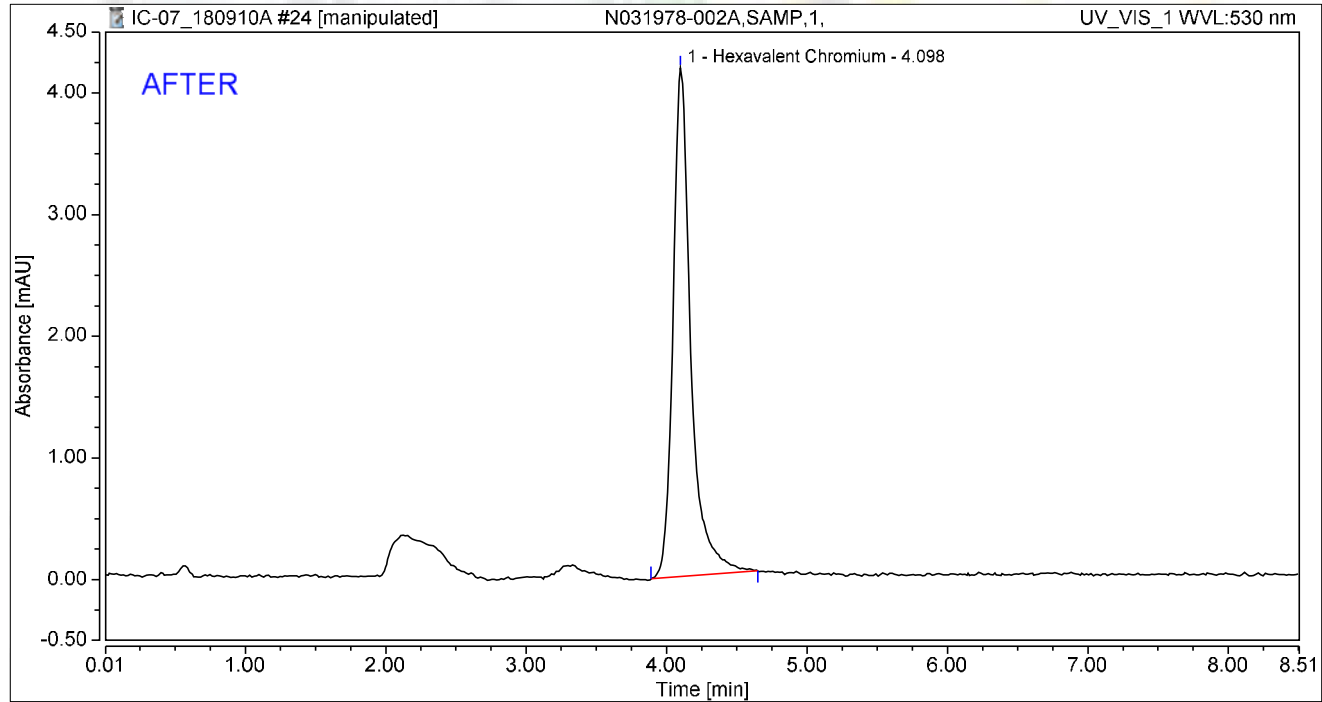
**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

Injection Details		
Injection Name:	N031978-002A,SAMP,1,	Run Time (min): 8.50
Vial Number:	14	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	10/Sep/18 13:50	Sample Weight: 1.0000

#### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.615	4.183	100.00	100.00	2.4451
<b>Total:</b>			<b>0.615</b>	<b>4.183</b>	<b>100.00</b>	<b>100.00</b>	

nba 9/15/2018

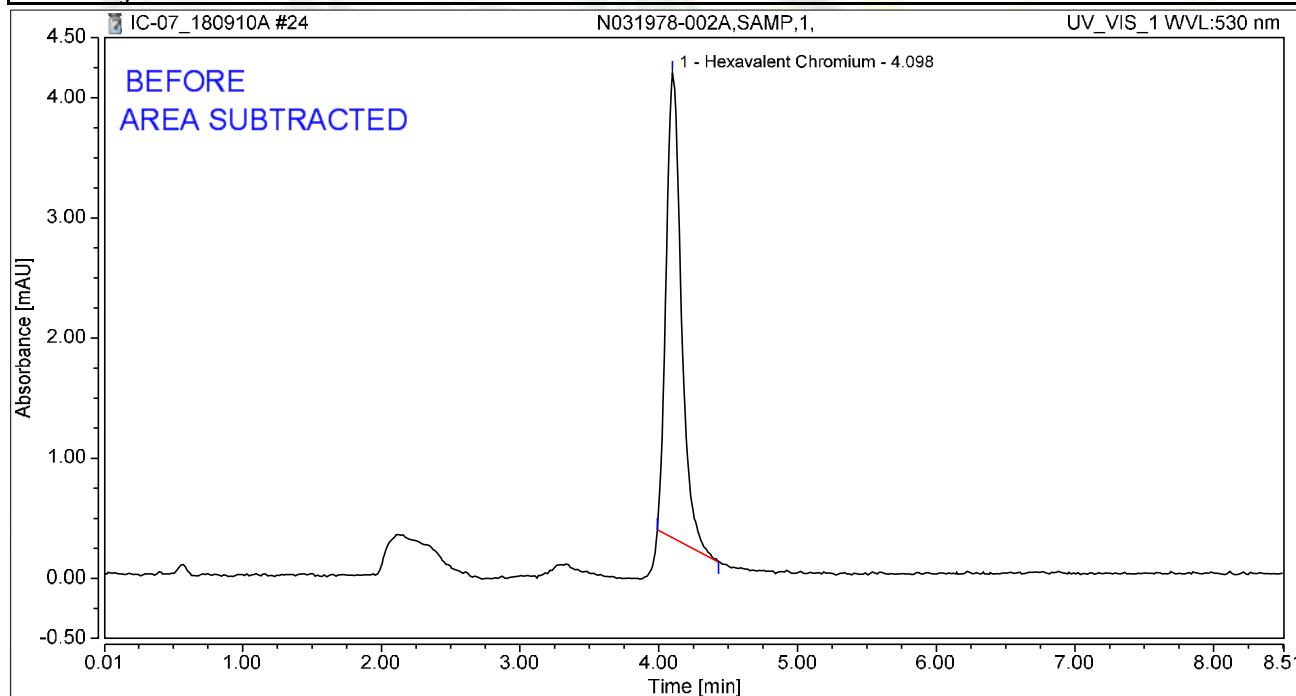
Reviewed by:  
*Nancy* 9/19/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031978-002A,SAMP,1,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 13:50	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.494	3.868	100.00	100.00	1.9638
<b>Total:</b>			<b>0.494</b>	<b>3.868</b>	<b>100.00</b>	<b>100.00</b>	

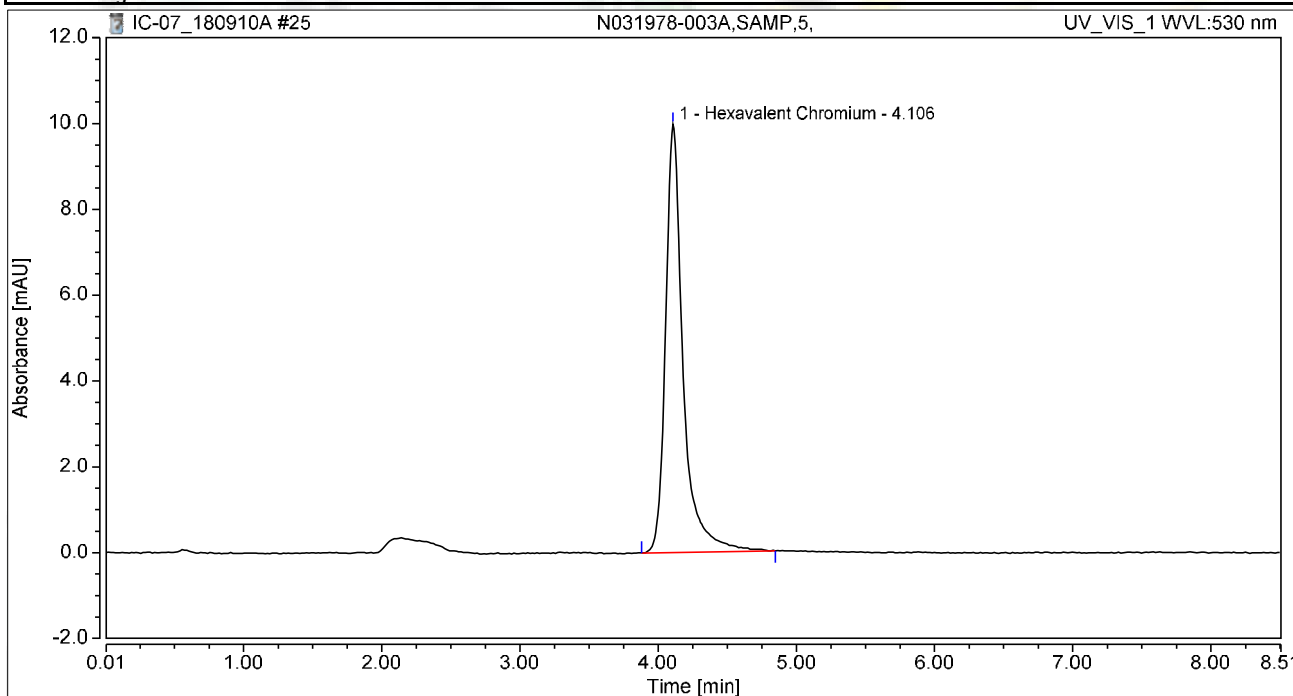
rba 9/15/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031978-003A,SAMP,5,	Run Time (min):	8.50
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 13:59	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

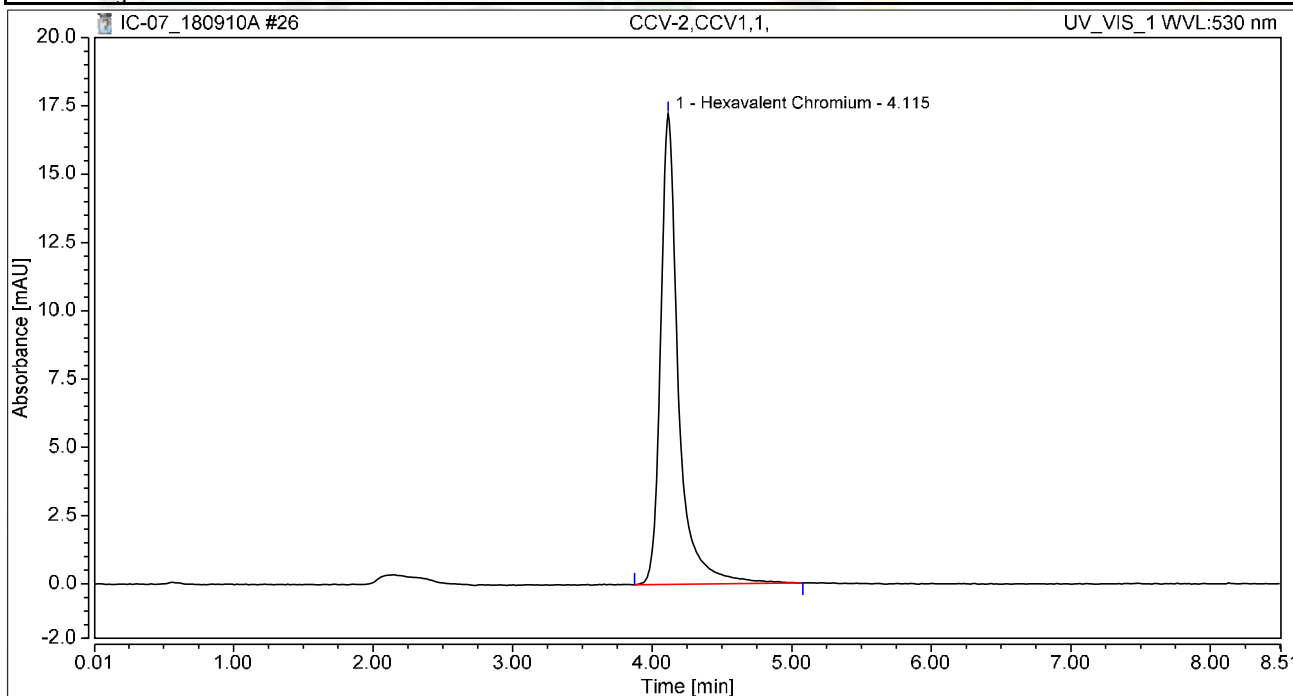
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	1.468	9.976	100.00	100.00	5.8359
<b>Total:</b>			<b>1.468</b>	<b>9.976</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-2,CCV1,1,	Run Time (min):	8.50
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 14:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

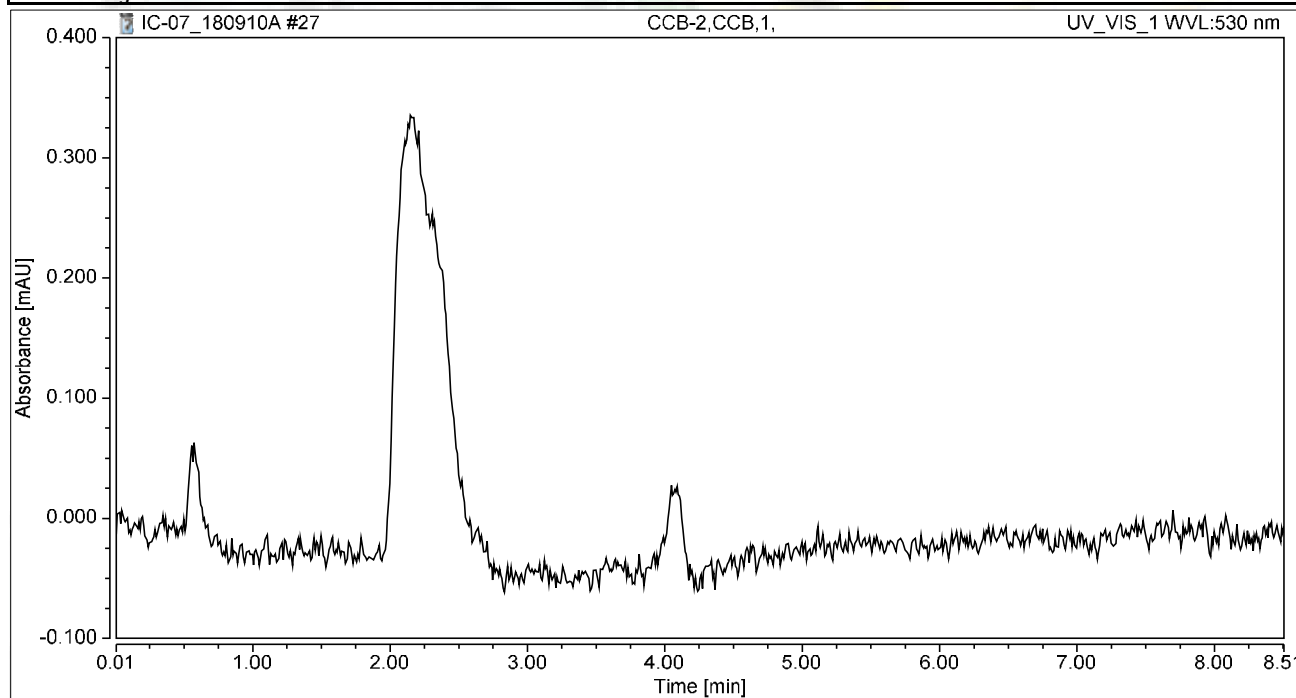
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.560	17.232	100.00	100.00	10.1773
<b>Total:</b>			<b>2.560</b>	<b>17.232</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-2,CCB,1,	Run Time (min):	8.50
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 14:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

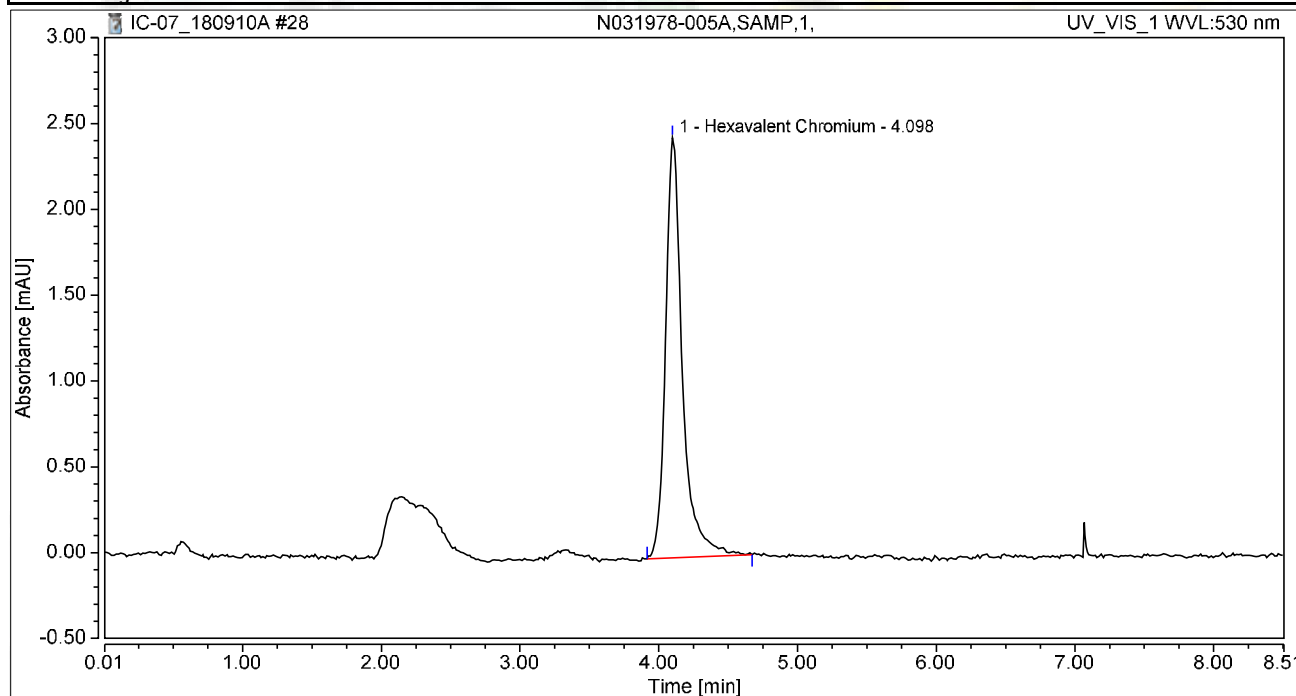
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031978-005A,SAMP,1,	Run Time (min):	8.50
Vial Number:	18	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 14:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

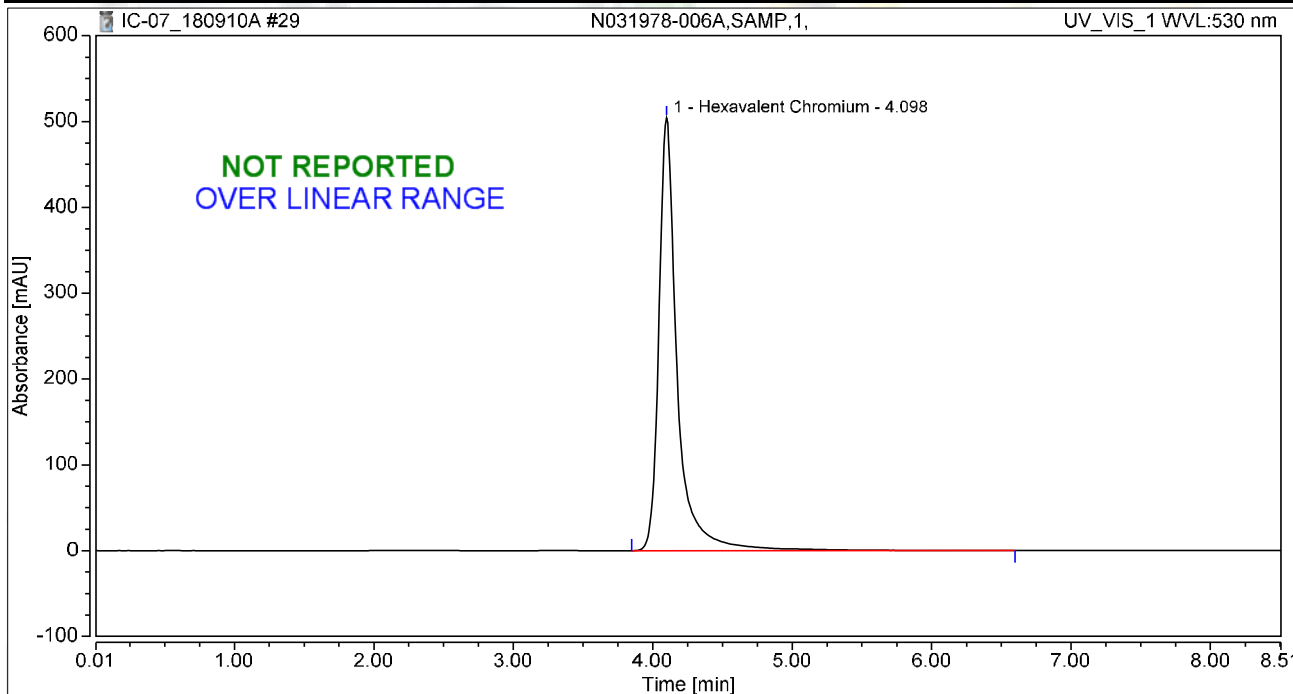
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.345	2.448	100.00	100.00	1.3722
<b>Total:</b>			<b>0.345</b>	<b>2.448</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031978-006A,SAMP,1,	Run Time (min):	8.50
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 14:37	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	77.046	504.098	100.00	100.00	306.2915
Total:			77.046	504.098	100.00	100.00	

rba 9/15/2018

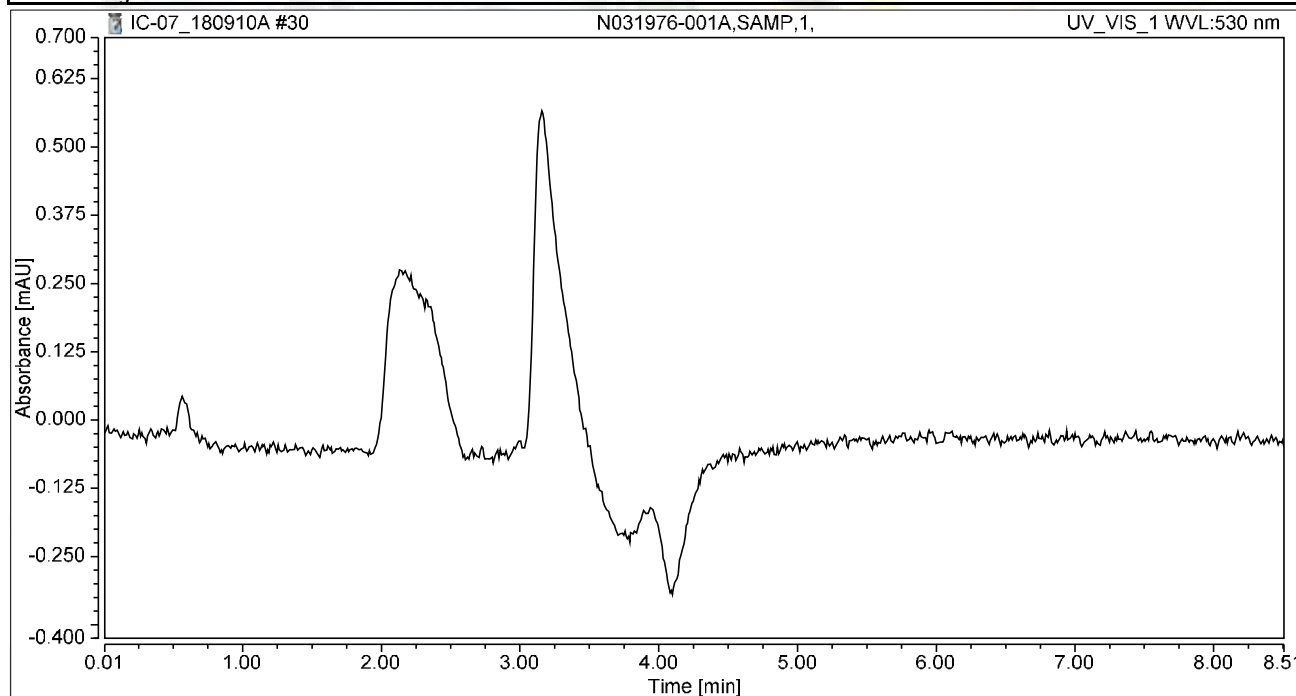


### Chromatogram and Results

**Injection Details**

Injection Name:	N031976-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 14:47	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

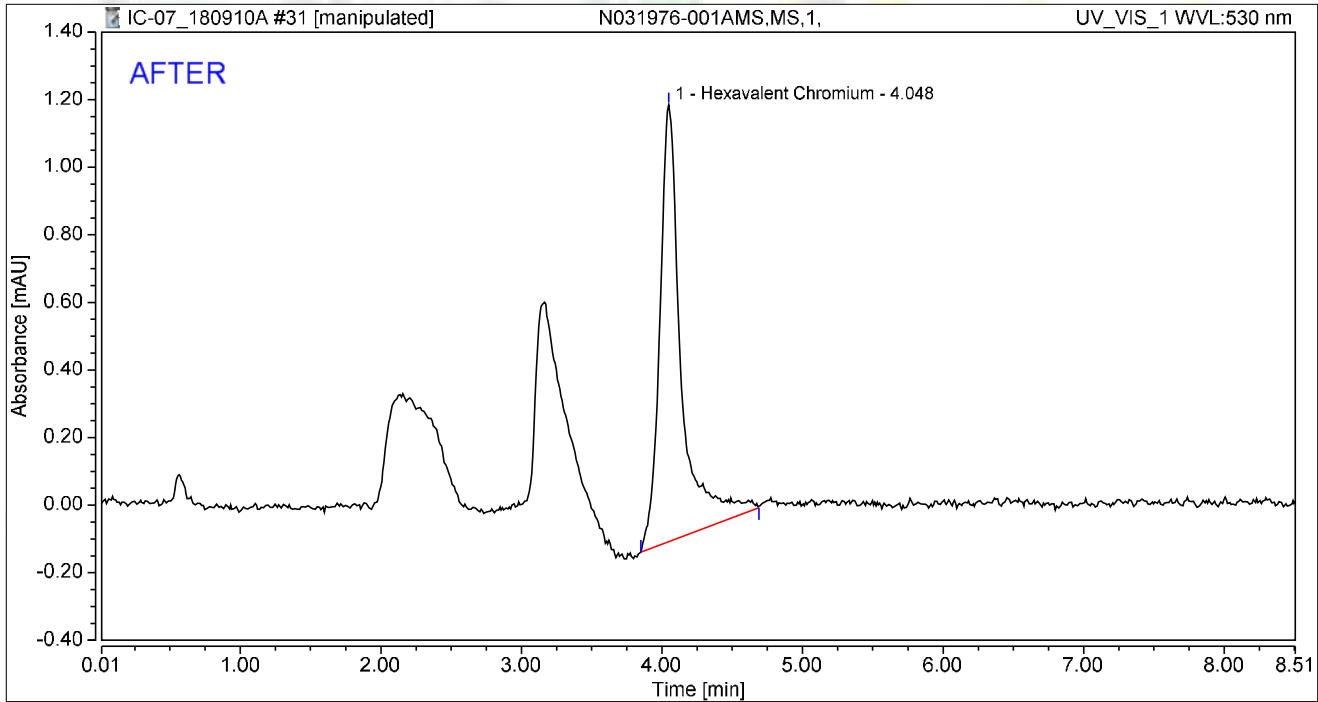
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031976-001AMS,MS,1,	Run Time (min):	8.49
Vial Number:	21	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 14:56	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.048	0.230	1.293	100.00	100.00	0.9137
<b>Total:</b>			<b>0.230</b>	<b>1.293</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/15/2018

Reviewed by:  
*Henry* 9/19/2018

My first report/Integration

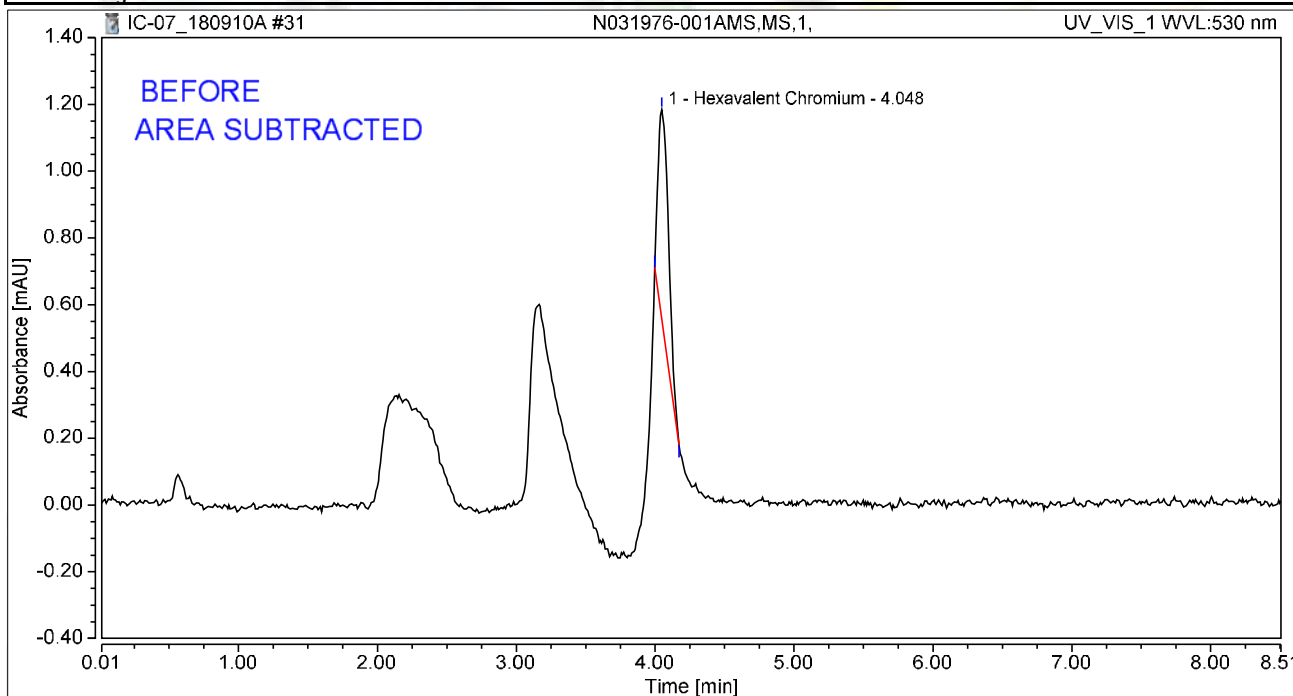
Chromleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	N031976-001AMS,MS,1,	Run Time (min):	8.49
Vial Number:	21	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 14:56	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.048	0.056	0.626	100.00	100.00	0.2215
<b>Total:</b>			<b>0.056</b>	<b>0.626</b>	<b>100.00</b>	<b>100.00</b>	

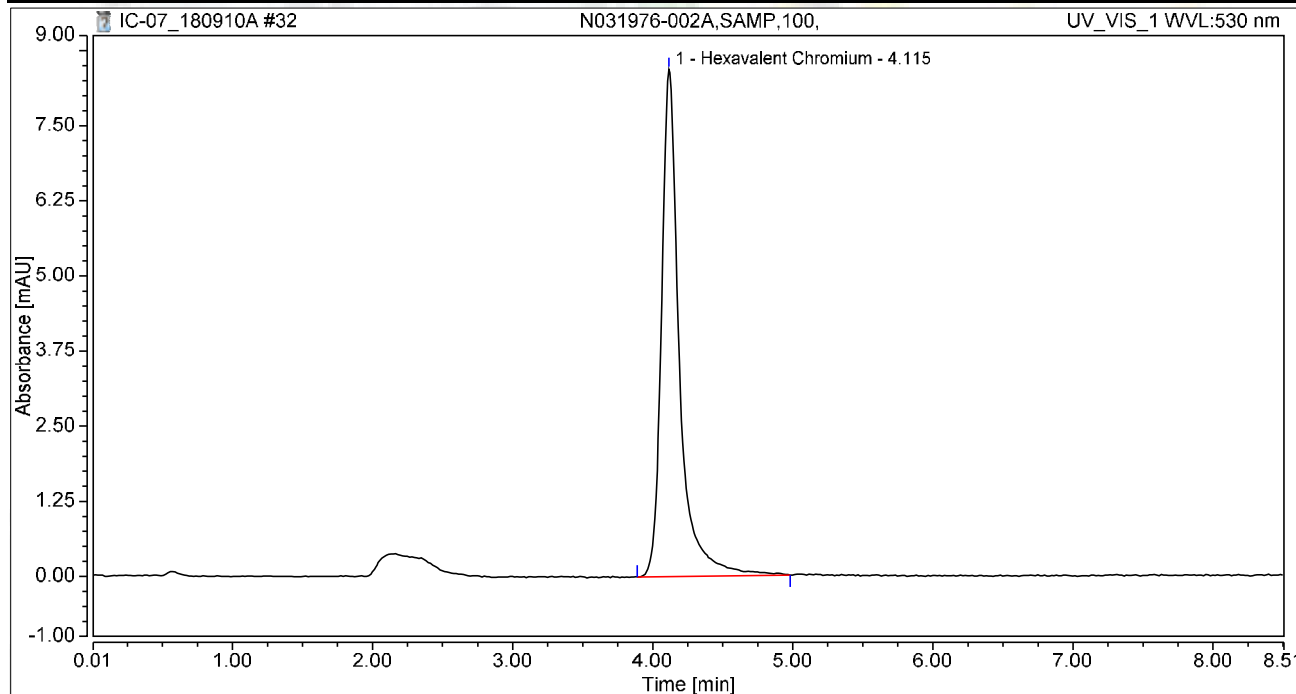
rba 9/15/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N031976-002A,SAMP,100,	Run Time (min):	8.50
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

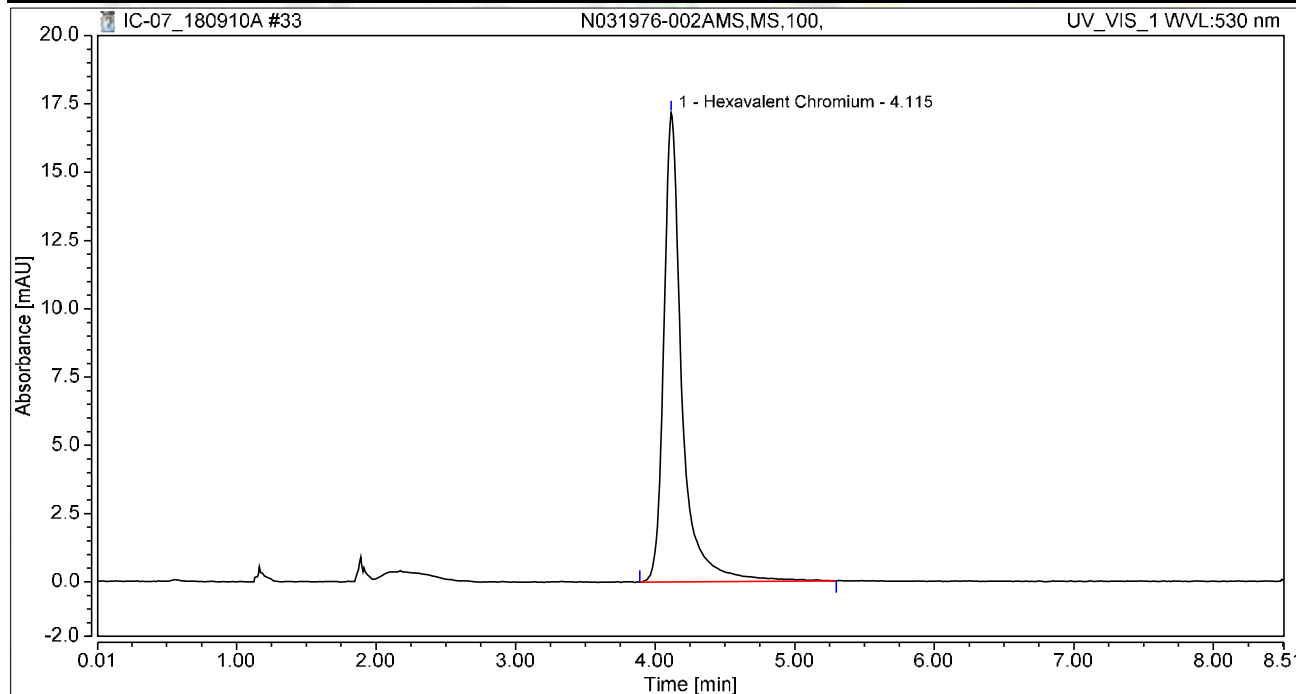
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.259	8.445	100.00	100.00	5.0068
<b>Total:</b>			<b>1.259</b>	<b>8.445</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031976-002AMS,MS,100,	Run Time (min):	8.50
Vial Number:	23	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 15:15	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

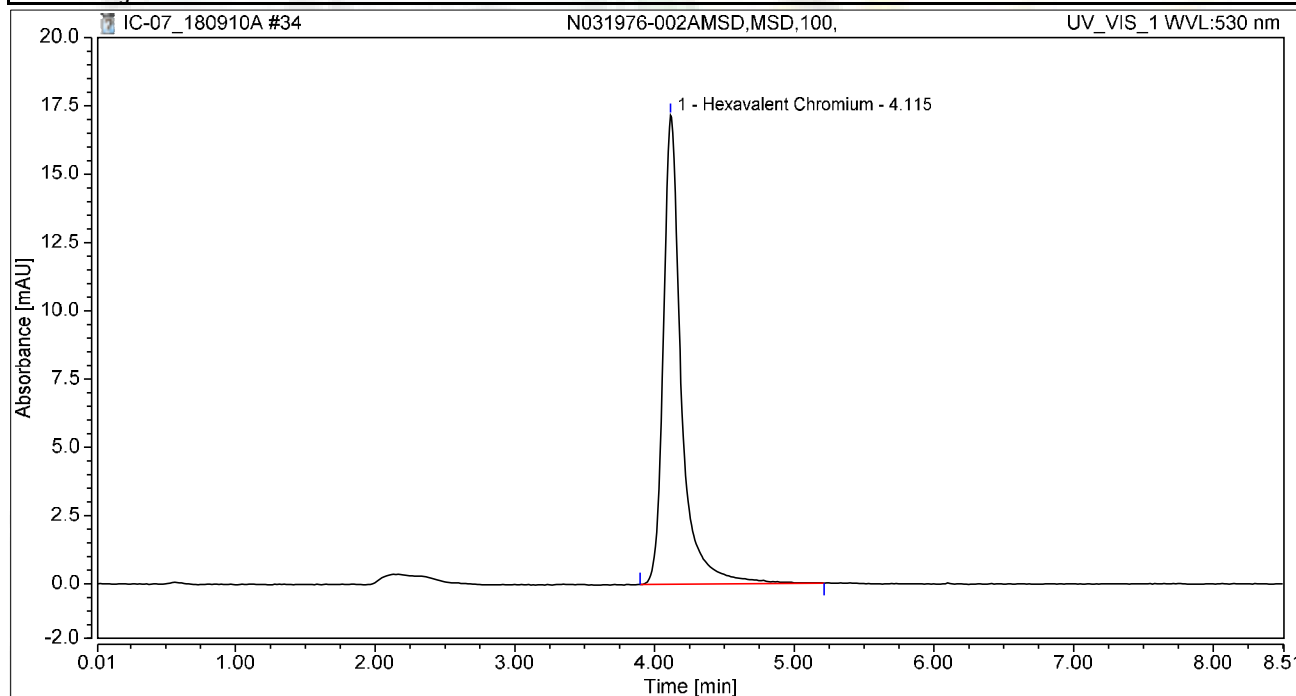
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.583	17.174	100.00	100.00	10.2687
<b>Total:</b>			<b>2.583</b>	<b>17.174</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031976-002AMSD,MSD,100,	Run Time (min):	8.49
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 15:25	Sample Weight:	1.0000

**Chromatogram**



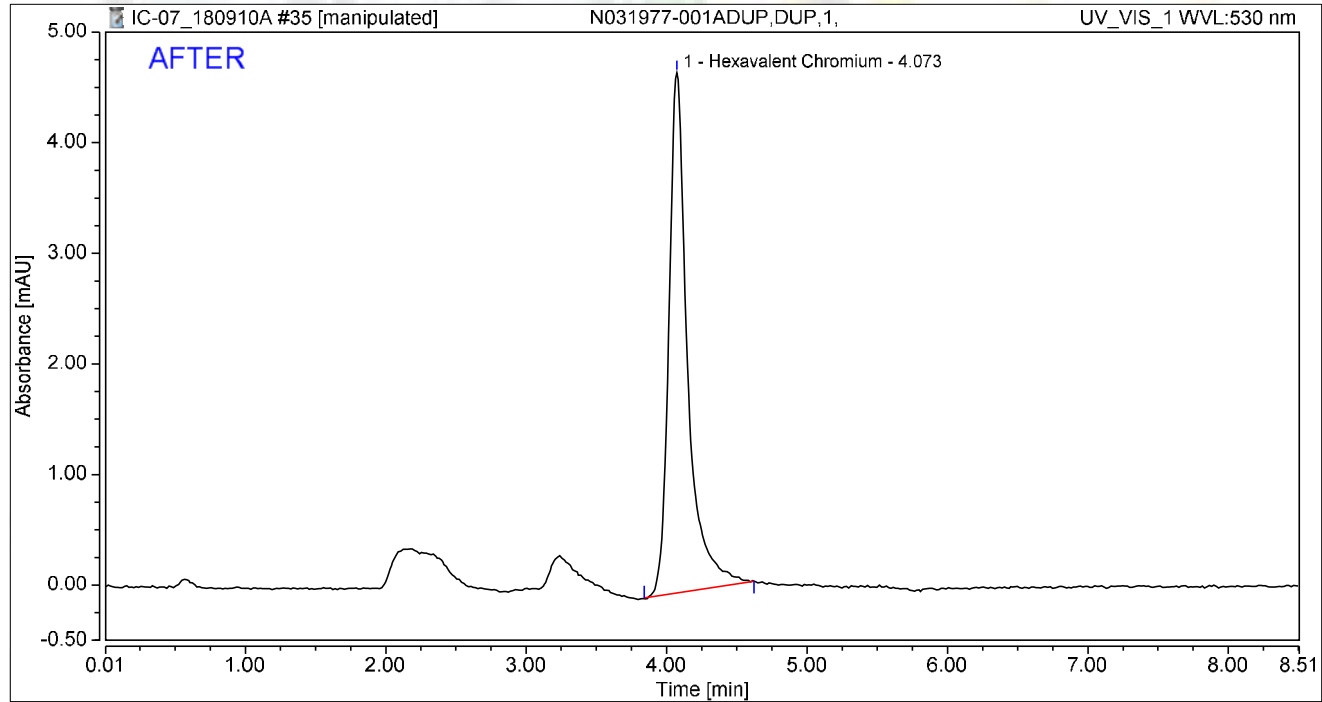
**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.570	17.172	100.00	100.00	10.2175
<b>Total:</b>			<b>2.570</b>	<b>17.172</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

Injection Details		
Injection Name:	N031977-001ADUP,DUP,1,	Run Time (min): 8.50
Vial Number:	25	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	10/Sep/18 15:34	Sample Weight: 1.0000

#### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.727	4.704	100.00	100.00	2.8913
<b>Total:</b>			<b>0.727</b>	<b>4.704</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/15/2018

Reviewed by:  
*Money* 9/19/2018

My first report/Integration

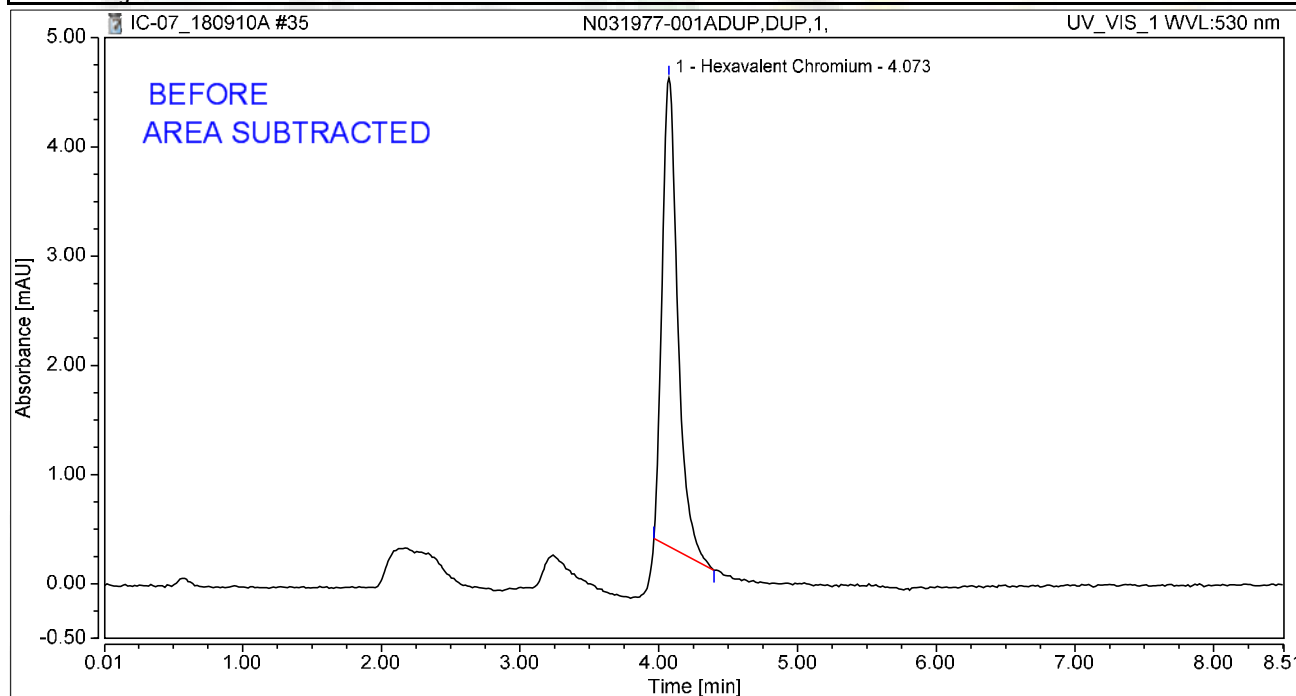
Chromleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

#### Injection Details

Injection Name:	N031977-001ADUP,DUP,1,	Run Time (min):	8.50
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 15:34	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.565	4.291	100.00	100.00	2.2445
<b>Total:</b>			<b>0.565</b>	<b>4.291</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/15/2018

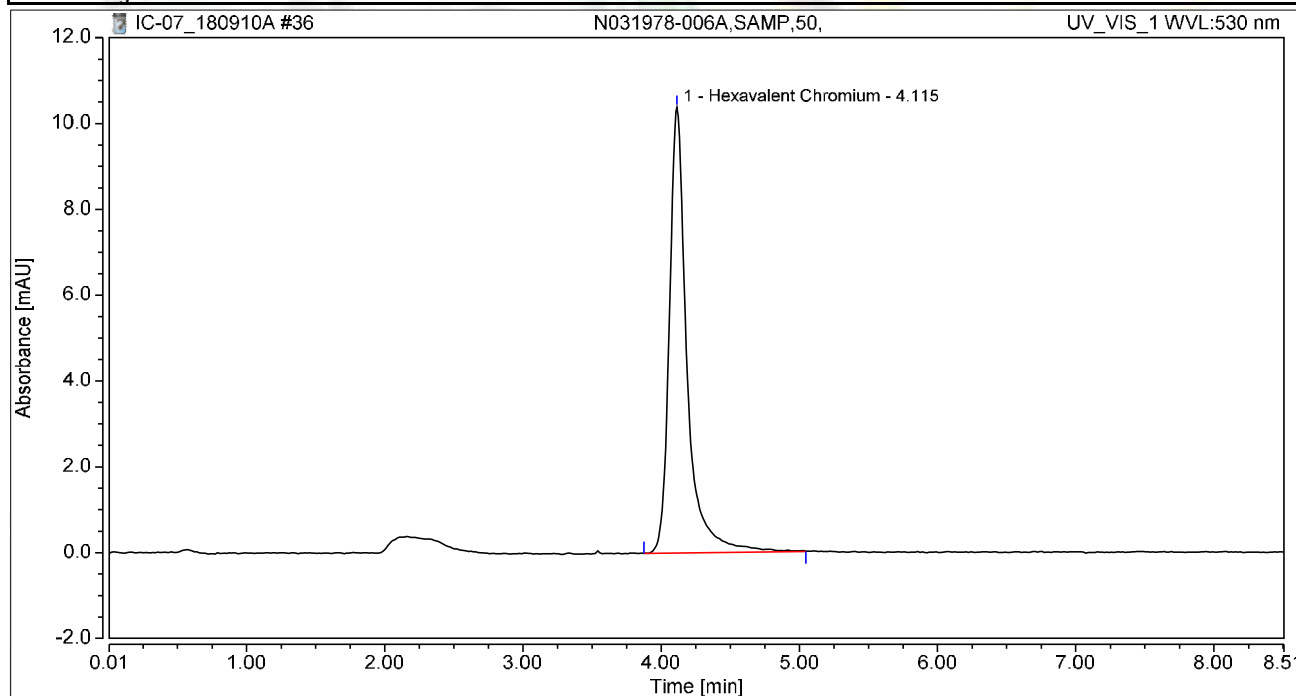


### Chromatogram and Results

**Injection Details**

Injection Name:	N031978-006A,SAMP,50,	Run Time (min):	8.50
Vial Number:	26	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 15:44	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

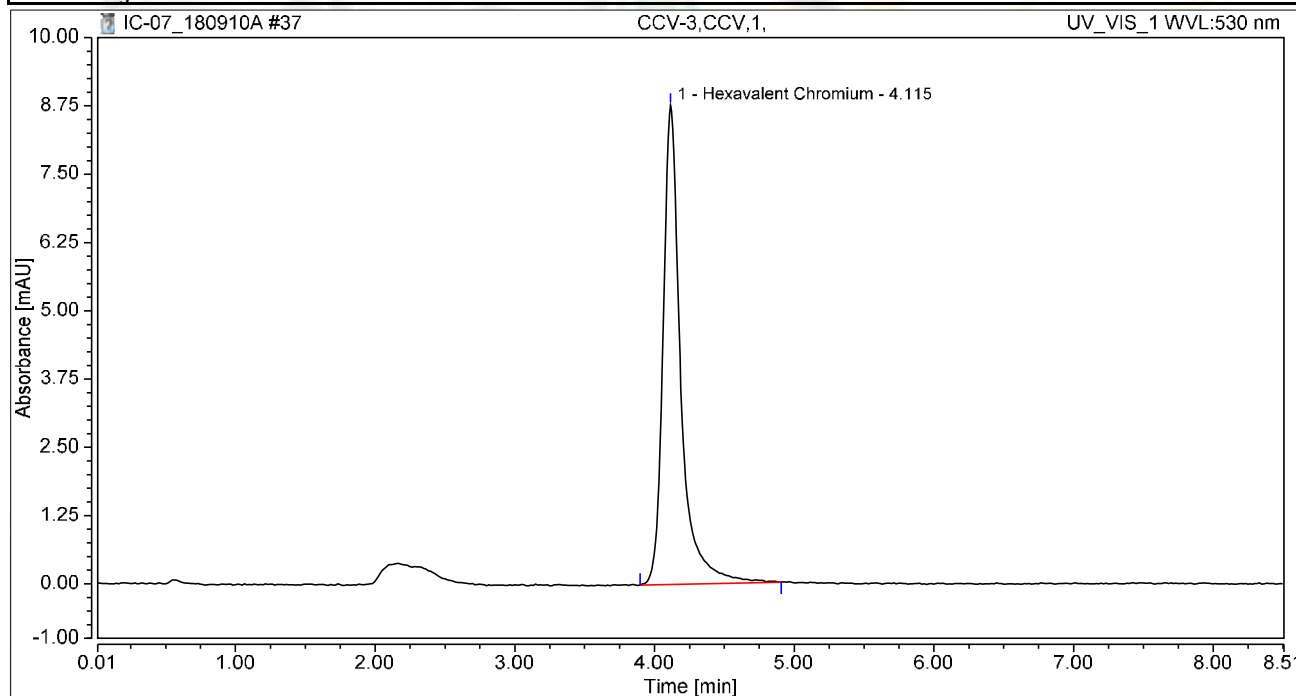
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.546	10.387	100.00	100.00	6.1459
<b>Total:</b>			<b>1.546</b>	<b>10.387</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-3,CCV,1,	Run Time (min):	8.49
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 15:53	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

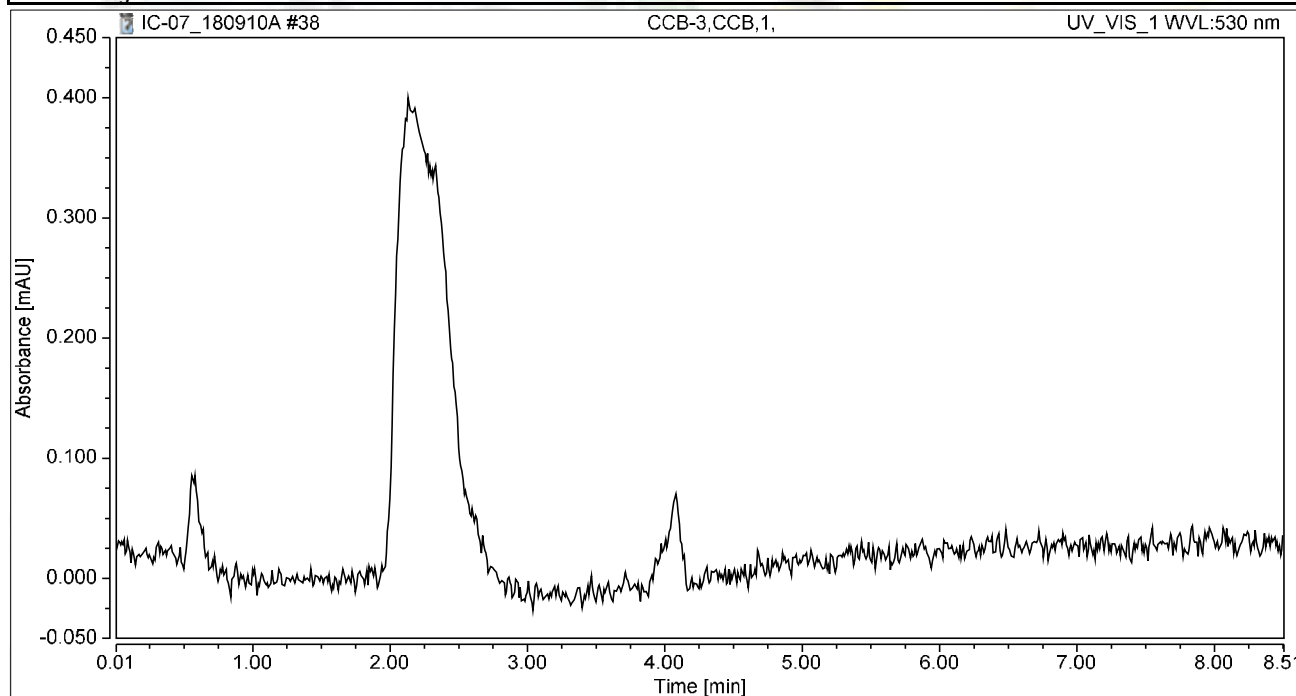
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.287	8.773	100.00	100.00	5.1182
<b>Total:</b>			<b>1.287</b>	<b>8.773</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-3,CCB,1,	Run Time (min):	8.50
Vial Number:	28	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Sep/18 16:02	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

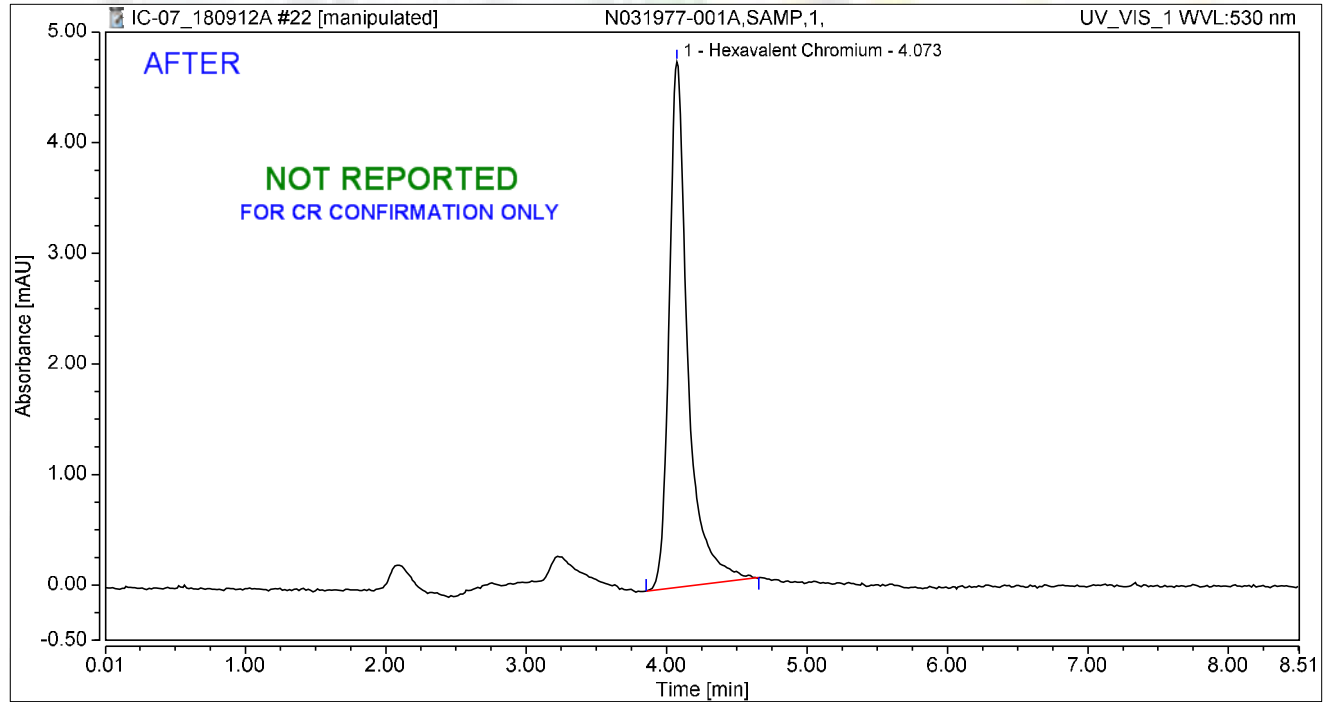
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			0.000	0.000	0.00	0.00	



### Chromatogram and Results

Injection Details		
Injection Name:	N031977-001A,SAMP,1,	Run Time (min): 8.50
Vial Number:	11	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	12/Sep/18 13:54	Sample Weight: 1.0000

#### Chromatogram



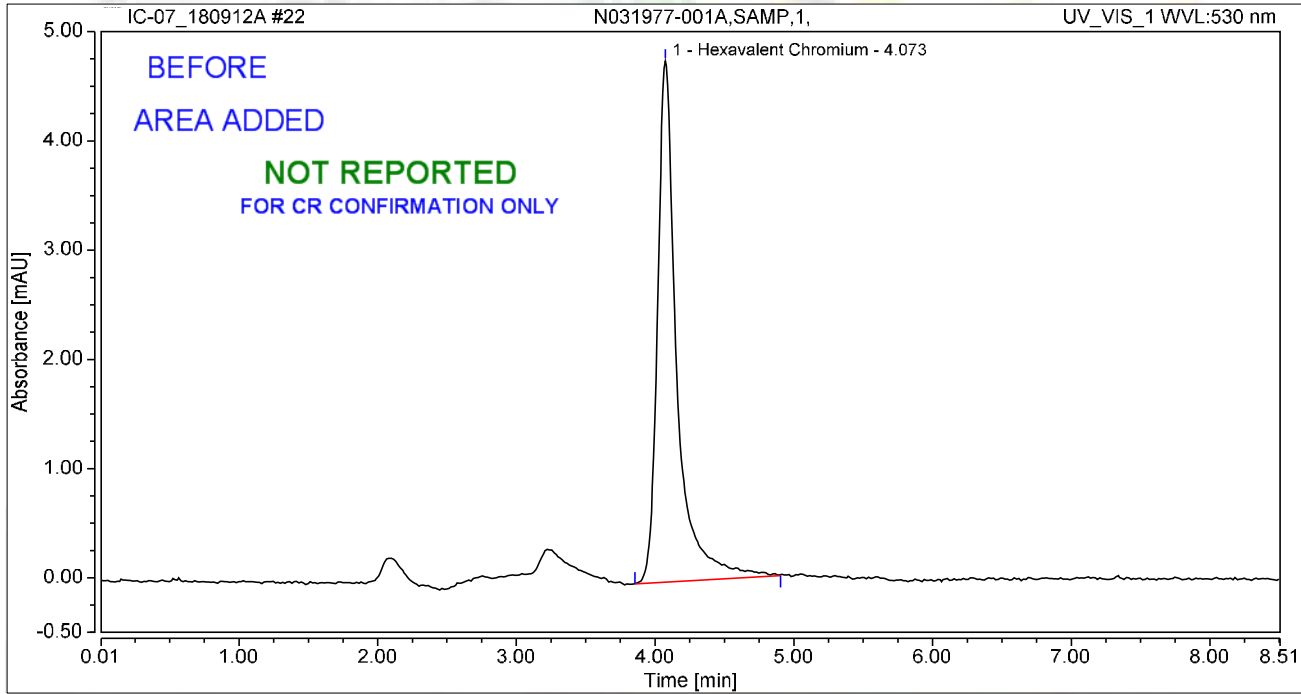
Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.738	4.754	100.00	100.00	2.9349
<b>Total:</b>			<b>0.738</b>	<b>4.754</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031977-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	12/Sep/18 13:54	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

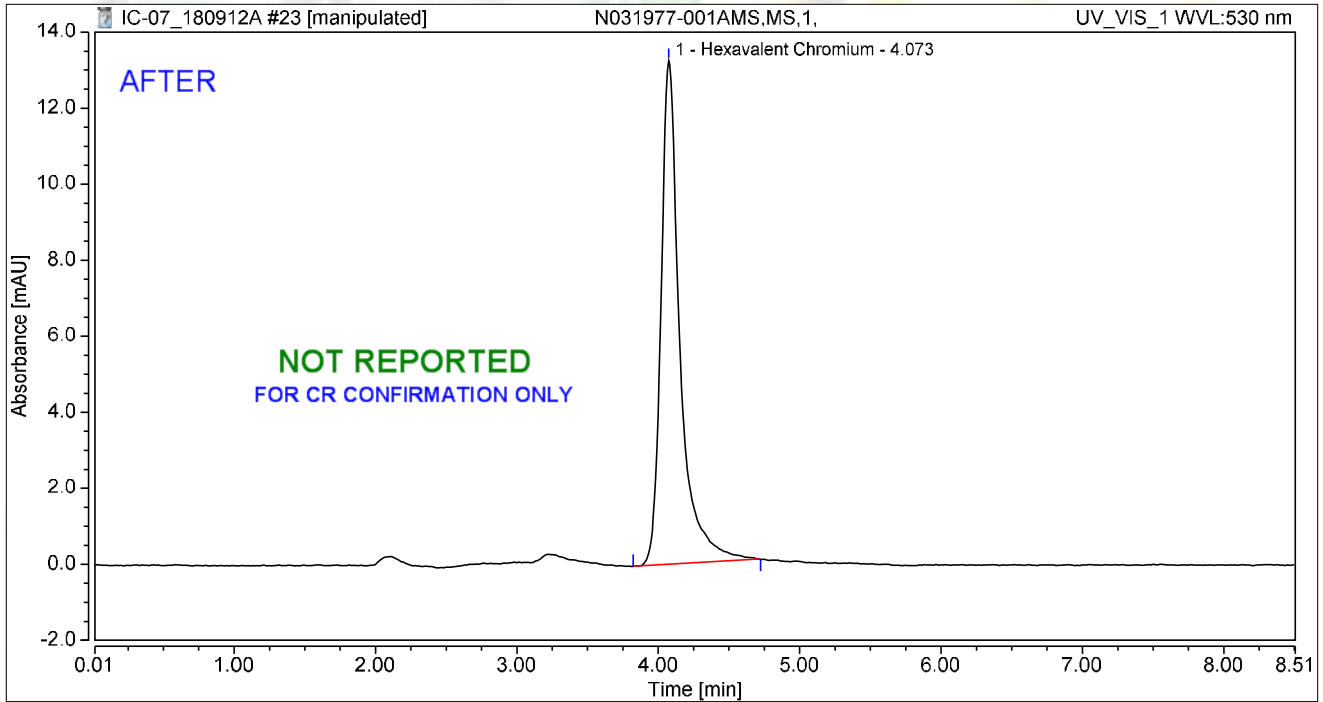
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.772	4.771	100.00	100.00	3.0674
<b>Total:</b>			<b>0.772</b>	<b>4.771</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031977-001AMS,MS,1,	Run Time (min):	8.49
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	12/Sep/18 14:03	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

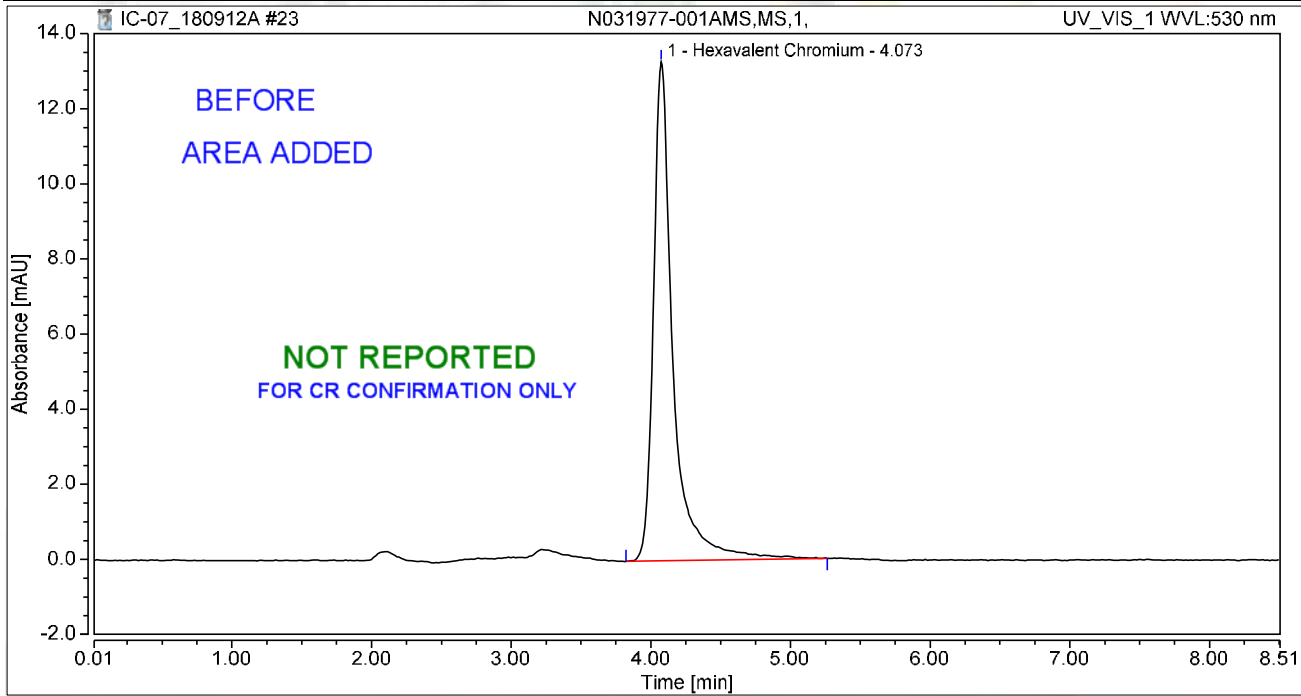
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	2.065	13.252	100.00	100.00	8.2105
<b>Total:</b>			<b>2.065</b>	<b>13.252</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N031977-001AMS,MS,1,	Run Time (min):	8.49
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	12/Sep/18 14:03	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	2.164	13.293	100.00	100.00	8.6031
<b>Total:</b>			<b>2.164</b>	<b>13.293</b>	<b>100.00</b>	<b>100.00</b>	

# SM 2320B



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R127531

Analyst: LSR

ASSET #: N031976

Date Analyzed: 11-Sep

Method: EPA 2320

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
<b>Sample Information</b>						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Julia Ramit

Date: 9/12/2018

2nd Level Reviewer Nancy 9/20/2018

Date: \_\_\_\_\_

# SAMPLE CALCULATION



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Sample ID: **N031976-001B @ pH 7.85**

A. Standardization of Sulfuric Acid (titrant):

$$\text{Normality of acid} = (A) (B) / (53.00) (C)$$

Where:

A, grams weighed for  $\text{Na}_2\text{CO}_3$  solution ( $\text{Na}_2\text{CO}_3$  Standardization Solution)  
B, mL  $\text{Na}_2\text{CO}_3$  solution taken for titration, and  
C, ml of sulfuric acid used to inflection point

Spike Standards

**$\text{Na}_2\text{CO}_3$  Standardization Solution**, ACS Grade (1.00 ml = 2500ug as  $\text{CaCO}_3$ ):  
Dissolve 2.650 grams of  $\text{Na}_2\text{CO}_3$  in distilled water and dilute to 1 liter.

**LCS/MS/MSD Stock**  $\text{NaHCO}_3$ , ACS Grade (1.00 ml = 5000 ug as  $\text{CaCO}_3$ ):  
Dissolve 0.8398 grams of  $\text{NaHCO}_3$  in distilled water and dilute to 1 liter.

Therefore,

$$\begin{aligned} \text{Normality of Acid} &= (2.65 \text{ g/L}) (5\text{mL}) / (53.00) (11.925 \text{ mL}) \\ &= \mathbf{0.02096 \text{ N}} \end{aligned}$$

B. CALCULATION OF ALKALINITY (for a 50 ml sample)

$$\text{Total Alkalinity (as } \text{CaCO}_3\text{), mg/L} = M_{\text{vol.}} * N \text{ H}_2\text{SO}_4 * \text{DF} * 1000$$

Where:

$M_{\text{vol.}}$  volume titrant used to reach pH 4.5, ml  
N, Normality of  $\text{H}_2\text{SO}_4$   
DF, Dilution Factor = (50 ml) / (Vol. of Sample used)

Therefore,

$$\begin{aligned} \text{Total Alkalinity (as } \text{CaCO}_3\text{), mg/L} &= (12.20) (0.02096 \text{ N}) (1) * 1000 \\ &= 255.7120 \text{ mg/L} \end{aligned}$$

Reporting results in two significant figures,

$$= \mathbf{260 \text{ mg/L as } \text{CaCO}_3}$$

*Julia Ramit*

9/12/2018

C. SPECIATED ALKALINITY:

Phenolphthalein Alkalinity

$$\begin{aligned} \text{P alkalinity, mg/L as CaCO}_3 &= P_{\text{vol.}} \cdot N \text{ H}_2\text{SO}_4 \cdot \text{DF} \cdot 1000 \\ &= (0) (0.02096 \text{ N}) (1) \cdot 1000 \\ &= \mathbf{0} \end{aligned}$$

Total Alkalinity

$$\begin{aligned} \text{T alkalinity, mg/L as CaCO}_3 &= M_{\text{vol.}} \cdot N \text{ H}_2\text{SO}_4 \cdot \text{DF} \cdot 1000 \\ &= (12.20 \text{ mL}) (0.02096) (1) \cdot 1000 \\ &= \mathbf{255.7120 \text{ mg/L as CaCO}_3} \end{aligned}$$

Where:

- $P_{\text{vol.}}$  - Volume titrant used to reach pH 8.3, ml
- $M_{\text{vol.}}$  - Volume titrant used to reach pH 4.5, ml
- $N$  - Normality of  $\text{H}_2\text{SO}_4$
- $\text{DF}$  - Dilution Factor = (50 ml) / (Vol. of Sample used)

Then OH,  $\text{CO}_3$ ,  $\text{HCO}_3$  alkalinities as  $\text{CaCO}_3$  will be calculated as follows:

Result of Titration	OH Alkalinity as $\text{CaCO}_3$	$\text{CO}_3$ Alkalinity as $\text{CaCO}_3$	$\text{HCO}_3$ Alkalinity as $\text{CaCO}_3$
$P = 0$	0	0	T
$P < \frac{1}{2} T$	0	2P	$T - 2P$
$P = \frac{1}{2} T$	0	2P	0
$P > \frac{1}{2} T$	$2P - T$	$2(T - P)$	0
$P = T$	T	0	0

Therefore,

$$\text{OH Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{CO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{HCO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{255.7120 \text{ mg/L}}$$

Reporting results in two significant figures,

$$\text{OH Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{CO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{HCO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{260 \text{ mg/L}}$$

*Silia Ramit*

9/12/2018

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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SAMPLE	PH SAMPLE	AMOUNT	V@8.3	VT TO 4.5	Sample Type	Standardization:		
MB-1	5.30	50	0.00	0.050	MBLK	Spike amt:	5	ml
LCS-1	8.37	50	0.05	4.60	LCS	Titrant used:	11.925	ml
N031976-001B	7.85	50	0.00	12.20	SAMP			
N031976-002B	7.70	50	0.00	7.20	SAMP	N H2SO4	0.02096	Normal
N031976-001BDUP	7.96	50	0.00	12.40	DUP			
N031976-002BMS	8.06	50	0.00	11.70	MS	Date Analyzed:	9/11/18	
N031976-002BMSD	8.05	50	0.00	11.70	MSD	Time:	9:15 AM	
						Analyzed By:	LSR	
						Sodium Carbonate:	CINV-161205A	
						Sodium Bicarbonate:	CINV-180510A	
						Sulfuric Acid:	R180911A	

*Julia Ramit* 9/12/2018

Date Analyzed:		9/11/18	Reagents:				Standardization:						P = 0
Time Started:		9:15 AM	Sodium Carbonate:		CINV-161205A	Spike amt:		5	mL			P < 1/2 T	
Analyzed By:		LSR	Hydrochloric Acid:		0	Titrant used:		11.925	mL			P = 1/2 T	
			Sulfuric Acid:		R180911A							P > 1/2 T	
						N H2SO4		0.02096	N			P = T	
Sample ID	Sample Vol/Wt.	Sample pH	Std. Code	Spike Amount	Spike Conc.	Normality, Titrant	Vol. Used to pH 8.3, ml.	Vol. Used pH 8.3 to 4.5, ml.	Total Vol. Used, ml.	DF (50ml/Vsamp.)	P Alkalinity	T Alkalinity	Comments
MB-1	50	5.3				0.02096	0.00	0.05	0.05	1	0.00	1.05	
LCS-1	50	8.37				0.02096	0.05	4.55	4.60	1	1.05	96.44	
N031976-001B	50	7.85				0.02096	0.00	12.20	12.20	1	0.00	255.77	
N031976-002B	50	7.7				0.02096	0.00	7.20	7.20	1	0.00	150.94	
N031976-001BDU	50	7.96				0.02096	0.00	12.40	12.40	1	0.00	259.96	
N031976-002BMS	50	8.06				0.02096	0.00	11.70	11.70	1	0.00	245.28	
N031976-002BMS	50	8.05				0.02096	0.00	11.70	11.70	1	0.00	245.28	

*Silia Ramif* 9/12/2018

# Speciated, Alkalinity as CaCO3

SM 2320B

Date Analyzed:	<u>9/11/18</u>
Time:	<u>9:15 AM</u>
Analyzed By:	<u>LSR</u>

SAMPLE ID	OH	CO3	HCO3	TOTAL	CHECK	COMMENT	REMARKS
MB-1	0.00	0.00	1.05	1.05	1.05		P = 0
LCS-1	0.00	2.10	94.34	96.44	96.44		P < 1/2 T
N031976-001B	0.00	0.00	255.77	255.77	255.77		P = 0
N031976-002B	0.00	0.00	150.94	150.94	150.94		P = 0
N031976-001BDUP	0.00	0.00	259.96	259.96	259.96		P = 0
N031976-002BMS	0.00	0.00	245.28	245.28	245.28		P = 0
N031976-002BMSD	0.00	0.00	245.28	245.28	245.28		P = 0

*Lilia Ramif* 9/12/2018



Alkalinity Preparation and Runlog

<b>Matrix:</b> H <sub>2</sub> O Date Extracted: 7 July 2018 Time Extracted: 2:00 PM Extracted By: LSR Date Analyzed: 9/11/18 Time Analyzed: 9:15 Analyzed By: LSR	<b>Reagent Lot # / Reagent ID</b> Sodium Carbonate: C1N118051A Hydrochloric Acid: R10911A Sulfuric Acid: R10911A Sodium Bicarbonate: C1N1180510A
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#1 water calibration:  
 Slope: 98.67  
 pH 7 - 7.01 C1N1180515A  
 pH 4 - 4.02 R10915A  
 pH 10 - 10.12 R10913B

Sample ID	Sample Wt./Vol.	Sample pH	Std Code	Spike Amt Added	Spike Conc.	Norm. Titrant	Vol. At pH = 8.3	Vol. At pH = 4.5	Dilution (F/I)	Calculations	Comments
<b>STANDARDIZATION</b>											
#1	50 mL	10.67	1051180911A	5 mL	0.05N	-	-	12.05	50/50	$N_{H_2SO_4} = \frac{(2.049g/L)(50mL)}{(50)(V_{titrant})} = 0.020746887$	$= 0.02118644$
#2	50 mL	10.62	-	-	-	-	-	11.80	-		
1) MALK	50 mL	5.30	-	-	-	0.02096	0	0.050	50/50		Ave: 0.02096663
2) LCS	-	8.37	1051180911B	1 mL	0.05N	-	0.05	4.60	-		
3) K031976-1B	-	7.85	-	-	-	-	0	12.20	-		
4) 2B	-	7.70	-	-	-	-	0	7.20	-		
5) 1BDF	-	7.96	-	-	-	-	0	12.40	-		
6) 2BMS	-	8.06	1051180911B	1 mL	0.05N	-	0	11.70	-		
7) 2BMSD	-	8.05	-	-	-	-	0	11.70	-		
8)											
9)											
10)											
11)											
12)											
13)											
14)											
15)											
16)											
17)											
18)											
19)											
20)											
MS											
MSD											
LCS											

$$P = \frac{(V_{pH\ 8.3})(N_{H_2SO_4})(50,000)}{V_{SX}}$$

$$T = \frac{(V_{pH\ 4.5})(N_{H_2SO_4})(50,000)}{V_{SX}}$$

Julia Ramit 9/12/2018

# EPA 300.0



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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IC Technical Batch Review Checklist (ARCUS02)  
ASSET LABORATORIES - LAS VEGAS

IC ARCUS  
REV 2.0  
011416

QC Batch Number: R127468  
ASSET #: N031978 / N031976

Instrument ID: IC-08  
Analyst: RBA  
Date Analyzed: 9/7/2018

Method:

EPA 300.0  
 EPA 7199

EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)			X			
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?			X			
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?			X			
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)			X			
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)			X			
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X	X				
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments: % Rec of PO4 in N031978-001CMS/MSD failed, high bias, possibly due to matrix interference.

However, LCS passed criteria.

Further dilution for PO4 in N031978-001C at 5X was done since RT of MS/MSD at 2X failed.

n/a for N031976

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer RBA

Date: 9/11/2018

2nd Level Reviewer Nancy 9/19/2018

Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 300  
**TEST NAME:** INORGANIC ANIONS BY IC  
**MATRIX:** GROUNDWATER

FORMULA:

Calculate the Sulfate concentration, in mg/L, in the original sample as follows:

$$\text{Sulfate, mg/L} = A * DF$$

where:

A = mg/L, IC calculated concentration  
DF = dilution factor

For **N031976-001B** concentration in mg/L is calculated as follows:

$$\begin{aligned}\text{Sulfate, mg/L} &= 6.8687 * 50 \\ &= 343.435\end{aligned}$$

Reporting result in two significant values,

$$\text{Sulfate, mg/L} = \mathbf{340}$$

*rba* 9/18/2018

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
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Sequence: IC-08\_180816A  
Operator: IC-05

Page 1 of 4  
Printed: 8/20/2018 12:38:52 AM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 64

Created: 8/16/2018 8:40:24 AM by IC-05  
Last Update: 8/16/2018 6:14:04 PM by IC-05

No.	Name	Type	Inj. Vol.	Program	Method	Status
1	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
2	Std - 0	Standard	1000.0	Anions Default	EPA 300_0_180816	Finished
3	Std - 1	Standard	1000.0	Anions Default	EPA 300_0_180816	Finished
4	Std - 2	Standard	1000.0	Anions Default	EPA 300_0_180816	Finished
5	Std - 3	Standard	1000.0	Anions Default	EPA 300_0_180816	Finished
6	Std - 4	Standard	1000.0	Anions Default	EPA 300_0_180816	Finished
7	Std - 5	Standard	1000.0	Anions Default	EPA 300_0_180816	Finished
8	ICV	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
9	ICB	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
10	MB-H2O,MBLK,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
11	LCS-H2O,LCS,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
12	N031174-009A,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
13	N031304-006A,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
14	N031304-006A,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
15	N031174-009A,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
16	N031304-006ADUP,DUP,10	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
17	N031174-006A,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
18	N031174-007A,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
19	N031174-011A,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
20	CCV-1,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
21	CCB-1,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
22	N031304-008A,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
23	N031304-015A,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
24	N031304-016A,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
25	N031174-006A,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
26	N031174-009A,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
27	N031174-009A,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
28	N031304-008A,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
29	N031304-008A,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
30	N031304-015A,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
31	N031304-016A,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
32	CCV-2,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
33	CCB-2,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
34	N031304-015A,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
35	N031174-007ADUP,DUP,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
36	N031174-007AMS,MS,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
37	N031174-007AMSD,MSD,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
38	N031174-006ADUP,DUP,5	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
39	N031304-008AMS,MS,10	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
40	N031304-008AMSD,MSD,10	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
41	N031174-009ADUP,DUP,5	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished

Sequence: IC-08\_180816A  
Operator: IC-05

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Printed: 8/20/2018 12:38:52 AM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 64

Created: 8/16/2018 8:40:24 AM by IC-05  
Last Update: 8/16/2018 6:14:04 PM by IC-05

No.	Name	Inj. Date/Time	Comment
1	BLANK,BLANK	8/16/2018 8:48:48 AM	BLANK
2	Std - 0	8/16/2018 9:04:07 AM	IBLANK
3	Std - 1	8/16/2018 9:32:18 AM	STD-LOW
4	Std - 2	8/16/2018 9:47:36 AM	STD
5	Std - 3	8/16/2018 10:02:55 AM	STD
6	Std - 4	8/16/2018 10:18:13 AM	STD
7	Std - 5	8/16/2018 10:33:31 AM	STD-HIGH
8	ICV	8/16/2018 10:59:10 AM	ICV
9	ICB	8/16/2018 11:14:28 AM	ICB
10	MB-H2O,MBLK,1	8/16/2018 11:29:46 AM	METHOD BLANK
11	LCS-H2O,LCS,1	8/16/2018 11:45:04 AM	LCS
12	N031174-009A,SAMP,2	8/16/2018 12:01:36 PM	SAMP,5>10mL
13	N031304-006A,SAMP,1	8/16/2018 12:16:53 PM	SAMP,10mL
14	N031304-006A,SAMP,10	8/16/2018 12:46:26 PM	SAMP,1>10mL
15	N031174-009A,SAMP,5	8/16/2018 1:01:44 PM	SAMP,2>10mL
16	N031304-006ADUP,DUP,10	8/16/2018 1:17:02 PM	DUP,1>10mL
17	N031174-006A,SAMP,1	8/16/2018 1:38:49 PM	SAMP,10mL
18	N031174-007A,SAMP,1	8/16/2018 1:54:07 PM	SAMP,10mL
19	N031174-011A,SAMP,1	8/16/2018 2:09:25 PM	SAMP,10mL
20	CCV-1,CCV,1	8/16/2018 2:24:43 PM	CCV
21	CCB-1,CCB,1	8/16/2018 2:40:00 PM	CCB
22	N031304-008A,SAMP,2	8/16/2018 2:55:19 PM	SAMP,5>10mL
23	N031304-015A,SAMP,5	8/16/2018 3:10:37 PM	SAMP,2>10mL
24	N031304-016A,SAMP,2	8/16/2018 3:25:55 PM	SAMP,5>10mL
25	N031174-006A,SAMP,5	8/16/2018 3:41:13 PM	SAMP,2>10mL
26	N031174-009A,SAMP,10	8/16/2018 3:56:31 PM	SAMP,1>10mL
27	N031174-009A,SAMP,20	8/16/2018 4:11:49 PM	SAMP,0.5>10mL
28	N031304-008A,SAMP,5	8/16/2018 4:27:07 PM	SAMP,2>10mL
29	N031304-008A,SAMP,10	8/16/2018 4:42:25 PM	SAMP,1>10mL
30	N031304-015A,SAMP,2	8/16/2018 4:57:43 PM	SAMP,5>10mL
31	N031304-016A,SAMP,1	8/16/2018 5:13:01 PM	SAMP,10mL
32	CCV-2,CCV,1	8/16/2018 5:28:19 PM	CCV
33	CCB-2,CCB,1	8/16/2018 5:43:37 PM	CCB
34	N031304-015A,SAMP,1	8/16/2018 5:58:55 PM	SAMP,10mL
35	N031174-007ADUP,DUP,1	8/16/2018 6:14:13 PM	DUP,10mL
36	N031174-007AMS,MS,1	8/16/2018 6:29:31 PM	MS,10mL
37	N031174-007AMSD,MSD,1	8/16/2018 6:44:48 PM	MSD,10mL
38	N031174-006ADUP,DUP,5	8/16/2018 7:00:06 PM	DUP,2>10mL
39	N031304-008AMS,MS,10	8/16/2018 7:15:24 PM	MS,1>10mL
40	N031304-008AMSD,MSD,10	8/16/2018 7:30:43 PM	MSD,1>10mL
41	N031174-009ADUP,DUP,5	8/16/2018 7:46:01 PM	DUP,2>10mL



Sequence: IC-08\_180816A  
Operator: IC-05

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Printed: 8/20/2018 12:38:52 AM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 64

Created: 8/16/2018 8:40:24 AM by IC-05  
Last Update: 8/16/2018 6:14:04 PM by IC-05

No.	Name	Type	Inj. Vol.	Program	Method	Status
42	N031174-009AMS,MS,10	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
43	N031174-009AMSD,MSD,10	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
44	CCV-3,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
45	CCB-3,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
46	N031304-006AMS,MS,10	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
47	N031304-006AMSD,MSD,10	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
48	N031174-011ADUP,DUP,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
49	N031304-016AMS,MS,2	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
50	N031304-016AMSD,MSD,2	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
51	N031304-006ADUP,DUP,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
52	N031174-009AMS,MS,20	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
53	N031174-009AMSD,MSD,20	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
54	N028093-006A,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
55	N028093-006A,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
56	CCV-4,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
57	CCB-4,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
58	N028093-008A,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
59	N028093-008A,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
60	N020330-007A,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
61	N012960-016A,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
62	CCV-5,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
63	CCB-5,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
64	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished

*rba* 9/11/2018

Sequence: IC-08\_180816A  
Operator: IC-05

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Printed: 8/20/2018 12:38:52 AM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 64

Created: 8/16/2018 8:40:24 AM by IC-05  
Last Update: 8/16/2018 6:14:04 PM by IC-05

No.	Name	Inj. Date/Time	Comment
42	N031174-009AMS,MS,10	8/16/2018 8:01:19 PM	MS,1>10mL
43	N031174-009AMSD,MSD,10	8/16/2018 8:16:38 PM	MSD,1>10mL
44	CCV-3,CCV,1	8/16/2018 8:31:56 PM	CCV
45	CCB-3,CCB,1	8/16/2018 8:47:14 PM	CCB
46	N031304-006AMS,MS,10	8/16/2018 9:02:32 PM	MS,1>10mL
47	N031304-006AMSD,MSD,10	8/16/2018 9:17:49 PM	MSD,1>10mL
48	N031174-011ADUP,DUP,1	8/16/2018 9:33:07 PM	DUP,10mL
49	N031304-016AMS,MS,2	8/16/2018 9:48:26 PM	MS,5>10mL
50	N031304-016AMSD,MSD,2	8/16/2018 10:03:44 PM	MSD,5>10mL
51	N031304-006ADUP,DUP,1	8/16/2018 10:19:02 PM	DUP,10mL
52	N031174-009AMS,MS,20	8/16/2018 10:34:19 PM	MS,0.5>10mL
53	N031174-009AMSD,MSD,20	8/16/2018 10:49:37 PM	MSD,0.5>10mL
54	N028093-006A,SAMP,1	8/16/2018 11:04:56 PM	SAMP,10mL
55	N028093-006A,SAMP,5	8/16/2018 11:20:14 PM	SAMP,2>10mL
56	CCV-4,CCV,1	8/16/2018 11:35:32 PM	CCV
57	CCB-4,CCB,1	8/16/2018 11:50:50 PM	CCB
58	N028093-008A,SAMP,2	8/17/2018 12:06:08 AM	SAMP,5>10mL
59	N028093-008A,SAMP,5	8/17/2018 12:21:27 AM	SAMP,2>10mL
60	N020330-007A,SAMP,1	8/17/2018 12:36:45 AM	SAMP,10mL
61	N012960-016A,SAMP,2	8/17/2018 12:52:03 AM	SAMP,5>10mL
62	CCV-5,CCV,1	8/17/2018 1:07:21 AM	CCV
63	CCB-5,CCB,1	8/17/2018 1:22:38 AM	CCB
64	BLANK,BLANK	8/17/2018 1:37:56 AM	BLANK


Sequence: IC-08\_180907A  
Operator: IC-05

Title:

Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 51

Created: 9/7/2018 8:16:22 AM by IC-05  
Last Update: 9/10/2018 10:28:46 AM by IC-05

No.	Name	Type	Inj. Vol.	Program	Method	Status
1	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
2	Std - 0	Standard	1000.0	Anions Default	EPA 300_0_180816	Finished
3	Std - 1	Standard	1000.0	Anions Default	EPA 300_0_180816	Finished
4	Std - 2	Standard	1000.0	Anions Default	EPA 300_0_180816	Finished
5	Std - 3	Standard	1000.0	Anions Default	EPA 300_0_180816	Finished
6	Std - 4	Standard	1000.0	Anions Default	EPA 300_0_180816	Finished
7	Std - 5	Standard	1000.0	Anions Default	EPA 300_0_180816	Finished
8	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
9	CCV-1,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
10	CCB-1,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
11	MB-H2O,MBLK,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
12	LCS-H2O,LCS,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
13	N031978-001C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
14	N031978-002C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
15	N031978-003C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
16	N031978-005C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
17	N031978-006C,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
18	N031978-001CMS,MS,2	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
19	N031978-001CMSD,MSD,2	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
20	CCV-2,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
21	CCB-2,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
22	N031978-004A,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
23	N031978-001CMS,MS,5	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
24	N031978-001CMSD,MSD,5	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
25	N031978-001C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
26	N031978-001CDUP,DUP,5	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
27	N031979-002A,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
28	N031978-003CDUP,DUP,10	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
29	N031998-001A,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
30	N031970-002A,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
31	N031976-001B,SAMP,100	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
32	CCV-3,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
33	CCB-3,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
34	N031976-002B,SAMP,500	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
35	N031998-001A,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
36	N031998-001A,SAMP,100	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
37	N031905-008B,SAMP,5000	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
38	N031905-008B,SAMP,20000	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
39	N031976-002BMS,MS,500	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
40	N031976-002BMSD,MSD,500	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
41	N031976-001B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished

 9/11/2018

Sequence: IC-08\_180907A  
Operator: IC-05

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Printed: 9/10/2018 5:55:33 PM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 51

Created: 9/7/2018 8:16:22 AM by IC-05  
Last Update: 9/10/2018 10:28:46 AM by IC-05

No.	Name	Inj. Date/Time	Comment
1	BLANK,BLANK	8/16/2018 8:48:48 AM	BLANK
2	Std - 0	8/16/2018 9:04:07 AM	IBLANK
3	Std - 1	8/16/2018 9:32:18 AM	STD-LOW
4	Std - 2	8/16/2018 9:47:36 AM	STD
5	Std - 3	8/16/2018 10:02:55 AM	STD
6	Std - 4	8/16/2018 10:18:13 AM	STD
7	Std - 5	8/16/2018 10:33:31 AM	STD-HIGH
8	BLANK,BLANK	9/7/2018 8:16:42 AM	BLANK
9	CCV-1,CCV,1	9/7/2018 8:32:00 AM	CCV
10	CCB-1,CCB,1	9/7/2018 8:47:18 AM	CCB
11	MB-H2O,MBLK,1	9/7/2018 9:02:36 AM	METHOD BLANK
12	LCS-H2O,LCS,1	9/7/2018 9:17:53 AM	LCS
13	N031978-001C,SAMP,2	9/7/2018 9:49:54 AM	SAMP,5>10mL
14	N031978-002C,SAMP,5	9/7/2018 10:05:11 AM	SAMP,2>10mL
15	N031978-003C,SAMP,10	9/7/2018 10:20:29 AM	SAMP,1>10mL
16	N031978-005C,SAMP,10	9/7/2018 10:51:05 AM	SAMP,1>10mL
17	N031978-006C,SAMP,10	9/7/2018 11:06:23 AM	SAMP,1>10mL
18	N031978-001CMS,MS,2	9/7/2018 11:30:55 AM	MS,5>10mL
19	N031978-001CMSD,MSD,2	9/7/2018 11:46:13 AM	MSD,5>10mL
20	CCV-2,CCV,1	9/7/2018 12:01:31 PM	CCV
21	CCB-2,CCB,1	9/7/2018 12:16:49 PM	CCB
22	N031978-004A,SAMP,2	9/7/2018 12:49:39 PM	SAMP,5>10mL
23	N031978-001CMS,MS,5	9/7/2018 1:37:43 PM	MS,2>10mL
24	N031978-001CMSD,MSD,5	9/7/2018 1:53:25 PM	MSD,2>10mL
25	N031978-001C,SAMP,5	9/7/2018 2:08:43 PM	SAMP,2>10mL
26	N031978-001CDUP,DUP,5	9/7/2018 2:24:01 PM	DUP,2>10mL
27	N031979-002A,SAMP,1	9/7/2018 2:39:19 PM	SAMP,10mL
28	N031978-003CDUP,DUP,10	9/7/2018 2:54:36 PM	DUP,1>10mL
29	N031998-001A,SAMP,5	9/7/2018 3:11:56 PM	SAMP,2>10mL
30	N031970-002A,SAMP,20	9/7/2018 3:27:14 PM	SAMP,0.5>10mL
31	N031976-001B,SAMP,100	9/7/2018 3:42:32 PM	SAMP,0.1>10mL
32	CCV-3,CCV,1	9/7/2018 3:57:50 PM	CCV
33	CCB-3,CCB,1	9/7/2018 4:13:08 PM	CCB
34	N031976-002B,SAMP,500	9/7/2018 4:32:56 PM	SAMP,0.02>10mL
35	N031998-001A,SAMP,10	9/7/2018 4:48:14 PM	SAMP,1>10mL
36	N031998-001A,SAMP,100	9/7/2018 5:03:32 PM	SAMP,0.1>10mL
37	N031905-008B,SAMP,5000	9/7/2018 5:18:50 PM	SAMP,0.002>10mL 9056
38	N031905-008B,SAMP,20000	9/7/2018 5:34:08 PM	SAMP,0.0005>10mL 9056
39	N031976-002BMS,MS,500	9/7/2018 5:49:26 PM	MS,0.02>10mL
40	N031976-002BMSD,MSD,500	9/7/2018 6:04:45 PM	MSD,0.02>10mL
41	N031976-001B,SAMP,200	9/7/2018 6:20:03 PM	SAMP,0.05>10mL

Sequence: IC-08\_180907A  
Operator: IC-05


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Printed: 9/10/2018 5:55:33 PM

Title:

Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 51

Created: 9/7/2018 8:16:22 AM by IC-05  
Last Update: 9/10/2018 10:28:46 AM by IC-05

No.	Name	Type	Inj. Vol.	Program	Method	Status
42	N031976-001BDUP,DUP,200	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
43	CCV-4,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
44	CCB-4,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
45	N031976-001B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
46	N031976-002B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
47	N031976-001BMS,MS,50	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
48	N031976-001BMDS,MSD,50	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
49	N031976-002BDUP,DUP,50	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
50	CCV-5,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished
51	CCB-5,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180816	Finished

 9/11/2018

Sequence: IC-08\_180907A  
Operator: IC-05

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Printed: 9/10/2018 5:55:33 PM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 51

Created: 9/7/2018 8:16:22 AM by IC-05  
Last Update: 9/10/2018 10:28:46 AM by IC-05

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No.	Name	Inj. Date/Time	Comment
42	N031976-001BDUP,DUP,200	9/7/2018 6:35:20 PM	DUP,0.05>10mL
43	CCV-4,CCV,1	9/7/2018 6:50:38 PM	CCV
44	CCB-4,CCB,1	9/7/2018 7:05:56 PM	CCB
45	N031976-001B,SAMP,50	9/7/2018 7:21:14 PM	SAMP,0.2>10mL
46	N031976-002B,SAMP,50	9/7/2018 7:36:32 PM	SAMP,0.2>10mL
47	N031976-001BMS,MS,50	9/7/2018 7:51:50 PM	MS,0.2>10mL
48	N031976-001BMDS,MSD,50	9/7/2018 8:07:07 PM	MSD,0.2>10mL
49	N031976-002BDUP,DUP,50	9/7/2018 8:22:25 PM	DUP,0.2>10mL
50	CCV-5,CCV,1	9/7/2018 8:37:43 PM	CCV
51	CCB-5,CCB,1	9/7/2018 8:53:01 PM	CCB

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

(EPA 300) - INITIAL CALIBRATION

Instrument ID: IC-08  
Date Calibrated: 8/16/2018

Initial Calibration:

Chloride	STD0	STD1	STD2	STD3	STD4	STD5	
COMPOUND, in ug/L	0	0.5	1	2	5	10	R <sup>2</sup>
Area,mAU*min	0.0000	0.0742	0.1478	0.2983	0.7710	1.6092	1.000

	Stock
Standard Concentration:	1000000 PPB
Standard ID:	ISST-170814B

Calibration Acceptance Criteria: > 0.995 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.



(EPA 300) - INITIAL CALIBRATION

Instrument ID: IC-08  
Date Calibrated: 8/16/2018

Initial Calibration:

Sulfate	STD0	STD1	STD2	STD3	STD4	STD5	
COMPOUND, in ug/L	0	0.5	2	4	10	20	R <sup>2</sup>
Area,mAU*min	0.0000	0.0574	0.2280	0.4612	1.1860	2.4616	1.000

	Stock
Standard Concentration:	1000000 PPB
Standard ID:	ISST-170814G

Calibration Acceptance Criteria: > 0.995 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_CLPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/16/2018</b>	SeqNo: <b>3133372</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.970	0.50	2.000	0	98.5	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133374</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.946	0.50	2.000	0	97.3	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133378</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.940	0.50	2.000	0	97.0	90	110				

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133380</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.947	0.50	2.000	0	97.3	90	110				

Sample ID <b>CCV-4</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133388</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.930	0.50	2.000	0	96.5	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_CLPGE**

Sample ID <b>CCV-5</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133390</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.924	0.50	2.000	0	96.2	90	110				

**Qualifiers:**

- |    |   |   |                                      |   |  |
|----|---|---|--------------------------------------|---|--|
| B  | Analyte detected in the associated Method Blank | E | Value above quantitation range       | H | Holding times for preparation or analysis exceeded           |
| ND | Not Detected at the Reporting Limit             | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/16/2018</b>	SeqNo: <b>3133392</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.894	0.50	4.000	0	97.3	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133394</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.899	0.50	4.000	0	97.5	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133399</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.891	0.50	4.000	0	97.3	90	110				

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133403</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.859	0.50	4.000	0	96.5	90	110				

Sample ID <b>CCV-4</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133407</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.815	0.50	4.000	0	95.4	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 300\_W\_SO4PGE

Sample ID <b>CCV-5</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133414</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.801	0.50	4.000	0	95.0	90	110				

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_CLPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>8/16/2018</b>	SeqNo: <b>3133373</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride ND 0.50

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133375</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride ND 0.50

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133379</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride ND 0.50

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133381</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride ND 0.50

Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133389</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride ND 0.50

**Qualifiers:**

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  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_CLPGE**

Sample ID <b>CCB-5</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133391</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>300_W_SO4P</b> Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>
Client ID: <b>ICB</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>8/16/2018</b>	SeqNo: <b>3133393</b>
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual

Sulfate	ND	0.50									
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Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b> Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133395</b>
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual

Sulfate	ND	0.50									
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Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b> Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133400</b>
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual

Sulfate	ND	0.50									
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Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b> Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133404</b>
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual

Sulfate	ND	0.50									
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Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b> Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133408</b>
Analyte	Result	PQL SPK value SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual

Sulfate	ND	0.50									
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 300\_W\_SO4PGE

Sample ID <b>CCB-5</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127468</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127468</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/7/2018</b>	SeqNo: <b>3133415</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-08

### Analytical Sequence

Date Analyzed: 9/7/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	Chloride 3.787	
CCV-1	Chloride 3.770	
CCV-2	Chloride 3.773	
CCV-3	Chloride 3.780	
CCV-4	Chloride 3.780	
CCV-5	Chloride 3.780	

**Average** 3.777

**Applied RT Window** 3.577 - 3.977

MB-R127468_CL	Chloride	N.A.	N.A.
LCS-R127468_CL	Chloride	3.767	PASS
N031976-002B	Chloride	3.784	PASS
N031976-002BMS	Chloride	3.784	PASS
N031976-002BMSD	Chloride	3.784	PASS
N031976-001B	Chloride	3.787	PASS
N031976-001BDUP	Chloride	3.787	PASS

*rba* 9/18/2018

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-08

### Analytical Sequence

Date Analyzed: 9/7/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	Sulfate 7.494	
CCV-1	Sulfate 7.470	
CCV-2	Sulfate 7.497	
CCV-3	Sulfate 7.510	
CCV-4	Sulfate 7.510	
CCV-5	Sulfate 7.507	

**Average** 7.499

**Applied RT Window** 7.299 - 7.699

MB-R127468_SO4	Sulfate 7.470	PASS
LCS-R127468_SO4	Sulfate 7.474	PASS
N031976-001B	Sulfate 7.510	PASS
N031976-002B	Sulfate 7.514	PASS
N031976-001BMS	Sulfate 7.517	PASS
N031976-001BMSD	Sulfate 7.514	PASS
N031976-001BDUP	Sulfate 7.514	PASS

*rba* 9/18/2018

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **INORGANIC IONS by Ion Chromatography**  
 Method Number: EPA 300.0  
 Analysis Date(s): 5/23/2017 ; 5/24/2017; 5/25/2017  
 Analyst/Technician: Ria Abes

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **IC-08**

Acceptance Criteria: MDL < spike < 10XMDL

Datafile	170523A D36	170523A D37	170523A D38	170524A D17	170524A D18	170525A D45	170525A D46					
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	MDL	LOD	PQL
Fluoride	0.020	0.022	0.021	0.020	0.023	0.026	0.024	0.020	0.0021	<b>0.0065</b>	0.020	0.10
Chloride	0.133	0.136	0.136	0.133	0.141	0.133	0.136	0.025	0.0029	<b>0.0091</b>	0.020	0.50
Nitrite	0.030	0.028	0.027	0.028	0.028	0.027	0.027	0.020	0.0010	<b>0.0030</b>	0.010	0.05
Bromide	0.037	0.042	0.043	0.038	0.040	0.032	0.025	0.040	0.0062	<b>0.0196</b>	0.040	0.20
Nitrate	0.035	0.034	0.033	0.033	0.033	0.031	0.030	0.020	0.0016	<b>0.0050</b>	0.010	0.05
Phosphate	0.047	0.051	0.049	0.046	0.052	0.047	0.059	0.040	0.0043	<b>0.0135</b>	0.030	0.10
Sulfate	0.213	0.199	0.208	0.216	0.199	0.201	0.198	0.050	0.0073	<b>0.0229</b>	0.050	0.50



**ASSET LABORATORIES**  
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CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
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 P: 702.307.2659 F: 702.307.2691

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## MDL/LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Inorganic Ions by Ion Chromatography (Low Level)**  
 Method Number: EPA Method 300.0  
 Analysis Date(s): 3/29-30/2018  
 Analyst: Ria B. Abes

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **IC-08**

Compound	MDL	LOD Spike Conc., mg/L	LOD Actual Conc., mg/L	PQL Spike Conc., mg/L	PQL Actual Conc., mg/L	%Recovery
Fluoride	<b>0.0065</b>	0.020	0.0252	0.10	0.087	<b><u>87</u></b>
Chloride	<b>0.0091</b>	0.020	0.1193	0.50	0.5757	<b><u>115</u></b>
Nitrite	<b>0.0030</b>	0.010	0.0237	0.05	0.0638	<b><u>128</u></b>
Bromide	<b>0.0196</b>	0.040	0.0405	0.20	0.1993	<b><u>100</u></b>
Nitrate	<b>0.0050</b>	0.010	0.0191	0.05	0.0561	<b><u>112</u></b>
Phosphate	<b>0.0135</b>	0.030	0.0415	0.10	0.1216	<b><u>122</u></b>
Sulfate	<b>0.0229</b>	0.050	0.3682	0.50	0.6549	<b><u>131</u></b>



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CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

# SM 4500-NO3F



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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# Wet Chemistry Technical Batch Review Checklist (ARCUS02)

## ASSET LABORATORIES - LAS VEGAS

### FIRST LEVEL REVIEW:

QC Batch Number:                     R127567                     Analyst:                     QBM                    

ASSET #:                     N031976                     Date Analyzed:                     9/12/2018                    

Method:           4500\_N03          

Initial Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis or every 24 hrs.	X					
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)	X					
3. ICV within ± 15% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.	X					
5. CCV within ± 15% of expected value.	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)	X					
<b>Sample Information</b>						
8. All samples are within linear range.	X					
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

### Comments:

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### SECOND LEVEL REVIEW:

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer                     QBM                    

Date:                     9/20/18                    

2nd Level Reviewer                     *Norrey* 9/20/2018                    

Date:                     \_\_\_\_\_



## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R127648

Analyst: QBM

ASSET #: N031976, N032065

Date Analyzed: 9/17/2018

Method: 4500\_N03

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.	X					
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X					
3. ICV within ± 15% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.	X					
5. CCV within ± 15% of expected value.	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)	X					
<b>Sample Information</b>						
8. All samples are within linear range.	X					
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			I
14. Runlog complete and included in package.	X			I		
15. Spectrophotometer tape included (Spec work only)			X			I
16. Digestion log complete and included in package (if applicable)			X			I
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer QBM

Date: 9/20/18

2nd Level Reviewer *Nancy* 9/20/2018

Date: —

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 4500N03F  
**TEST NAME:** Nitrate/Nitrite-N by Automated Cadmium Reduction  
**MATRIX:** Groundwater

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

$$\text{Nitrate/Nitrite-N, mg/L} = A * DF$$

where:

A = mg/L, instrument calculated concentration  
DF = dilution factor

For: **N031976-002C**

The concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{Nitrate/Nitrite-N} &= 0.5437 * 5 \\ &= 2.7185 \text{ mg/L} \end{aligned}$$

Reporting result in two significant figures,

$$\text{Nitrate/Nitrite-N} = 2.7 \text{ mg/L}$$

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## EPA 353.2 NO3 as N (NO3CD) - Endpoint

## General setup

Measuring unit	ppm
Number of decimals	4
Stabilization time (sec)	26
Measurement time (sec)	3
Sample volume (µl)	450
Filter	546
Reagent prime	No
CD Reduction	Yes

## Limits and dilution

Low level	-0.2
High level	4
Max linearity	4
Blank min	0
Blank max	0.049
Postdilution factor %	10
Factor Calculations	No

## Washes

Number of final washes	6
Wash every	R1, R2

## O.D. Corrections

Carry Over	No
Carry Over value	0.0000
Blank	No
Gain	No

## Reagents

N.	Volume (µl)	Incubation time (sec)
1	200	102
2	300	663
3	0	0

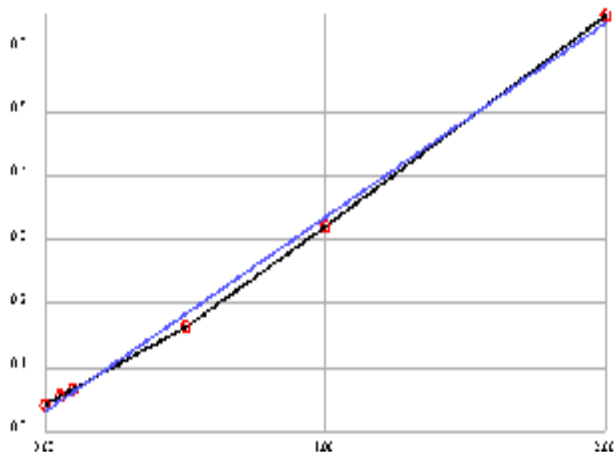
## QC

N.	Value	Tolerance
1	1	0.1

## Calibration

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	$y = 0.3036x + 0.0321$
Correlation	.998394



Calibrant	Energy	Set	Conc
1	0.0406	0.0000	0.0279
2	0.0561	0.0500	0.0790
3	0.0675	0.1000	0.1165
4	0.1649	0.5000	0.4373
5	0.3207	1.0000	0.9504
6	0.6512	2.0000	2.0389

Notes:



## EPA 353.2 NO3 as N (NO3CD) - Endpoint

## General setup

Measuring unit	ppm
Number of decimals	4
Stabilization time (sec)	26
Measurement time (sec)	3
Sample volume (µl)	450
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Reagent prime	No
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High level	4
Max linearity	4
Blank min	0
Blank max	0.049
Postdilution factor %	10
Factor Calculations	No

## Washes

Number of final washes	6
Wash every	R1, R2

## O.D. Corrections

Carry Over	No
Carry Over value	0.0000
Blank	No
Gain	No

## Reagents

N.	Volume (µl)	Incubation time (sec)
1	200	102
2	300	663
3	0	0

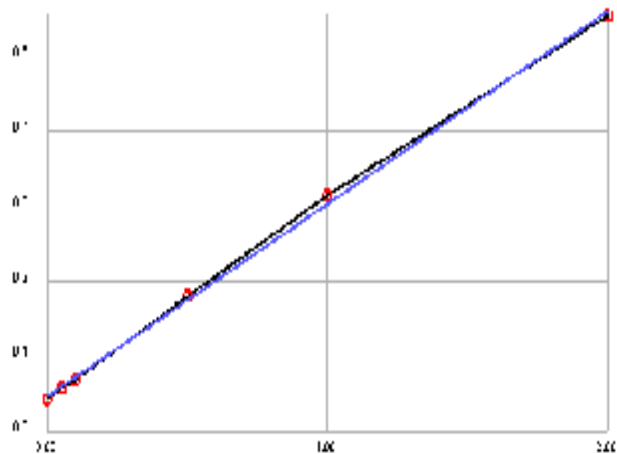
## QC

N.	Value	Tolerance
1	1	0.1

## Calibration

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	$y = 0.2565x + 0.0468$
Correlation	.999436



Calibrant	Energy	Set	Conc
1	0.0429	0.0000	-0.0150
2	0.0581	0.0500	0.0442
3	0.0678	0.1000	0.0820
4	0.1809	0.5000	0.5230
5	0.3138	1.0000	1.0411
6	0.5533	2.0000	1.9748

Notes:

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127567</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127567</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/12/2018</b>	SeqNo: <b>3138745</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.454	0.050	0.5000	0	90.8	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127567</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127567</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/12/2018</b>	SeqNo: <b>3138756</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.459	0.050	0.5000	0	91.8	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 4500N03F\_W**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141094</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.516	0.050	0.5000	0	103	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141117</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.500	0.050	0.5000	0	99.9	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141127</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.507	0.050	0.5000	0	101	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# INITIAL CALIBRATION AND CONTINUING CALIBRATION BLANK SUMMARY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127567</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R127567</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/12/2018</b>	SeqNo: <b>3138746</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N                      0.045              0.050

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127567</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127567</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/12/2018</b>	SeqNo: <b>3138757</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Nitrate/Nitrite as N                      0.047              0.050

ICB & CCB has detect > 1/2 RL , however, reported samples are >10x the ICB/CCB detection.

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

*Handwritten signature* 9/20/2018 **293**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N031976  
**Project:** PG&E Topock - PMP

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 4500N03F\_W**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>
Client ID: <b>ICB</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141095</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N                      ND              0.050

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141118</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N                      ND              0.050

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141128</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Nitrate/Nitrite as N                      ND              0.050

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGISTS

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Advanced Technology Laboratories, Inc.

3151 W. Post Rd.  
Las Vegas, NV. 89118  
702-307-2659  
702-307-2691  
[www.atl-labs.com](http://www.atl-labs.com)

Time start: 09-12-2018 16:01

Time end: 09-12-2018 17:36

		EPA 353.2 NO3 as N		
		ppm	Flags	OD
1	<BLANK>	17:17:13	0.0328	0.0421
2	<BLANK>	17:18:13	0.0282	0.0407
3	<CAL1>	17:19:07	0.0279 [0]	0.0406
4	<CAL2>	17:20:08	0.0790 [0.05]	0.0561
5	<CAL3>	17:20:52	0.1165 [0.1]	0.0675
6	<CAL4>	17:21:40	0.4373 [0.5]	0.1649
7	<CAL5>	17:22:23	0.9504 [1]	0.3207
8	<CAL6>	17:23:12	2.0389 [2]	0.6512
9	,BLANK,BLANK,1, <b>NOT REPORTED</b>	17:23:54	0.0885	0.0590
10	,ICV,ICV,1,	17:24:37	0.4538	0.1699
11	,ICB,ICB,1,	17:25:25	0.0450	0.0458
12	,MB-H2O,MBLK,1,	17:26:09	0.0302	0.0413
13	,LCS-H2O,LCS,1,	17:26:57	0.4758	0.1766
NR	14 ,N031976-001C,SAMP,1,	17:27:40	0.0658	0.0521
	15 ,N031980-002A,SAMP,1,	17:28:22	0.4366	0.1647
	16 ,N031976-002C,SAMP,5,	17:29:11	0.5437	0.1972
	17 ,N031976-002CDUP,DUP,5,	17:29:55	0.5335	0.1941
	18 ,N031947-002D,SAMP,5,	17:30:37	0.5410	0.1964
	19 ,N031947-002DMS,MS,5,	17:31:26	0.9702	0.3267
	20 ,N031947-002DMSD,MSD,5,	17:32:08	1.0466	0.3499
	21 ,BLANK, <b>NOT REPORTED</b>	17:32:51	0.0724	0.0541
	22 ,CCV-1,CCV,1,	17:33:39	0.4590	0.1715
	23 ,CCB-1,CCB,1,	17:34:23	0.0467	0.0463

Nitrate/Nitrite as N by Cadmium Reduction Preparation and Runlog

**Matrix:**

Method: SM 4500-NO3-F/ EPA 353.2

Instrument: Easy Chem Analyzer

Date Analyzed: 9/12/2018

Time Analyzed: 4:01 PM

Analyzed By: QBM

Reagent ID #

Ammonium Chloride reagent/Buffer: R180904B

Color reagent: R180904C

2% Copper Sulfate: R180904A

Ammonium Hydroxide: CINV-180703A

Sample ID.	Sample Wt./Vol.	Sample pH	Std Code	Spike Amt Added (mL)	Spike Conc.(PPM)	Final Volume (mL)	Dilution (F/I)	Reading & Calculations (mg/L)	Comments
N031947-002D		8.88							
N031976-001C		7.49							
N031976-002C		6.41							
N031980-002A		8.35							

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Las Vegas, NV. 89118  
702-307-2659  
702-307-2691  
[www.atl-labs.com](http://www.atl-labs.com)

Time start: 09-17-2018 16:26

Time end: 09-17-2018 18:39

			EPA 353.2 NO3 as N	
			ppm	Flags
1	<BLANK>	18:09:59	-0.0115	0.0438
2	<BLANK>	18:10:54	-0.0197	0.0417
3	<CAL1>	18:11:48	-0.0150 [0]	0.0429
4	<CAL2>	18:12:49	0.0442 [0.05]	0.0581
5	<CAL3>	18:13:45	0.0820 [0.1]	0.0678
6	<CAL4>	18:14:46	0.5230 [0.5]	0.1809
7	<CAL5>	18:15:40	1.0411 [1]	0.3138
8	<CAL6>	18:16:36	1.9748 [2]	0.5533
9	,BLANK,BLANK,1, <b>NOT REPORTED</b>	18:17:31	0.0824	0.0679
10	,ICV,ICV,1,	18:18:31	0.5159	0.1791
11	,ICB,ICB,1,	18:19:26	0.0080	0.0488
12	,MB-H2O,MBLK,1,	18:20:28	-0.0119	0.0437
13	,LCS-H2O,LCS,1,	18:21:23	0.5654	0.1918
14	,N031976-001C,SAMP,1,	18:22:17	0.0239	0.0529
15	,N032065-003E,SAMP,1,	18:23:19	0.3479	0.1360
16	,N032065-005E,SAMP,1,	18:24:02	0.4465	0.1613
17	,N032065-005EDUP,DUP,1,	18:24:50	0.5042	0.1761
18	,N032065-004E,SAMP,1,	18:25:34	0.4076	0.1513
19	,N032065-004EMS,MS,1,	18:26:22	0.9339	0.2863
20	,N032065-004EMSD,MSD,1,	18:27:05	0.9662	0.2946
21	,BLANK, <b>NOT REPORTED</b>	18:27:53	0.0177	0.0513
22	,CCV-1,CCV,1,	18:28:37	0.4996	0.1749
23	,CCB-1,CCB,1,	18:29:20	0.0029	0.0475
24	,N032065-006E,SAMP,1,	18:30:08	0.4387	0.1593
25	,N032065-007E,SAMP,1,	18:30:51	0.3963	0.1484
26	,N032065-008E,SAMP,1,	18:31:33	0.3697	0.1416

			EPA 353.2 NO3 as N	
			ppm	Flags
27	,N032065-009E,SAMP,1,	18:32:23	0.3573	0.1384
28	,N032065-010E,SAMP,1,	18:33:05	0.3791	0.1440
29	,N032065-013E,SAMP,1,	18:33:48	0.3713	0.1420
30	,N032065-014E,SAMP,1,	18:34:38	0.4107	0.1521
31	,N032065-015E,SAMP,1,	18:35:20	0.3830	0.1450
32	,BLANK, <b>NOT REPORTED</b>	18:36:03	-0.0037	0.0458
33	,CCV-2,CCV,1,	18:36:51	0.5074	0.1769
34	,CCB-2,CCB,1,	18:37:34	-0.0057	0.0453

Nitrate/Nitrite as N by Cadmium Reduction Preparation and Runlog

**Matrix:**

Method: SM 4500-NO3-F/ EPA 353.2

Instrument: Easy Chem Analyzer

Date Analyzed: 9/17/2018

Time Analyzed: 4:26 PM

Analyzed By: QBM

Reagent ID #

Ammonium Chloride reagent/Buffer: R180904B

Color reagent: R180904C

2% Copper Sulfate: R180904A

Ammonium Hydroxide: CINV-180703A

Sample ID.	Sample Wt./Vol.	Sample pH	Std Code	Spike Amt Added (mL)	Spike Conc.(PPM)	Final Volume (mL)	Dilution (F/I)	Reading & Calculations (mg/L)	Comments
N031976-001C		7.35							
N032065-003E		7.1							
N032065-004E		8.07							
N032065-005E		7.78							
N032065-006E		6.06							
N032065-007E		6.72							
N032065-008E		7.24							
N032065-009E		8.18							
N032065-010E		6.67							
N032065-013E		7.29							
N032065-014E		6.67							
N032065-015E		7.71							

# MDL STUDY



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## METHOD DETECTION LIMIT 2017

Method Name: **Nitrate/Nitrite by Cadmium Reduction**  
 Method Number: SM4500NO3F  
 Analysis Date(s): 10/25,2017, 10/26/2017, 10/27/2017  
 Analyst/Technician: Quennie B. Manimtim

Matrix: **Water**  
 Unit: mg/L  
 Spike Conc: 0.05 mg/L

Analyte	#1	#2	#3	#4	#5	#6	#7	Ave	SD	t <sub>(n-1)</sub> value	MDL	PQL
Nitrate/Nitrite as N	0.0573	0.0562	0.0500	0.0730	0.0698	0.0637	0.0564	0.0609	0.0082	3.143	0.0259	0.05
<b>Method Blank</b>												
Nitrate/Nitrite as N	0.0160	0.0067	0.0064	0.0204	0.0173	0.0036	0.0083	0.0112	0.0065	3.143	0.0317	0.05
<b>MDL:</b>	<b>0.0317</b>	<b>mg/L</b>										



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September 27, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032065

RE: PG&E Topock - RMP, RC000753.0801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 12, 2018 by ASSET Laboratories .  
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in  
accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,



Quennie Manimtim  
Laboratory Director

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its entirety without written permission from the client and Advanced Technology Laboratories - Las Vegas.



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---

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab Order:** N032065

---

**CASE NARRATIVE**

**SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time except for pH. pH testing is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

Samples N032065-001(AmbientBlank-1-Q318) and N032065-002 (AmbientBlank-2-Q318) were not analyzed as per COC.

**Analytical Comments for EPA 6020\_Dissolved:**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Barium in QC samples N032065-003B-MS and N032065-003B-MSD since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.



**ASSET Laboratories**

Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab Order:** N032065  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032065-001A	AmbientBlank-1-Q318	Groundwater	9/12/2018 9:00:00 AM	9/12/2018	9/27/2018
N032065-002A	AmbientBlank-2-Q318	Groundwater	9/12/2018 1:20:00 PM	9/12/2018	9/27/2018
N032065-003A	C-R22A-D-Q318	Groundwater	9/12/2018 11:00:00 AM	9/12/2018	9/27/2018
N032065-003B	C-R22A-D-Q318	Groundwater	9/12/2018 11:00:00 AM	9/12/2018	9/27/2018
N032065-003C	C-R22A-D-Q318	Groundwater	9/12/2018 11:00:00 AM	9/12/2018	9/27/2018
N032065-003D	C-R22A-D-Q318	Groundwater	9/12/2018 11:00:00 AM	9/12/2018	9/27/2018
N032065-003E	C-R22A-D-Q318	Groundwater	9/12/2018 11:00:00 AM	9/12/2018	9/27/2018
N032065-004A	C-R22A-S-Q318	Groundwater	9/12/2018 11:15:00 AM	9/12/2018	9/27/2018
N032065-004B	C-R22A-S-Q318	Groundwater	9/12/2018 11:15:00 AM	9/12/2018	9/27/2018
N032065-004C	C-R22A-S-Q318	Groundwater	9/12/2018 11:15:00 AM	9/12/2018	9/27/2018
N032065-004D	C-R22A-S-Q318	Groundwater	9/12/2018 11:15:00 AM	9/12/2018	9/27/2018
N032065-004E	C-R22A-S-Q318	Groundwater	9/12/2018 11:15:00 AM	9/12/2018	9/27/2018
N032065-005A	C-R27-D-Q318	Groundwater	9/12/2018 12:15:00 PM	9/12/2018	9/27/2018
N032065-005B	C-R27-D-Q318	Groundwater	9/12/2018 12:15:00 PM	9/12/2018	9/27/2018
N032065-005C	C-R27-D-Q318	Groundwater	9/12/2018 12:15:00 PM	9/12/2018	9/27/2018
N032065-005D	C-R27-D-Q318	Groundwater	9/12/2018 12:15:00 PM	9/12/2018	9/27/2018
N032065-005E	C-R27-D-Q318	Groundwater	9/12/2018 12:15:00 PM	9/12/2018	9/27/2018
N032065-006A	C-R27-S-Q318	Groundwater	9/12/2018 12:35:00 PM	9/12/2018	9/27/2018
N032065-006B	C-R27-S-Q318	Groundwater	9/12/2018 12:35:00 PM	9/12/2018	9/27/2018
N032065-006C	C-R27-S-Q318	Groundwater	9/12/2018 12:35:00 PM	9/12/2018	9/27/2018
N032065-006D	C-R27-S-Q318	Groundwater	9/12/2018 12:35:00 PM	9/12/2018	9/27/2018
N032065-006E	C-R27-S-Q318	Groundwater	9/12/2018 12:35:00 PM	9/12/2018	9/27/2018
N032065-007A	C-TAZ-D-Q318	Groundwater	9/12/2018 8:50:00 AM	9/12/2018	9/27/2018
N032065-007B	C-TAZ-D-Q318	Groundwater	9/12/2018 8:50:00 AM	9/12/2018	9/27/2018
N032065-007C	C-TAZ-D-Q318	Groundwater	9/12/2018 8:50:00 AM	9/12/2018	9/27/2018
N032065-007D	C-TAZ-D-Q318	Groundwater	9/12/2018 8:50:00 AM	9/12/2018	9/27/2018
N032065-007E	C-TAZ-D-Q318	Groundwater	9/12/2018 8:50:00 AM	9/12/2018	9/27/2018
N032065-008A	C-TAZ-S-Q318	Groundwater	9/12/2018 9:15:00 AM	9/12/2018	9/27/2018
N032065-008B	C-TAZ-S-Q318	Groundwater	9/12/2018 9:15:00 AM	9/12/2018	9/27/2018



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab Order:** N032065  
**Contract No:**

## Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032065-008C	C-TAZ-S-Q318	Groundwater	9/12/2018 9:15:00 AM	9/12/2018	9/27/2018
N032065-008D	C-TAZ-S-Q318	Groundwater	9/12/2018 9:15:00 AM	9/12/2018	9/27/2018
N032065-008E	C-TAZ-S-Q318	Groundwater	9/12/2018 9:15:00 AM	9/12/2018	9/27/2018
N032065-009A	R-28-Q318	Groundwater	9/12/2018 1:10:00 PM	9/12/2018	9/27/2018
N032065-009B	R-28-Q318	Groundwater	9/12/2018 1:10:00 PM	9/12/2018	9/27/2018
N032065-009C	R-28-Q318	Groundwater	9/12/2018 1:10:00 PM	9/12/2018	9/27/2018
N032065-009D	R-28-Q318	Groundwater	9/12/2018 1:10:00 PM	9/12/2018	9/27/2018
N032065-009E	R-28-Q318	Groundwater	9/12/2018 1:10:00 PM	9/12/2018	9/27/2018
N032065-010A	R63-Q318	Groundwater	9/12/2018 10:35:00 AM	9/12/2018	9/27/2018
N032065-010B	R63-Q318	Groundwater	9/12/2018 10:35:00 AM	9/12/2018	9/27/2018
N032065-010C	R63-Q318	Groundwater	9/12/2018 10:35:00 AM	9/12/2018	9/27/2018
N032065-010D	R63-Q318	Groundwater	9/12/2018 10:35:00 AM	9/12/2018	9/27/2018
N032065-010E	R63-Q318	Groundwater	9/12/2018 10:35:00 AM	9/12/2018	9/27/2018
N032065-011A	SW1-Q318	Groundwater	9/12/2018 2:40:00 PM	9/12/2018	9/27/2018
N032065-011B	SW1-Q318	Groundwater	9/12/2018 2:40:00 PM	9/12/2018	9/27/2018
N032065-011C	SW1-Q318	Groundwater	9/12/2018 2:40:00 PM	9/12/2018	9/27/2018
N032065-012A	SW2-Q318	Groundwater	9/12/2018 3:00:00 PM	9/12/2018	9/27/2018
N032065-012B	SW2-Q318	Groundwater	9/12/2018 3:00:00 PM	9/12/2018	9/27/2018
N032065-012C	SW2-Q318	Groundwater	9/12/2018 3:00:00 PM	9/12/2018	9/27/2018
N032065-013A	C-BNS-Q318	Groundwater	9/12/2018 11:50:00 AM	9/12/2018	9/27/2018
N032065-013B	C-BNS-Q318	Groundwater	9/12/2018 11:50:00 AM	9/12/2018	9/27/2018
N032065-013C	C-BNS-Q318	Groundwater	9/12/2018 11:50:00 AM	9/12/2018	9/27/2018
N032065-013D	C-BNS-Q318	Groundwater	9/12/2018 11:50:00 AM	9/12/2018	9/27/2018
N032065-013E	C-BNS-Q318	Groundwater	9/12/2018 11:50:00 AM	9/12/2018	9/27/2018
N032065-014A	C-I-3-D-Q318	Groundwater	9/12/2018 9:50:00 AM	9/12/2018	9/27/2018
N032065-014B	C-I-3-D-Q318	Groundwater	9/12/2018 9:50:00 AM	9/12/2018	9/27/2018
N032065-014C	C-I-3-D-Q318	Groundwater	9/12/2018 9:50:00 AM	9/12/2018	9/27/2018
N032065-014D	C-I-3-D-Q318	Groundwater	9/12/2018 9:50:00 AM	9/12/2018	9/27/2018
N032065-014E	C-I-3-D-Q318	Groundwater	9/12/2018 9:50:00 AM	9/12/2018	9/27/2018
N032065-015A	C-I-3-S-Q318	Groundwater	9/12/2018 10:10:00 AM	9/12/2018	9/27/2018



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab Order:** N032065  
**Contract No:**

## Work Order Sample Summary

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Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032065-015B	C-I-3-S-Q318	Groundwater	9/12/2018 10:10:00 AM	9/12/2018	9/27/2018
N032065-015C	C-I-3-S-Q318	Groundwater	9/12/2018 10:10:00 AM	9/12/2018	9/27/2018
N032065-015D	C-I-3-S-Q318	Groundwater	9/12/2018 10:10:00 AM	9/12/2018	9/27/2018
N032065-015E	C-I-3-S-Q318	Groundwater	9/12/2018 10:10:00 AM	9/12/2018	9/27/2018



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-003

**Client Sample ID:** C-R22A-D-Q318  
**Collection Date:** 9/12/2018 11:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	860	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-004

**Client Sample ID:** C-R22A-S-Q318  
**Collection Date:** 9/12/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

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Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	870	0.10	0.10	umhos/cm	1		9/13/2018 10:40 AM

---

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-005

**Client Sample ID:** C-R27-D-Q318  
**Collection Date:** 9/12/2018 12:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>			PrepDate		Analyst: <b>LR</b>
Specific Conductance	870	0.10	0.10	umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-006

**Client Sample ID:** C-R27-S-Q318  
**Collection Date:** 9/12/2018 12:35:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	880	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-007

**Client Sample ID:** C-TAZ-D-Q318  
**Collection Date:** 9/12/2018 8:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	880	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-008

**Client Sample ID:** C-TAZ-S-Q318  
**Collection Date:** 9/12/2018 9:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	880	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-009

**Client Sample ID:** R-28-Q318  
**Collection Date:** 9/12/2018 1:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	880	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-010

**Client Sample ID:** R63-Q318  
**Collection Date:** 9/12/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

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Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	880	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

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**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-011

**Client Sample ID:** SW1-Q318  
**Collection Date:** 9/12/2018 2:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	910	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-012

**Client Sample ID:** SW2-Q318  
**Collection Date:** 9/12/2018 3:00:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	910	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-013

**Client Sample ID:** C-BNS-Q318  
**Collection Date:** 9/12/2018 11:50:00 AM  
**Matrix:** GROUNDWATER

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Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	880	0.10	0.10	umhos/cm	1		9/13/2018 10:40 AM

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**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-014

**Client Sample ID:** C-I-3-D-Q318  
**Collection Date:** 9/12/2018 9:50:00 AM  
**Matrix:** GROUNDWATER

<b>Analyses</b>	<b>Result</b>	<b>MDL</b>	<b>PQL</b>	<b>Qual</b>	<b>Units</b>	<b>DF</b>	<b>Date Analyzed</b>
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

<b>RunID: NV00922-WC_180913B</b>	<b>QC Batch: R127586</b>				<b>PrepDate</b>		<b>Analyst: LR</b>
Specific Conductance	880	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-015

**Client Sample ID:** C-I-3-S-Q318  
**Collection Date:** 9/12/2018 10:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	890	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID <b>N032065-006DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>120.1_WPGE</b>	Units: <b>umhos/cm</b>	Prep Date:	RunNo: <b>127586</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127586</b>	TestNo: <b>EPA 120.1</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139299</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	880.000	0.10						875.0	0.570		2

Sample ID <b>N032065-013DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>120.1_WPGE</b>	Units: <b>umhos/cm</b>	Prep Date:	RunNo: <b>127586</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127586</b>	TestNo: <b>EPA 120.1</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139307</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	889.000	0.10						884.0	0.564		2

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- E Value above quantitation range
- R RPD outside accepted recovery limits
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-003

**Client Sample ID:** C-R22A-D-Q318  
**Collection Date:** 9/12/2018 11:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	8.0	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-004

**Client Sample ID:** C-R22A-S-Q318  
**Collection Date:** 9/12/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	8.0	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-005

**Client Sample ID:** C-R27-D-Q318  
**Collection Date:** 9/12/2018 12:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	8.0	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-006

**Client Sample ID:** C-R27-S-Q318  
**Collection Date:** 9/12/2018 12:35:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: NV00922-WC_180913C	QC Batch: R127589	PrepDate	Analyst: LR				
pH	7.9	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-007

**Client Sample ID:** C-TAZ-D-Q318  
**Collection Date:** 9/12/2018 8:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	7.9	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-008

**Client Sample ID:** C-TAZ-S-Q318  
**Collection Date:** 9/12/2018 9:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	7.6	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-009

**Client Sample ID:** R-28-Q318  
**Collection Date:** 9/12/2018 1:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	8.0	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-010

**Client Sample ID:** R63-Q318  
**Collection Date:** 9/12/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: NV00922-WC_180913C	QC Batch: R127589	PrepDate	Analyst: LR				
pH	7.9	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-011

**Client Sample ID:** SW1-Q318  
**Collection Date:** 9/12/2018 2:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	7.7	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-012

**Client Sample ID:** SW2-Q318  
**Collection Date:** 9/12/2018 3:00:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	7.6	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-013

**Client Sample ID:** C-BNS-Q318  
**Collection Date:** 9/12/2018 11:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: NV00922-WC_180913C	QC Batch: R127589				PrepDate	Analyst: LR	
pH	7.9	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-014

**Client Sample ID:** C-I-3-D-Q318  
**Collection Date:** 9/12/2018 9:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	7.9	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-015

**Client Sample ID:** C-I-3-S-Q318  
**Collection Date:** 9/12/2018 10:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	7.9	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 150.1\_4500H+B\_W**

Sample ID <b>N032065-003DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>150.1_4500H</b>	Units: <b>pH Units</b>	Prep Date:	RunNo: <b>127589</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127589</b>	TestNo: <b>SM4500-H+B</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139351</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.010	0.10						7.990	0.250	10	H
Temp. at time of pH Analysis	25.000	0.10						25.00	0	10	H

Sample ID <b>N032065-015DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>150.1_4500H</b>	Units: <b>pH Units</b>	Prep Date:	RunNo: <b>127589</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127589</b>	TestNo: <b>SM4500-H+B</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139364</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.930	0.10						7.900	0.379	10	H
Temp. at time of pH Analysis	25.000	0.10						25.00	0	10	H

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-003

**Client Sample ID:** C-R22A-D-Q318  
**Collection Date:** 9/12/2018 11:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-004

**Client Sample ID:** C-R22A-S-Q318  
**Collection Date:** 9/12/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-005

**Client Sample ID:** C-R27-D-Q318  
**Collection Date:** 9/12/2018 12:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-006

**Client Sample ID:** C-R27-S-Q318  
**Collection Date:** 9/12/2018 12:35:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-007

**Client Sample ID:** C-TAZ-D-Q318  
**Collection Date:** 9/12/2018 8:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-008

**Client Sample ID:** C-TAZ-S-Q318  
**Collection Date:** 9/12/2018 9:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-009

**Client Sample ID:** R-28-Q318  
**Collection Date:** 9/12/2018 1:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-010

**Client Sample ID:** R63-Q318  
**Collection Date:** 9/12/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-013

**Client Sample ID:** C-BNS-Q318  
**Collection Date:** 9/12/2018 11:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>	
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-014

**Client Sample ID:** C-I-3-D-Q318  
**Collection Date:** 9/12/2018 9:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>	
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-015

**Client Sample ID:** C-I-3-S-Q318  
**Collection Date:** 9/12/2018 10:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 160.2\_2540D\_W**

Sample ID	<b>LCS-70638</b>	SampType:	<b>LCS</b>	TestCode:	<b>160.2_2540D</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/14/2018</b>	RunNo:	<b>127612</b>											
Client ID:	<b>LCSW</b>	Batch ID:	<b>70638</b>	TestNo:	<b>SM2540D</b>			Analysis Date:	<b>9/14/2018</b>	SeqNo:	<b>3140073</b>											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual
Suspended Solids (Residue, Non-Filter		932.000		10		1000		0		93.2		80		120								

Sample ID	<b>MB-70638</b>	SampType:	<b>MBLK</b>	TestCode:	<b>160.2_2540D</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/14/2018</b>	RunNo:	<b>127612</b>											
Client ID:	<b>PBW</b>	Batch ID:	<b>70638</b>	TestNo:	<b>SM2540D</b>			Analysis Date:	<b>9/14/2018</b>	SeqNo:	<b>3140074</b>											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual
Suspended Solids (Residue, Non-Filter		ND		10																		

Sample ID	<b>N032065-003DDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>160.2_2540D</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/14/2018</b>	RunNo:	<b>127612</b>											
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>70638</b>	TestNo:	<b>SM2540D</b>			Analysis Date:	<b>9/14/2018</b>	SeqNo:	<b>3140076</b>											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual
Suspended Solids (Residue, Non-Filter		ND		10												0		0		5		

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 160.2\_2540D\_W**

Sample ID <b>LCS-70639</b>	SampType: <b>LCS</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/14/2018</b>	RunNo: <b>127613</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70639</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3140060</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Suspended Solids (Residue, Non-Filter)	962.000	10	1000	0	96.2	80	120				
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Sample ID <b>MB-70639</b>	SampType: <b>MBLK</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/14/2018</b>	RunNo: <b>127613</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70639</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3140061</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Suspended Solids (Residue, Non-Filter)	ND	10									
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Sample ID <b>N032084-001DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/14/2018</b>	RunNo: <b>127613</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70639</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3140064</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Suspended Solids (Residue, Non-Filter)	ND	10						0	0	5	
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-003

**Client Sample ID:** C-R22A-D-Q318  
**Collection Date:** 9/12/2018 11:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_180913A	QC Batch: R127606				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 11:34 AM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_180918B	QC Batch: 70627				PrepDate	9/13/2018	Analyst: CEI
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 01:13 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-004

**Client Sample ID:** C-R22A-S-Q318  
**Collection Date:** 9/12/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_180913A	QC Batch: R127606				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 11:52 AM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_180918B	QC Batch: 70627				PrepDate	9/13/2018	Analyst: CEI
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 01:41 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-005

**Client Sample ID:** C-R27-D-Q318  
**Collection Date:** 9/12/2018 12:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180913A</b>	QC Batch: <b>R127606</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 12:30 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 01:47 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-006

**Client Sample ID:** C-R27-S-Q318  
**Collection Date:** 9/12/2018 12:35:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180913A</b>	QC Batch: <b>R127606</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 12:49 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 01:52 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-007

**Client Sample ID:** C-TAZ-D-Q318  
**Collection Date:** 9/12/2018 8:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180913A</b>	QC Batch: <b>R127606</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 01:10 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:11 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-008

**Client Sample ID:** C-TAZ-S-Q318  
**Collection Date:** 9/12/2018 9:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180913B</b>	QC Batch: <b>R127607</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 07:26 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:15 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-009

**Client Sample ID:** R-28-Q318  
**Collection Date:** 9/12/2018 1:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180913B</b>	QC Batch: <b>R127607</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 08:22 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:21 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-010

**Client Sample ID:** R63-Q318  
**Collection Date:** 9/12/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180913B</b>	QC Batch: <b>R127607</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 09:00 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:26 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-011

**Client Sample ID:** SW1-Q318  
**Collection Date:** 9/12/2018 2:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_180913B	QC Batch: R127607				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 07:54 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_180918B	QC Batch: 70627				PrepDate	9/13/2018	Analyst: CEI
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:31 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-012

**Client Sample ID:** SW2-Q318  
**Collection Date:** 9/12/2018 3:00:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_180913B	QC Batch: R127607				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 09:19 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_180918B	QC Batch: 70627				PrepDate	9/13/2018	Analyst: CEI
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:37 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-013

**Client Sample ID:** C-BNS-Q318  
**Collection Date:** 9/12/2018 11:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180913B</b>	QC Batch: <b>R127607</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 09:38 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:42 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-014

**Client Sample ID:** C-I-3-D-Q318  
**Collection Date:** 9/12/2018 9:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_180913B	QC Batch: R127607				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 09:57 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_180918B	QC Batch: 70627				PrepDate	9/13/2018	Analyst: CEI
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:48 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-015

**Client Sample ID:** C-I-3-S-Q318  
**Collection Date:** 9/12/2018 10:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180913B</b>	QC Batch: <b>R127607</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 10:16 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:53 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>MB-R127606</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>
Client ID: <b>PBW</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139834</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>LCS-R127606</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139835</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.175	0.20	5.000	0	103 90 110

Sample ID <b>N032065-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139837</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	1.076	0.20	1.000	0.08260	99.3 90 110

Sample ID <b>N032065-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139839</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	1.050	0.20	1.000	0.07720	97.2 90 110

Sample ID <b>N032065-005AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139843</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	1.077	0.20	1.000	0.06510	101 90 110

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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3151 W. Post Rd., Las Vegas, NV 89118  
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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032065-006AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139845</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.085	0.20	1.000	0.06330	102	90	110				

Sample ID <b>N032065-007AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139847</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.083	0.20	1.000	0.07220	101	90	110				

Sample ID <b>N032065-003AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139858</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.091	0.20	1.000	0.08260	101	90	110	1.076	1.41	20	

Sample ID <b>N032071-001ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139859</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	16153.600	400						16300	0.884	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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EPA ID CA01638

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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID: <b>LCS-R127607</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139874</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.233	0.20	5.000	0	105	90	110				

Sample ID: <b>MB-R127607</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139875</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: <b>N032065-008AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139877</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.070	0.20	1.000	0.08030	99.0	90	110				

Sample ID: <b>N032065-008AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139878</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.024	0.20	1.000	0.08030	94.3	90	110	1.070	4.48	20	

Sample ID: <b>N032065-011AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139880</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.121	0.20	1.000	0.1270	99.4	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CALIFORNIA** | P: 562.219.7435 F: 562.219.7436  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032065-011ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139881</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.129	0.20						0.1270	0	20	

Sample ID <b>N032065-009AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139883</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.094	0.20	1.000	0.1056	98.9	90	110				

Sample ID <b>N032065-010AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139887</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.071	0.20	1.000	0.07740	99.3	90	110				

Sample ID <b>N032065-012AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139889</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.157	0.20	1.000	0.1018	106	90	110				

Sample ID <b>N032065-013AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139891</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.074	0.20	1.000	0.08050	99.4	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032065-014AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139893</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.095	0.20	1.000	0.08550	101	90	110				

Sample ID <b>N032065-015AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139895</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.107	0.20	1.000	0.07680	103	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>MB-70627</b>	SampType: <b>MBLK</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145776</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>LCS-70627</b>	SampType: <b>LCS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145777</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	10.150	1.0	10.00	0	101	85	115				
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Sample ID <b>N032065-003B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145781</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	9.759	1.0	10.00	0	97.6	75	125				
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Sample ID <b>N032065-003B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145782</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	9.547	1.0	10.00	0	95.5	75	125	9.759	2.20	20	
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-003

**Client Sample ID:** C-R22A-D-Q318  
**Collection Date:** 9/12/2018 11:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.35	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	C-R22A-S-Q318
<b>Lab Order:</b>	N032065	<b>Collection Date:</b>	9/12/2018 11:15:00 AM
<b>Project:</b>	PG&E Topock - RMP, RC000753.0801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032065-004		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.41	0.032	0.050	mg/L	1		9/17/2018

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-005

**Client Sample ID:** C-R27-D-Q318  
**Collection Date:** 9/12/2018 12:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.45	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-006

**Client Sample ID:** C-R27-S-Q318  
**Collection Date:** 9/12/2018 12:35:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.44	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-007

**Client Sample ID:** C-TAZ-D-Q318  
**Collection Date:** 9/12/2018 8:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.40	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-008

**Client Sample ID:** C-TAZ-S-Q318  
**Collection Date:** 9/12/2018 9:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.37	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-009

**Client Sample ID:** R-28-Q318  
**Collection Date:** 9/12/2018 1:10:00 PM  
**Matrix:** GROUNDWATER

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Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.36	0.032	0.050		mg/L	1	9/17/2018

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**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-010

**Client Sample ID:** R63-Q318  
**Collection Date:** 9/12/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.38	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-013

**Client Sample ID:** C-BNS-Q318  
**Collection Date:** 9/12/2018 11:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.37	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-014

**Client Sample ID:** C-I-3-D-Q318  
**Collection Date:** 9/12/2018 9:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.41	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	C-I-3-S-Q318
<b>Lab Order:</b>	N032065	<b>Collection Date:</b>	9/12/2018 10:10:00 AM
<b>Project:</b>	PG&E Topock - RMP, RC000753.0801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032065-015		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.38	0.032	0.050	mg/L	1		9/17/2018

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R127648</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>
Client ID: <b>PBW</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141096</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R127648</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141097</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.565	0.050	0.5000	0	113 85 115

Sample ID <b>N032065-005EDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141101</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.504	0.050			0.4465 12.1 20

Sample ID <b>N032065-004EMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141103</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.934	0.050	0.5000	0.4076	105 75 125

Sample ID <b>N032065-004EMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141104</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.966	0.050	0.5000	0.4076	112 75 125 0.9339 3.40 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-003

**Client Sample ID:** C-R22A-D-Q318  
**Collection Date:** 9/12/2018 11:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70629			PrepDate	9/13/2018		Analyst: CEI
Iron	23	18	20		ug/L	1	9/25/2018 09:07 AM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70628			PrepDate	9/13/2018		Analyst: CEI
Iron	34	18	20		ug/L	1	9/25/2018 10:50 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-004

**Client Sample ID:** C-R22A-S-Q318  
**Collection Date:** 9/12/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925A	QC Batch: 70629				PrepDate	9/13/2018	Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 09:34 AM

**TOTAL METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925B	QC Batch: 70628				PrepDate	9/13/2018	Analyst: CEI
Iron	34	18	20		ug/L	1	9/25/2018 11:30 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-005

**Client Sample ID:** C-R27-D-Q318  
**Collection Date:** 9/12/2018 12:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70629			PrepDate	9/13/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 09:39 AM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70628			PrepDate	9/13/2018		Analyst: CEI
Iron	32	18	20		ug/L	1	9/25/2018 11:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-006

**Client Sample ID:** C-R27-S-Q318  
**Collection Date:** 9/12/2018 12:35:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70629			PrepDate	9/13/2018		Analyst: CEI
Iron	52	18	20	ug/L	1		9/25/2018 09:45 AM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70628			PrepDate	9/13/2018		Analyst: CEI
Iron	32	18	20	ug/L	1		9/25/2018 11:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-007

**Client Sample ID:** C-TAZ-D-Q318  
**Collection Date:** 9/12/2018 8:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925A	QC Batch: 70629				PrepDate	9/13/2018	Analyst: CEI
Iron	39	18	20		ug/L	1	9/25/2018 10:02 AM

**TOTAL METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925B	QC Batch: 70628				PrepDate	9/13/2018	Analyst: CEI
Iron	36	18	20		ug/L	1	9/25/2018 11:46 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-008

**Client Sample ID:** C-TAZ-S-Q318  
**Collection Date:** 9/12/2018 9:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70629			PrepDate	9/13/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 10:08 AM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70628			PrepDate	9/13/2018		Analyst: CEI
Iron	27	18	20		ug/L	1	9/25/2018 11:51 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-009

**Client Sample ID:** R-28-Q318  
**Collection Date:** 9/12/2018 1:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925A	QC Batch: 70629				PrepDate	9/13/2018	Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 10:13 AM

**TOTAL METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925B	QC Batch: 70628				PrepDate	9/13/2018	Analyst: CEI
Iron	33	18	20		ug/L	1	9/25/2018 11:57 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-010

**Client Sample ID:** R63-Q318  
**Collection Date:** 9/12/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70629			PrepDate	9/13/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 10:18 AM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70628			PrepDate	9/13/2018		Analyst: CEI
Iron	39	18	20		ug/L	1	9/25/2018 12:14 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	C-BNS-Q318
<b>Lab Order:</b>	N032065	<b>Collection Date:</b>	9/12/2018 11:50:00 AM
<b>Project:</b>	PG&E Topock - RMP, RC000753.0801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032065-013		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70629			PrepDate	9/13/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 10:24 AM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70628			PrepDate	9/13/2018		Analyst: CEI
Iron	36	18	20		ug/L	1	9/25/2018 12:20 PM

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-014

**Client Sample ID:** C-I-3-D-Q318  
**Collection Date:** 9/12/2018 9:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70629			PrepDate	9/13/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 10:29 AM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70628			PrepDate	9/13/2018		Analyst: CEI
Iron	33	18	20		ug/L	1	9/25/2018 12:25 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-015

**Client Sample ID:** C-I-3-S-Q318  
**Collection Date:** 9/12/2018 10:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70629			PrepDate	9/13/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 10:34 AM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70628			PrepDate	9/13/2018		Analyst: CEI
Iron	33	18	20		ug/L	1	9/25/2018 12:30 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WDPGEPB**

Sample ID <b>MB-70629</b>	SampType: <b>MBLK</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128807</b>
Client ID: <b>PBW</b>	Batch ID: <b>70629</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151469</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron ND 20

Sample ID <b>LCS-70629</b>	SampType: <b>LCS</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128807</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70629</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151470</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron 104.905 20 100.0 0 105 85 115

Sample ID <b>N032065-003B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128807</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70629</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151474</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron 103.573 20 100.0 22.72 80.9 75 125

Sample ID <b>N032065-003B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128807</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70629</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151475</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron 103.785 20 100.0 22.72 81.1 75 125 103.6 0.204 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WPGEPB**

Sample ID <b>MB-70628</b>	SampType: <b>MBLK</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128810</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70628</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151582</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron ND 20

Sample ID <b>LCS-70628</b>	SampType: <b>LCS</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128810</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70628</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151583</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 104.584 20 100.0 0 105 85 115

Sample ID <b>N032065-003C-MS</b>	SampType: <b>MS</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128810</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70628</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151589</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 136.908 20 100.0 33.97 103 75 125

Sample ID <b>N032065-003C-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128810</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70628</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151590</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 135.935 20 100.0 33.97 102 75 125 136.9 0.713 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-003

**Client Sample ID:** C-R22A-D-Q318  
**Collection Date:** 9/12/2018 11:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.7	0.081	0.10	µg/L	1	9/19/2018 01:13 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 01:13 AM
Manganese	1.0	0.26	0.50	µg/L	1	9/19/2018 01:13 AM
Molybdenum	4.9	0.21	0.50	µg/L	1	9/19/2018 01:13 AM
Selenium	1.6	0.36	0.50	µg/L	1	9/26/2018 10:56 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-004

**Client Sample ID:** C-R22A-S-Q318  
**Collection Date:** 9/12/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 01:41 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 01:41 AM
Manganese	1.1	0.26	0.50	µg/L	1	9/19/2018 01:41 AM
Molybdenum	4.5	0.21	0.50	µg/L	1	9/19/2018 01:41 AM
Selenium	1.4	0.36	0.50	µg/L	1	9/26/2018 11:24 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-005

**Client Sample ID:** C-R27-D-Q318  
**Collection Date:** 9/12/2018 12:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 01:47 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 01:47 AM
Manganese	1.3	0.26	0.50	µg/L	1	9/19/2018 01:47 AM
Molybdenum	4.6	0.21	0.50	µg/L	1	9/19/2018 01:47 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 01:22 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-006

**Client Sample ID:** C-R27-S-Q318  
**Collection Date:** 9/12/2018 12:35:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 01:52 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 01:52 AM
Manganese	1.4	0.26	0.50	µg/L	1	9/19/2018 01:52 AM
Molybdenum	4.8	0.21	0.50	µg/L	1	9/19/2018 01:52 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 11:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-007

**Client Sample ID:** C-TAZ-D-Q318  
**Collection Date:** 9/12/2018 8:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 02:11 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 02:11 AM
Manganese	0.78	0.26	0.50	µg/L	1	9/19/2018 02:11 AM
Molybdenum	4.5	0.21	0.50	µg/L	1	9/19/2018 02:11 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 01:33 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-008

**Client Sample ID:** C-TAZ-S-Q318  
**Collection Date:** 9/12/2018 9:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.5	0.081	0.10	µg/L	1	9/19/2018 02:15 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 02:15 AM
Manganese	1.2	0.26	0.50	µg/L	1	9/19/2018 02:15 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 02:15 AM
Selenium	1.6	0.36	0.50	µg/L	1	9/26/2018 11:58 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-009

**Client Sample ID:** R-28-Q318  
**Collection Date:** 9/12/2018 1:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 02:21 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 02:21 AM
Manganese	1.3	0.26	0.50	µg/L	1	9/19/2018 02:21 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 02:21 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 01:04 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-010

**Client Sample ID:** R63-Q318  
**Collection Date:** 9/12/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 02:26 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 02:26 AM
Manganese	1.3	0.26	0.50	µg/L	1	9/19/2018 02:26 AM
Molybdenum	4.6	0.21	0.50	µg/L	1	9/19/2018 02:26 AM
Selenium	1.7	0.36	0.50	µg/L	1	9/26/2018 12:09 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-013

**Client Sample ID:** C-BNS-Q318  
**Collection Date:** 9/12/2018 11:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 02:42 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 02:42 AM
Manganese	1.2	0.26	0.50	µg/L	1	9/19/2018 02:42 AM
Molybdenum	4.6	0.21	0.50	µg/L	1	9/19/2018 02:42 AM
Selenium	1.7	0.36	0.50	µg/L	1	9/26/2018 01:17 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-014

**Client Sample ID:** C-I-3-D-Q318  
**Collection Date:** 9/12/2018 9:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.7	0.081	0.10	µg/L	1	9/19/2018 02:48 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 02:48 AM
Manganese	1.1	0.26	0.50	µg/L	1	9/26/2018 12:31 PM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 02:48 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 12:31 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-015

**Client Sample ID:** C-I-3-S-Q318  
**Collection Date:** 9/12/2018 10:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.5	0.081	0.10	µg/L	1	9/19/2018 02:53 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 02:53 AM
Manganese	1.0	0.26	0.50	µg/L	1	9/26/2018 12:37 PM
Molybdenum	4.4	0.21	0.50	µg/L	1	9/19/2018 02:53 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 12:37 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>MB-70627</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>
Client ID: <b>PBW</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145720</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Arsenic	ND	0.10			
Barium	ND	1.0			
Manganese	ND	0.50			
Molybdenum	ND	0.50			

Sample ID <b>LCS-70627</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145721</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Arsenic	10.178	0.10	10.00	0	102	85	115			
Barium	10.193	1.0	10.00	0	102	85	115			
Manganese	105.867	0.50	100.0	0	106	85	115			
Molybdenum	9.822	0.50	10.00	0	98.2	85	115			

Sample ID <b>N032065-003B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145725</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Arsenic	12.749	0.10	10.00	2.680	101	75	125			
Barium	116.194	1.0	10.00	110.8	53.5	75	125			S
Manganese	101.171	0.50	100.0	1.001	100	75	125			
Molybdenum	15.510	0.50	10.00	4.938	106	75	125			

Sample ID <b>N032065-003B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145726</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Arsenic	12.815	0.10	10.00	2.680	101	75	125	12.75	0.511	20
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>N032065-003B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145726</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	116.175	1.0	10.00	110.8	53.4	75	125	116.2	0.0159	20	S
Manganese	101.012	0.50	100.0	1.001	100	75	125	101.2	0.157	20	
Molybdenum	15.595	0.50	10.00	4.938	107	75	125	15.51	0.542	20	

Sample ID <b>MB-70627</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128842</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152573</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	ND	0.50									

Sample ID <b>LCS-70627</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128842</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152574</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	9.705	0.50	10.00	0	97.1	85	115				

Sample ID <b>N032065-003B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128842</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152578</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	10.172	0.50	10.00	1.573	86.0	75	125				

Sample ID <b>N032065-003B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128842</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152579</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	11.602	0.50	10.00	1.573	100	75	125	10.17	13.1	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENTAL SCIENCE INDUSTRY

**CALIFORNIA** | P: 562.219.7435 F: 562.219.7436  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 ELAP Cert 2921  
 EPA ID CA01638

**NEVADA** | P: 702.307.2659 F: 702.307.2691  
 3151 W. Post Rd., Las Vegas, NV 89118  
 ELAP Cert 2676 | NV Cert NVO0922  
 ORELAP/NELAP Cert 4046

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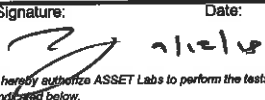




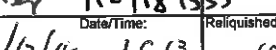


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## CHAIN OF CUSTODY RECORD

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 Nevada: 3151 W. Post Road, Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
 California: 11060 Artesia Blvd., Ste C, Carritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 www.assetlaboratories.com

Client: Arcadis		Report to: Dan Bush		Bill to: Marty Bloes				EDD Requirement		QA/QC		Sample Receipt Condition														
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis		Address:				Excel EDD		RTNE		1. Chilled														
Address: Roseville, CA 95661		Email: dan.bush@arcadis.com daniel.moore@crtipen.com		Address:				Geotracker		RWQCB		2. Headspace														
Phone: 916-786-3302		Fax:		Address: 1410 Rocky Ridge Dr # 330		Email to: mbloes@pivox.com		LabSpec		CaTrans		3. Container Intact														
Submitted By: Nara Tay		Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661		Email to: mbloes@pivox.com		P.O.#		Others		LEVEL III		4. Seal Present														
Title: sample tech		Phone: 916-786-3302		Phone: 949-727-1400, ext 200		Fax:		Specify:		LEVEL IV		5. IR number														
Signature:  Date: 9/12/18		Sampled By: Nara Tay		Ground		3x250 mL Poly		Global ID:		Regulatory		6. Method of Cooling:														
<i>I hereby authorize ASSET Labs to perform the tests indicated below.</i>		<i>I attest to the veracity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for</i>		x Sediment		250 ml Poly		Specify State:		Sample Temp: 3:10		Sample Temp:														
Project Name: PG&E Topock - RMP		Signature:  Date: 9/12/18		Potable		3x500 mL Poly		Turn Around Time		No. of Container		Courier:														
Project Number: RC000753.0801		NPDES		Other Solid		3x500 mL Poly		Container Type		PRESERVATION		Tracking No.:														
		Surface						Remarks																		
Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	CR(VI) FF (E218.6)	NH4, OH	Field QC Cr(VI) FF (E218.6)	Dissolved metals (SW6010B)	Dissolved metals (SW6010B)	Dissolved metals (SW6010B)	Total metals (SW6010B)	Ca, Mg, K, Na, B	As, Mn, Fe, Se, Mo, Ba	Anions (E300.0)	Specific Conductance (E120.1)	pH (SM4500HB)	TDS (SM2540C)	Alkalinity (Total, reported as CaCO3) (SM2320B)	TSS (SM2540)	Nitrate/Nitrite (SM4500N3) Nitrate; H2SO4	Turn Around Time	No. of Container	Container Type	Remarks	
	N032065-01	-MW-912-Q318	9/12/18	09:00		X		X	X	X	X	X			X	X	X					E	1	P	BN	Hold
	-02	• AB1-Q318	9/12/18	13:20				X														E	1	P	BN	Hold
		• AB2-Q318						X														E	1	P	BN	Hold
		• AB3-Q318						X																		Hold
Relinquished by (Signature and Printed Name):  Nara Tay			Date/Time: 9/12/18 1555			Relinquished by (Signature and Printed Name):  Pujady			Date/Time: 9/12/18 1555			Turn Around Time (TAT):			Special Instruction:											
Relinquished by (Signature and Printed Name):  Pujady			Date/Time: 9/12/18 1513			Relinquished by (Signature and Printed Name):  Pujady			Date/Time: 9/12/18 1513			<input type="checkbox"/> A < 24 Hrs or Same Day TAT <input type="checkbox"/> B = Next Workday <input type="checkbox"/> C = 2 Workdays <input type="checkbox"/> D = 3 Workdays <input checked="" type="checkbox"/> E = Routine 5-7 Workdays														
Relinquished by (Signature and Printed Name):			Date/Time:			Relinquished by (Signature and Printed Name):			Date/Time:			TAT Starts at 8 AM the following day if samples received after 3:00PM.														
Terms:						5. Trip Blanks and Equipment Blanks are billable samples.						Preservatives:														
1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report.						6. Asset Laboratories is not responsible for samples collected using incorrect methodology.						H=HCL		N=HNO3		S=H2SO4		C=4°C		Container Type:						
2. Regular TAT is 5-7 business days, surcharge will apply for rush analysis.						7. Terms are net 30 days.						Z=Zn(AC)2		O=NaOH		T=Na2S2O3		T=Tube		V=VOA		P=Plnt				
Less than 24 Hrs. = 200% Next Day = 100% 2 Workdays = 50% 3 Workdays = 35% 4 Workdays = 20%						8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed.												J=Jar		B=Tedlar		G=Glass				
3. Custom EDD formats will be an additional 3% of the total project price.						9. For subcontract analysis, TAT and Surcharges will vary.						Others/Specify:		B		(NH4)2SO4/NH4OH		M=Metal		M=Metal		C=Can				
4. Add 10% surcharge for Level III Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.																										

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 www.assetlaboratories.com

Page 1 of 1

Client: Arcadis		Report to: Dan Bush		Bill to: Marty Bloes		EDD Requirement		QA/QC		Sample Receipt Condition																				
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis		Address:		Excel EDD		RTNE		1. Chilled																				
Address: Roseville, CA 95661		Email: dan.bush@arcadis.com daniel.moore@critgen.com		Address:		GeoTracker		RWQCB		2. Headspace																				
Phone: 916-786-3302		Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661		Email to: mbloes@pivox.com		LabSpec		LEVEL III		3. Container Intact																				
Submitted By: <i>Nana Toy</i>		Phone: 916-786-3302		Phone: 949-727-1400, ext 200		Others		LEVEL IV		4. Seal Present																				
Title: <i>sample Test</i>		Signature: <i>Nana Toy</i>		P.O.#		Specify: RWQCB		Regulatory		5. IR number																				
Date: <i>9/12/18</i>		Date: <i>9/12/18</i>		Fax:		Global ID:		Specify State:		6. Method of Cooling:																				
		Signature: <i>Nana Toy</i>								Sample Temp: <i>21°C / 69.8°F / 20°C</i>																				
Project Name: PG&E Topock - RMP		Signature: <i>Nana Toy</i>								Courier:																				
Project Number: RC000753.0601		Date: <i>9/12/18</i>								Tracking No.:																				
Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	Matrix													Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks							
						Ground	x Sediment	3x250 mL poly	3x500 mL poly	3x500 mL poly	3x500 mL poly	500 mL poly	1 liter poly	1 liter poly	1 liter poly	1 liter poly	1 liter poly	1 liter poly						125 mL poly	1.250 mL poly					
						Potable	Soil																							
						NPDES	Other Solid																							
						Surface																								

Relinquished by (Signature and Printed Name): <i>Nana Toy</i> Date/Time: <i>9/12/18 1555</i>		Relinquished by (Signature and Printed Name): <i>Marty Bloes</i> Date/Time: <i>9/12/18 1555</i>		Turn Around Time (TAT) <input type="checkbox"/> A < 24 Hrs or Same Day TAT <input type="checkbox"/> B = Next Workday <input type="checkbox"/> C = 2 Workdays <input type="checkbox"/> D = 3 Workdays <input checked="" type="checkbox"/> E = Routine 5-7 Workdays TAT Starts at 8 AM the following day if samples received after 3:00PM.	Special Instruction:
Relinquished by (Signature and Printed Name): <i>John DeG...</i> Date/Time: <i>9/12/18 1813</i>		Relinquished by (Signature and Printed Name): <i>John DeG...</i> Date/Time: <i>9/12/18 1813</i>			
Relinquished by (Signature and Printed Name): <i>John DeG...</i> Date/Time: <i>9/12/18 1813</i>		Relinquished by (Signature and Printed Name): <i>John DeG...</i> Date/Time: <i>9/12/18 1813</i>			

Terms		5. Trip Blanks and Equipment Blanks are billable samples.		Preservatives:		Container Type:	
1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report.		6. Asset Laboratories is not responsible for samples collected using incorrect methodology.		H=HCL		T=Tube	
2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis.		7. Terms are net 30 days.		N=HNO3		V=VOA	
3. Less than 24 Hrs = 200% Next Day = 100% 2 Workdays = 50% 3 Workdays = 30% 4 Workdays = 20%		8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed.		S=H2SO4		P=PinIt	
4. Custom EDD formats will be an additional 3% of the total project price.		9. For subcontract analysis, TAT and Surcharges will vary.		C=4°C		G=Glass	
5. Add 10% surcharge for Level II Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.				Z=Zn(AC)2		M=Metal	
				O=NaOH		C=Can	
				T=Na2S2O3			
				Others/Specify: B (NH4)2SO4/NH4OH			

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P: 562.219.7435 F: 562.219.7436  
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Client: Arcadis Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661 Phone: 916-786-3302 Submitted By: <i>Nana Tep</i> Title: <i>sample tech</i> Signature: <i>[Signature]</i> Date: <i>9/12/18</i> Project Name: PG&E Topock - RMP Project Number: RC000753.801D		Report to: Dan Bush Company: Arcadis Email: dan.bush@arcadis.com Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661 Phone: 916-786-3302 Signature: <i>[Signature]</i> Date: <i>9/12/18</i>		Bill to: Marty Bloes Address: Email to: mbloes@pivox.com Phone: 949-727-1400, ext 200 P.O.#: Fax:		EDD Requirement Excel EDD Geotracker Labspec Others Specify: RWQCB Global ID:		QA/QC RTNE RWQCB CalTrans LEVEL III LEVEL IV Regulatory Specify State:		Sample Receipt Condition Y N 1. Chilled 2. Headspace 3. Container Intact 4. Seal Present 5. IR number 6. Method of Cooling: Sample Temp: <i>10</i>									
I hereby authorize ASSET Labs to perform the tests indicated below.		I attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for		Matrix Ground x Sediment Potable Soil NPDES Other Solid Surface		3x250 mL poly 3x500mL poly 3x500mL poly 3x500mL poly 500 mL poly 1 liter poly 1 liter poly 1 liter poly 1 liter poly 1 liter poly 125 mL poly		C r(V) FF (E218.6) (NH4)2, SO4, NH4, OH Field QC Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH Dissolved metals (SW6010B)(SW6020Adis) FF; HNO3 Dissolved metals (SW6010B)(SW6020Adis) FF; HNO3 Ca, Mg, K, Na, B Dissolved metals (SW6010B)(SW6020Adis) FF; HNO3 As, Mn, Fe, Se, Mo, Ba Total metals (SW6010B); HNO3 Fe Anions (E300.0); Br, Cl, SO4 Specific Conductance (E120.1) pH (SM4500HB) TDS (SM2540C) Alkalinity (Total, reported as CaCO3) (SM2320E) TSS (SM2540) Nitrate/Nitrite (SM4500N3) Nitrogen; H2SO4		Tracking No.: Courier: Remarks:									
Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	3x250 mL poly	3x500mL poly	3x500mL poly	500 mL poly	1 liter poly	1 liter poly	1 liter poly	1 liter poly	1 liter poly	125 mL poly	Turn Around Time	No. of Container	Container Type	REMARKS
1	N032065-13	C-BNS-Q318	9/12/18	11:50		X	X	X	X	X	X	X	X	X	X	E 7	5	P BNS	
2		<del>C-CON-D-Q318</del>				X	X	X	X	X	X	X	X	X	X	E 5	5	P BNS	
3		<del>C-CON-S-Q318</del>				X	X	X	X	X	X	X	X	X	X	E 5	5	P BNS	
4	-14	C-I-3-D-Q318	9/12/18	0950		X	X	X	X	X	X	X	X	X	X	E 7	5	P BNS	
5		<del>MW-909-Q318</del>				X	X	X	X	X	X	X	X	X	X	E 5	5	P BNS	
6	-15	C-I-3-S-Q318	9/12/18	10:10		X	X	X	X	X	X	X	X	X	X	E 7	5	P BNS	
7		<del>C-MAR-D-Q318</del>				X	X	X	X	X	X	X	X	X	X	E 5	5	P BNS	
8		<del>C-MAR-S-Q318</del>				X	X	X	X	X	X	X	X	X	X	E 6	5	P BNS	
9		<del>C-NR1-D-Q318</del>				X	X	X	X	X	X	X	X	X	X	E 6	5	P BNS	
10		<del>C-NR1-S-Q318</del>				X	X	X	X	X	X	X	X	X	X	E 6	5	P BNS	
11		<del>C-NR3-D-Q318</del>				X	X	X	X	X	X	X	X	X	X	E 5	5	P BNS	
12		<del>C-NR3-S-Q318</del>				X	X	X	X	X	X	X	X	X	X	E 6	5	P BNS	
13		<del>MW-910-Q318</del>				X	X	X	X	X	X	X	X	X	X	E 3	3	P BNS	
14		<del>C-NR4-D-Q318</del>				X	X	X	X	X	X	X	X	X	X	E 5	5	P BNS	

- A < 24 Hrs or Same Day TAT
- B = Next Workday
- C = 2 Workdays
- D = 3 Workdays
- E = Routine 5-7 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00PM.

Preservatives:				Container Type:		
H=HCL	N=HNO3	S=H2SO4	C=4°C	T=Tube	V=VOA	P=Pint
Z=Zn(AC)2	O=NaOH	T=Na2S2O3		J=Jar	B=Tedlar	G=Glass
Others/Specify: B	(NH4)2SO4/NH4OH			M=Metal	M=Metal	C=Can

Terms  
 1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report.  
 2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis.  
 3. Less than 24 Hrs=200% Next Day=100% 2 Workdays=50% 3 Workdays=35% 4 Workdays=20%  
 4. Add 10% surcharge for Level III Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.

5. Trip Blanks and Equipment Blanks are labile samples.  
 6. Asset Laboratories is not responsible for samples collected using incorrect methodology.  
 7. Terms are net 30 days.  
 8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed.  
 9. For subcontract analysis, TAT and Surcharges will vary.

White=Laboratory Copy

Yellow=Customer's Copy

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.


If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.


Cooler Received/Opened On: 9/12/2018 Workorder: N032065  
 Rep sample Temp (Deg C): 2.9/3.1/2.6 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |  |  |  |
|---|--|--|--|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>                       |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>            |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>            |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 7. Chain of custody agrees with sample labels?  | Yes <input type="checkbox"/>   | No <input checked="" type="checkbox"/>                     |  |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 11. All samples received within holding time?   | Yes <input type="checkbox"/>   | No <input checked="" type="checkbox"/>                     |  |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>                     |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input checked="" type="checkbox"/><br>Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input type="checkbox"/><br>NA <input type="checkbox"/> |

Comments: Samples for pH were past holding time upon receipt. See Correspondence.

Checklist Completed By: YR  9/17/2018

Reviewed By:  LG 091718

Mary Ann Balilu ([maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com))

---

From: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
Sent: Monday, September 17, 2018 8:22 AM  
To: Yoandra Rodriguez  
Cc: 'Andreafe. Gallardo'; 'Sonny. Lorenzo'; [maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com)  
Subject: RE: PG&E Topock - RMP, RC000753.0801 (Asset Labs No. N032065)

Hi Yoandra,

Please use PN ".0801D"

Please use "AmbientBlank-1-Q318", "AmbientBlank-2-Q318"

-----Original Message-----

From: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
Sent: Friday, September 14, 2018 6:27 PM  
To: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
Cc: 'Andreafe. Gallardo' <[andrea.gallardo@assetlaboratories.com](mailto:andrea.gallardo@assetlaboratories.com)>; 'Sonny. Lorenzo' <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>; [maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com)  
Subject: Re: PG&E Topock - RMP, RC000753.0801 (Asset Labs No. N032065)

Hi Laura,

Please also advise on the following issues:

- Which Project number to use: RC000753.0801 (pages 1 and 2) or RC000753.0801D (page 3).
- Sample 1 and 2: ID is "AB1-Q318", "AB2-Q318" on COC while "AmbientBlank-1-Q318", "AmbientBlank-2-Q318" on samples labels.

Thanks,

On 9/13/2018 1:03 PM, Madsen, Laura wrote:

> HI,  
> That is correct. The dissolved metals on page 3 are the same as listed on page 2.

>  
> Thanks,  
> Laura

>  
> -----Original Message-----  
> From: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
> Sent: Thursday, September 13, 2018 2:59 PM  
> To: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
> Cc: 'Marlon B. Cartin' <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>; 'Andreafe. Gallardo' <[andrea.gallardo@assetlaboratories.com](mailto:andrea.gallardo@assetlaboratories.com)>; 'Sonny. Lorenzo' <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>;  
> [maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com)

> Subject: PG&E Topock - RMP, RC000753.0801 (Asset Labs No. N032065)

>

> Hi Laura,

>

> Please kindly inform list of dissolved metals needed for the samples on page 2 of the attached COC. For now we followed same dissolved metals requested on page 3.

>

> Thanks,

>

> --

> Yoandra Rodriguez

> Sample Control Officer

> Asset Laboratories

>

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--

Yoandra Rodriguez

Sample Control Officer

Asset Laboratories

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# ASSET Laboratories

## WORK ORDER Summary

17-Sep-18

WorkOrder: N032065

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/12/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032065-001A	AmbientBlank-1-Q318	9/12/2018 9:00:00 AM		Groundwater			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-002A	AmbientBlank-2-Q318	9/12/2018 1:20:00 PM					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-003A	C-R22A-D-Q318	9/12/2018 11:00:00 AM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-003B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-003C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-003D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-003E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-004A	C-R22A-S-Q318	9/12/2018 11:15:00 AM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-004B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-004C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

17-Sep-18

WorkOrder: N032065

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/12/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032065-004C	C-R22A-S-Q318	9/12/2018 11:15:00 AM	9/26/2018	Groundwater	EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-004D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-004E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-005A	C-R27-D-Q318	9/12/2018 12:15:00 PM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-005B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-005C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-005D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-005E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-006A	C-R27-S-Q318	9/12/2018 12:35:00 PM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-006B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

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## WORK ORDER Summary

17-Sep-18

WorkOrder: N032065

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/12/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032065-006B	C-R27-S-Q318	9/12/2018 12:35:00 PM	9/26/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-006C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-006D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-006E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-007A	C-TAZ-D-Q318	9/12/2018 8:50:00 AM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-007B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-007C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-007D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR

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## WORK ORDER Summary

17-Sep-18

WorkOrder: N032065

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/12/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032065-007D	C-TAZ-D-Q318	9/12/2018 8:50:00 AM	9/26/2018	Groundwater		Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-007E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-008A	C-TAZ-S-Q318	9/12/2018 9:15:00 AM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-008B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-008C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-008D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-008E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-009A	R-28-Q318	9/12/2018 1:10:00 PM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-009B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW



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## WORK ORDER Summary

17-Sep-18

WorkOrder: N032065

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/12/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032065-009C	R-28-Q318	9/12/2018 1:10:00 PM	9/26/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-009D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-009E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-010A	R63-Q318	9/12/2018 10:35:00 AM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-010B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-010C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-010D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-010E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-011A	SW1-Q318	9/12/2018 2:40:00 PM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

17-Sep-18

WorkOrder: N032065

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/12/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032065-011B	SW1-Q318	9/12/2018 2:40:00 PM	9/26/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-011C			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-012A	SW2-Q318	9/12/2018 3:00:00 PM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-012B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-012C			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-013A	C-BNS-Q318	9/12/2018 11:50:00 AM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-013B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-013C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-013D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-013E			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

17-Sep-18

WorkOrder: N032065

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/12/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032065-014A	C-I-3-D-Q318	9/12/2018 9:50:00 AM	9/26/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-014B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-014C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-014D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-014E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-015A	C-I-3-S-Q318	9/12/2018 10:10:00 AM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-015B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-015C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-015D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR

# ASSET Laboratories

## WORK ORDER Summary

17-Sep-18

**WorkOrder:** N032065

**Client ID:** ARCUS02

**Project:** PG&E Topock - RMP, RC000753.0801D

**QC Level:** Level IV

**Date Received:** 9/12/2018

**Comments:**

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032065-015D	C-I-3-S-Q318	9/12/2018 10:10:00 AM	9/26/2018	Groundwater	SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-015E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-016A	FOLDER	9/26/2018	9/26/2018		EDD	RWQCB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			9/26/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			9/26/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

# ***ARCADIS***

Project: PG&E Topock - RMP  
Project No.: RC000753.0801D

ASSET Laboratories Work Order:  
N032065

## ***ANALYTICAL and QC RESULTS SAMPLE RECEIVING ITEMS***

***PRIVILEGED AND CONFIDENTIAL***



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September 27, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032065

RE: PG&E Topock - RMP, RC000753.0801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 12, 2018 by ASSET Laboratories .  
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in  
accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,



Quennie Manimtim  
Laboratory Director

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab Order:** N032065

---

**CASE NARRATIVE**

**SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time except for pH. pH testing is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

Samples N032065-001(AmbientBlank-1-Q318) and N032065-002 (AmbientBlank-2-Q318) were not analyzed as per COC.

**Analytical Comments for EPA 6020\_Dissolved:**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Barium in QC samples N032065-003B-MS and N032065-003B-MSD since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.





**ASSET Laboratories**

Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab Order:** N032065  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032065-001A	AmbientBlank-1-Q318	Groundwater	9/12/2018 9:00:00 AM	9/12/2018	9/27/2018
N032065-002A	AmbientBlank-2-Q318	Groundwater	9/12/2018 1:20:00 PM	9/12/2018	9/27/2018
N032065-003A	C-R22A-D-Q318	Groundwater	9/12/2018 11:00:00 AM	9/12/2018	9/27/2018
N032065-003B	C-R22A-D-Q318	Groundwater	9/12/2018 11:00:00 AM	9/12/2018	9/27/2018
N032065-003C	C-R22A-D-Q318	Groundwater	9/12/2018 11:00:00 AM	9/12/2018	9/27/2018
N032065-003D	C-R22A-D-Q318	Groundwater	9/12/2018 11:00:00 AM	9/12/2018	9/27/2018
N032065-003E	C-R22A-D-Q318	Groundwater	9/12/2018 11:00:00 AM	9/12/2018	9/27/2018
N032065-004A	C-R22A-S-Q318	Groundwater	9/12/2018 11:15:00 AM	9/12/2018	9/27/2018
N032065-004B	C-R22A-S-Q318	Groundwater	9/12/2018 11:15:00 AM	9/12/2018	9/27/2018
N032065-004C	C-R22A-S-Q318	Groundwater	9/12/2018 11:15:00 AM	9/12/2018	9/27/2018
N032065-004D	C-R22A-S-Q318	Groundwater	9/12/2018 11:15:00 AM	9/12/2018	9/27/2018
N032065-004E	C-R22A-S-Q318	Groundwater	9/12/2018 11:15:00 AM	9/12/2018	9/27/2018
N032065-005A	C-R27-D-Q318	Groundwater	9/12/2018 12:15:00 PM	9/12/2018	9/27/2018
N032065-005B	C-R27-D-Q318	Groundwater	9/12/2018 12:15:00 PM	9/12/2018	9/27/2018
N032065-005C	C-R27-D-Q318	Groundwater	9/12/2018 12:15:00 PM	9/12/2018	9/27/2018
N032065-005D	C-R27-D-Q318	Groundwater	9/12/2018 12:15:00 PM	9/12/2018	9/27/2018
N032065-005E	C-R27-D-Q318	Groundwater	9/12/2018 12:15:00 PM	9/12/2018	9/27/2018
N032065-006A	C-R27-S-Q318	Groundwater	9/12/2018 12:35:00 PM	9/12/2018	9/27/2018
N032065-006B	C-R27-S-Q318	Groundwater	9/12/2018 12:35:00 PM	9/12/2018	9/27/2018
N032065-006C	C-R27-S-Q318	Groundwater	9/12/2018 12:35:00 PM	9/12/2018	9/27/2018
N032065-006D	C-R27-S-Q318	Groundwater	9/12/2018 12:35:00 PM	9/12/2018	9/27/2018
N032065-006E	C-R27-S-Q318	Groundwater	9/12/2018 12:35:00 PM	9/12/2018	9/27/2018
N032065-007A	C-TAZ-D-Q318	Groundwater	9/12/2018 8:50:00 AM	9/12/2018	9/27/2018
N032065-007B	C-TAZ-D-Q318	Groundwater	9/12/2018 8:50:00 AM	9/12/2018	9/27/2018
N032065-007C	C-TAZ-D-Q318	Groundwater	9/12/2018 8:50:00 AM	9/12/2018	9/27/2018
N032065-007D	C-TAZ-D-Q318	Groundwater	9/12/2018 8:50:00 AM	9/12/2018	9/27/2018
N032065-007E	C-TAZ-D-Q318	Groundwater	9/12/2018 8:50:00 AM	9/12/2018	9/27/2018
N032065-008A	C-TAZ-S-Q318	Groundwater	9/12/2018 9:15:00 AM	9/12/2018	9/27/2018
N032065-008B	C-TAZ-S-Q318	Groundwater	9/12/2018 9:15:00 AM	9/12/2018	9/27/2018



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab Order:** N032065  
**Contract No:**

## Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032065-008C	C-TAZ-S-Q318	Groundwater	9/12/2018 9:15:00 AM	9/12/2018	9/27/2018
N032065-008D	C-TAZ-S-Q318	Groundwater	9/12/2018 9:15:00 AM	9/12/2018	9/27/2018
N032065-008E	C-TAZ-S-Q318	Groundwater	9/12/2018 9:15:00 AM	9/12/2018	9/27/2018
N032065-009A	R-28-Q318	Groundwater	9/12/2018 1:10:00 PM	9/12/2018	9/27/2018
N032065-009B	R-28-Q318	Groundwater	9/12/2018 1:10:00 PM	9/12/2018	9/27/2018
N032065-009C	R-28-Q318	Groundwater	9/12/2018 1:10:00 PM	9/12/2018	9/27/2018
N032065-009D	R-28-Q318	Groundwater	9/12/2018 1:10:00 PM	9/12/2018	9/27/2018
N032065-009E	R-28-Q318	Groundwater	9/12/2018 1:10:00 PM	9/12/2018	9/27/2018
N032065-010A	R63-Q318	Groundwater	9/12/2018 10:35:00 AM	9/12/2018	9/27/2018
N032065-010B	R63-Q318	Groundwater	9/12/2018 10:35:00 AM	9/12/2018	9/27/2018
N032065-010C	R63-Q318	Groundwater	9/12/2018 10:35:00 AM	9/12/2018	9/27/2018
N032065-010D	R63-Q318	Groundwater	9/12/2018 10:35:00 AM	9/12/2018	9/27/2018
N032065-010E	R63-Q318	Groundwater	9/12/2018 10:35:00 AM	9/12/2018	9/27/2018
N032065-011A	SW1-Q318	Groundwater	9/12/2018 2:40:00 PM	9/12/2018	9/27/2018
N032065-011B	SW1-Q318	Groundwater	9/12/2018 2:40:00 PM	9/12/2018	9/27/2018
N032065-011C	SW1-Q318	Groundwater	9/12/2018 2:40:00 PM	9/12/2018	9/27/2018
N032065-012A	SW2-Q318	Groundwater	9/12/2018 3:00:00 PM	9/12/2018	9/27/2018
N032065-012B	SW2-Q318	Groundwater	9/12/2018 3:00:00 PM	9/12/2018	9/27/2018
N032065-012C	SW2-Q318	Groundwater	9/12/2018 3:00:00 PM	9/12/2018	9/27/2018
N032065-013A	C-BNS-Q318	Groundwater	9/12/2018 11:50:00 AM	9/12/2018	9/27/2018
N032065-013B	C-BNS-Q318	Groundwater	9/12/2018 11:50:00 AM	9/12/2018	9/27/2018
N032065-013C	C-BNS-Q318	Groundwater	9/12/2018 11:50:00 AM	9/12/2018	9/27/2018
N032065-013D	C-BNS-Q318	Groundwater	9/12/2018 11:50:00 AM	9/12/2018	9/27/2018
N032065-013E	C-BNS-Q318	Groundwater	9/12/2018 11:50:00 AM	9/12/2018	9/27/2018
N032065-014A	C-I-3-D-Q318	Groundwater	9/12/2018 9:50:00 AM	9/12/2018	9/27/2018
N032065-014B	C-I-3-D-Q318	Groundwater	9/12/2018 9:50:00 AM	9/12/2018	9/27/2018
N032065-014C	C-I-3-D-Q318	Groundwater	9/12/2018 9:50:00 AM	9/12/2018	9/27/2018
N032065-014D	C-I-3-D-Q318	Groundwater	9/12/2018 9:50:00 AM	9/12/2018	9/27/2018
N032065-014E	C-I-3-D-Q318	Groundwater	9/12/2018 9:50:00 AM	9/12/2018	9/27/2018
N032065-015A	C-I-3-S-Q318	Groundwater	9/12/2018 10:10:00 AM	9/12/2018	9/27/2018



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---

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab Order:** N032065  
**Contract No:**

## Work Order Sample Summary

---

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032065-015B	C-I-3-S-Q318	Groundwater	9/12/2018 10:10:00 AM	9/12/2018	9/27/2018
N032065-015C	C-I-3-S-Q318	Groundwater	9/12/2018 10:10:00 AM	9/12/2018	9/27/2018
N032065-015D	C-I-3-S-Q318	Groundwater	9/12/2018 10:10:00 AM	9/12/2018	9/27/2018
N032065-015E	C-I-3-S-Q318	Groundwater	9/12/2018 10:10:00 AM	9/12/2018	9/27/2018



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-003

**Client Sample ID:** C-R22A-D-Q318  
**Collection Date:** 9/12/2018 11:00:00 AM  
**Matrix:** GROUNDWATER

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Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	860	0.10	0.10	umhos/cm	1		9/13/2018 10:40 AM

---

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-004

**Client Sample ID:** C-R22A-S-Q318  
**Collection Date:** 9/12/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	870	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-005

**Client Sample ID:** C-R27-D-Q318  
**Collection Date:** 9/12/2018 12:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	870	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-006

**Client Sample ID:** C-R27-S-Q318  
**Collection Date:** 9/12/2018 12:35:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	880	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-007

**Client Sample ID:** C-TAZ-D-Q318  
**Collection Date:** 9/12/2018 8:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	880	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-008

**Client Sample ID:** C-TAZ-S-Q318  
**Collection Date:** 9/12/2018 9:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	880	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-009

**Client Sample ID:** R-28-Q318  
**Collection Date:** 9/12/2018 1:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	880	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-010

**Client Sample ID:** R63-Q318  
**Collection Date:** 9/12/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	880	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-011

**Client Sample ID:** SW1-Q318  
**Collection Date:** 9/12/2018 2:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	910	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-012

**Client Sample ID:** SW2-Q318  
**Collection Date:** 9/12/2018 3:00:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	910	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-013

**Client Sample ID:** C-BNS-Q318  
**Collection Date:** 9/12/2018 11:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	880	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-014

**Client Sample ID:** C-I-3-D-Q318  
**Collection Date:** 9/12/2018 9:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	880	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-015

**Client Sample ID:** C-I-3-S-Q318  
**Collection Date:** 9/12/2018 10:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180913B</b>	QC Batch: <b>R127586</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	890	0.10	0.10		umhos/cm	1	9/13/2018 10:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID	<b>N032065-006DDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>120.1_WPGE</b>	Units:	<b>umhos/cm</b>	Prep Date:		RunNo:	<b>127586</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R127586</b>	TestNo:	<b>EPA 120.1</b>			Analysis Date:	<b>9/13/2018</b>	SeqNo:	<b>3139299</b>
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC	
Specific Conductance		880.000		0.10						875.0	0.570
											2

Sample ID	<b>N032065-013DDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>120.1_WPGE</b>	Units:	<b>umhos/cm</b>	Prep Date:		RunNo:	<b>127586</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R127586</b>	TestNo:	<b>EPA 120.1</b>			Analysis Date:	<b>9/13/2018</b>	SeqNo:	<b>3139307</b>
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC	
Specific Conductance		889.000		0.10						884.0	0.564
											2

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- E Value above quantitation range
- R RPD outside accepted recovery limits
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-003

**Client Sample ID:** C-R22A-D-Q318  
**Collection Date:** 9/12/2018 11:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: NV00922-WC_180913C	QC Batch: R127589	PrepDate	Analyst: LR				
pH	8.0	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-004

**Client Sample ID:** C-R22A-S-Q318  
**Collection Date:** 9/12/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	8.0	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-005

**Client Sample ID:** C-R27-D-Q318  
**Collection Date:** 9/12/2018 12:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	8.0	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-006

**Client Sample ID:** C-R27-S-Q318  
**Collection Date:** 9/12/2018 12:35:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>PH</b>							
<b>SM4500-H+B</b>							
RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>		PrepDate		Analyst: <b>LR</b>		
pH	7.9	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-007

**Client Sample ID:** C-TAZ-D-Q318  
**Collection Date:** 9/12/2018 8:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	7.9	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-008

**Client Sample ID:** C-TAZ-S-Q318  
**Collection Date:** 9/12/2018 9:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	7.6	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-009

**Client Sample ID:** R-28-Q318  
**Collection Date:** 9/12/2018 1:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	8.0	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-010

**Client Sample ID:** R63-Q318  
**Collection Date:** 9/12/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	7.9	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-011

**Client Sample ID:** SW1-Q318  
**Collection Date:** 9/12/2018 2:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	7.7	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-012

**Client Sample ID:** SW2-Q318  
**Collection Date:** 9/12/2018 3:00:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	7.6	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-013

**Client Sample ID:** C-BNS-Q318  
**Collection Date:** 9/12/2018 11:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: NV00922-WC_180913C	QC Batch: R127589	PrepDate	Analyst: LR				
pH	7.9	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-014

**Client Sample ID:** C-I-3-D-Q318  
**Collection Date:** 9/12/2018 9:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	7.9	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-015

**Client Sample ID:** C-I-3-S-Q318  
**Collection Date:** 9/12/2018 10:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180913C</b>	QC Batch: <b>R127589</b>				PrepDate		Analyst: <b>LR</b>
pH	7.9	0.10	0.10	H	pH Units	1	9/13/2018 10:05 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/13/2018 10:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 150.1\_4500H+B\_W**

Sample ID <b>N032065-003DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>150.1_4500H</b>	Units: <b>pH Units</b>	Prep Date:	RunNo: <b>127589</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127589</b>	TestNo: <b>SM4500-H+B</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139351</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	8.010	0.10						7.990	0.250	10	H
Temp. at time of pH Analysis	25.000	0.10						25.00	0	10	H

Sample ID <b>N032065-015DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>150.1_4500H</b>	Units: <b>pH Units</b>	Prep Date:	RunNo: <b>127589</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127589</b>	TestNo: <b>SM4500-H+B</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139364</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.930	0.10						7.900	0.379	10	H
Temp. at time of pH Analysis	25.000	0.10						25.00	0	10	H

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	C-R22A-D-Q318
<b>Lab Order:</b>	N032065	<b>Collection Date:</b>	9/12/2018 11:00:00 AM
<b>Project:</b>	PG&E Topock - RMP, RC000753.0801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032065-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>		Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L		1	9/14/2018 08:09 AM

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-004

**Client Sample ID:** C-R22A-S-Q318  
**Collection Date:** 9/12/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-005

**Client Sample ID:** C-R27-D-Q318  
**Collection Date:** 9/12/2018 12:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-006

**Client Sample ID:** C-R27-S-Q318  
**Collection Date:** 9/12/2018 12:35:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-007

**Client Sample ID:** C-TAZ-D-Q318  
**Collection Date:** 9/12/2018 8:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-008

**Client Sample ID:** C-TAZ-S-Q318  
**Collection Date:** 9/12/2018 9:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

**Print Date:** 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-009

**Client Sample ID:** R-28-Q318  
**Collection Date:** 9/12/2018 1:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

- |                    |   |   |
|--------------------|---|---|
| <b>Qualifiers:</b> | <b>B</b> Analyte detected in the associated Method Blank              | <b>E</b> Value above quantitation range       |
|                    | <b>H</b> Holding times for preparation or analysis exceeded           | <b>ND</b> Not Detected at the Reporting Limit |
|                    | <b>S</b> Spike/Surrogate outside of limits due to matrix interference | Results are wet unless otherwise specified    |
|                    | <b>DO</b> Surrogate Diluted Out                                       |   |



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-010

**Client Sample ID:** R63-Q318  
**Collection Date:** 9/12/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>	
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-013

**Client Sample ID:** C-BNS-Q318  
**Collection Date:** 9/12/2018 11:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-014

**Client Sample ID:** C-I-3-D-Q318  
**Collection Date:** 9/12/2018 9:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914A</b>	QC Batch: <b>70638</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-015

**Client Sample ID:** C-I-3-S-Q318  
**Collection Date:** 9/12/2018 10:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 160.2\_2540D\_W**

Sample ID <b>LCS-70638</b>	SampType: <b>LCS</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/14/2018</b>	RunNo: <b>127612</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70638</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3140073</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter)	932.000	10	1000	0	93.2	80	120				

Sample ID <b>MB-70638</b>	SampType: <b>MBLK</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/14/2018</b>	RunNo: <b>127612</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70638</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3140074</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter)	ND	10									

Sample ID <b>N032065-003DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/14/2018</b>	RunNo: <b>127612</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70638</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3140076</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter)	ND	10						0	0	5	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 160.2\_2540D\_W**

Sample ID <b>LCS-70639</b>	SampType: <b>LCS</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/14/2018</b>	RunNo: <b>127613</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70639</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3140060</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Suspended Solids (Residue, Non-Filter	962.000	10	1000	0	96.2	80	120				
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Sample ID <b>MB-70639</b>	SampType: <b>MBLK</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/14/2018</b>	RunNo: <b>127613</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70639</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3140061</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Suspended Solids (Residue, Non-Filter	ND	10									
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Sample ID <b>N032084-001DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/14/2018</b>	RunNo: <b>127613</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70639</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3140064</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Suspended Solids (Residue, Non-Filter	ND	10						0	0	5	
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-003

**Client Sample ID:** C-R22A-D-Q318  
**Collection Date:** 9/12/2018 11:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_180913A	QC Batch: R127606				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 11:34 AM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_180918B	QC Batch: 70627				PrepDate	9/13/2018	Analyst: CEI
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 01:13 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-004

**Client Sample ID:** C-R22A-S-Q318  
**Collection Date:** 9/12/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: <b>NV00922-IC7_180913A</b>	QC Batch: <b>R127606</b>			PrepDate	Analyst: <b>RAB</b>		
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 11:52 AM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>			PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>	
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 01:41 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-005

**Client Sample ID:** C-R27-D-Q318  
**Collection Date:** 9/12/2018 12:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180913A</b>	QC Batch: <b>R127606</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 12:30 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 01:47 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-006

**Client Sample ID:** C-R27-S-Q318  
**Collection Date:** 9/12/2018 12:35:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_180913A	QC Batch: R127606				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 12:49 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_180918B	QC Batch: 70627				PrepDate	9/13/2018	Analyst: CEI
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 01:52 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-007

**Client Sample ID:** C-TAZ-D-Q318  
**Collection Date:** 9/12/2018 8:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180913A</b>	QC Batch: <b>R127606</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 01:10 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:11 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-008

**Client Sample ID:** C-TAZ-S-Q318  
**Collection Date:** 9/12/2018 9:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: <b>NV00922-IC7_180913B</b>	QC Batch: <b>R127607</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 07:26 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:15 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-009

**Client Sample ID:** R-28-Q318  
**Collection Date:** 9/12/2018 1:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180913B</b>	QC Batch: <b>R127607</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 08:22 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:21 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-010

**Client Sample ID:** R63-Q318  
**Collection Date:** 9/12/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: <b>NV00922-IC7_180913B</b>	QC Batch: <b>R127607</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 09:00 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:26 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-011

**Client Sample ID:** SW1-Q318  
**Collection Date:** 9/12/2018 2:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: <b>NV00922-IC7_180913B</b>	QC Batch: <b>R127607</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 07:54 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:31 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-012

**Client Sample ID:** SW2-Q318  
**Collection Date:** 9/12/2018 3:00:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: <b>NV00922-IC7_180913B</b>	QC Batch: <b>R127607</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 09:19 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:37 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-013

**Client Sample ID:** C-BNS-Q318  
**Collection Date:** 9/12/2018 11:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180913B</b>	QC Batch: <b>R127607</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 09:38 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:42 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-014

**Client Sample ID:** C-I-3-D-Q318  
**Collection Date:** 9/12/2018 9:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_180913B	QC Batch: R127607				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 09:57 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_180918B	QC Batch: 70627				PrepDate	9/13/2018	Analyst: CEI
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:48 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	C-I-3-S-Q318
<b>Lab Order:</b>	N032065	<b>Collection Date:</b>	9/12/2018 10:10:00 AM
<b>Project:</b>	PG&E Topock - RMP, RC000753.0801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032065-015		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: <b>NV00922-IC7_180913B</b>	QC Batch: <b>R127607</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/13/2018 10:16 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70627</b>				PrepDate	<b>9/13/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 02:53 AM

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>MB-R127606</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>
Client ID: <b>PBW</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139834</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>LCS-R127606</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139835</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.175	0.20	5.000	0	103 90 110

Sample ID <b>N032065-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139837</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	1.076	0.20	1.000	0.08260	99.3 90 110

Sample ID <b>N032065-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139839</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	1.050	0.20	1.000	0.07720	97.2 90 110

Sample ID <b>N032065-005AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139843</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	1.077	0.20	1.000	0.06510	101 90 110

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values



**ASSET LABORATORIES**  
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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032065-006AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139845</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.085	0.20	1.000	0.06330	102	90	110				

Sample ID <b>N032065-007AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139847</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.083	0.20	1.000	0.07220	101	90	110				

Sample ID <b>N032065-003AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139858</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.091	0.20	1.000	0.08260	101	90	110	1.076	1.41	20	

Sample ID <b>N032071-001ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139859</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	16153.600	400						16300	0.884	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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ELAP Cert 2921  
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**NEVADA** | P: 702.307.2659 F: 702.307.2691  
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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID: <b>LCS-R127607</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139874</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.233	0.20	5.000	0	105	90	110				

Sample ID: <b>MB-R127607</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139875</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID: <b>N032065-008AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139877</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.070	0.20	1.000	0.08030	99.0	90	110				

Sample ID: <b>N032065-008AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139878</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.024	0.20	1.000	0.08030	94.3	90	110	1.070	4.48	20	

Sample ID: <b>N032065-011AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139880</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.121	0.20	1.000	0.1270	99.4	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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CALIFORNIA | P: 562.219.7435 | F: 562.219.7436  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 ELAP Cert 2921  
 EPA ID CA01638

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 3151 W. Post Rd., Las Vegas, NV 89118  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032065-011ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139881</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.129	0.20						0.1270	0	20	

Sample ID <b>N032065-009AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139883</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.094	0.20	1.000	0.1056	98.9	90	110				

Sample ID <b>N032065-010AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139887</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.071	0.20	1.000	0.07740	99.3	90	110				

Sample ID <b>N032065-012AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139889</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.157	0.20	1.000	0.1018	106	90	110				

Sample ID <b>N032065-013AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139891</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.074	0.20	1.000	0.08050	99.4	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



**ASSET LABORATORIES**  
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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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**NEVADA** | P: 702.307.2659 F: 702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118  
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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032065-014AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139893</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.095	0.20	1.000	0.08550	101	90	110				

Sample ID <b>N032065-015AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139895</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.107	0.20	1.000	0.07680	103	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



**ASSET LABORATORIES**  
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ELAP Cert 2921  
EPA ID CA01638

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>MB-70627</b>	SampType: <b>MBLK</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145776</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>LCS-70627</b>	SampType: <b>LCS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145777</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	10.150	1.0	10.00	0	101	85	115				
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Sample ID <b>N032065-003B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145781</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	9.759	1.0	10.00	0	97.6	75	125				
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Sample ID <b>N032065-003B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145782</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	9.547	1.0	10.00	0	95.5	75	125	9.759	2.20	20	
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
ELAP Cert 2921  
EPA ID CA01638

**NEVADA** | P: 702.307.2659 | F: 702.307.2691  
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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-003

**Client Sample ID:** C-R22A-D-Q318  
**Collection Date:** 9/12/2018 11:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.35	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CALIFORNIA** | P:562.219.7435 F:562.219.7436  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 ELAP Cert 2921  
 EPA ID CA01638

**NEVADA** | P:702.307.2659 F:702.307.2691  
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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-004

**Client Sample ID:** C-R22A-S-Q318  
**Collection Date:** 9/12/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.41	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-005

**Client Sample ID:** C-R27-D-Q318  
**Collection Date:** 9/12/2018 12:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.45	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-006

**Client Sample ID:** C-R27-S-Q318  
**Collection Date:** 9/12/2018 12:35:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.44	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-007

**Client Sample ID:** C-TAZ-D-Q318  
**Collection Date:** 9/12/2018 8:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.40	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-008

**Client Sample ID:** C-TAZ-S-Q318  
**Collection Date:** 9/12/2018 9:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.37	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-009

**Client Sample ID:** R-28-Q318  
**Collection Date:** 9/12/2018 1:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.36	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-010

**Client Sample ID:** R63-Q318  
**Collection Date:** 9/12/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.38	0.032	0.050	mg/L	1		9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-013

**Client Sample ID:** C-BNS-Q318  
**Collection Date:** 9/12/2018 11:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.37	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-014

**Client Sample ID:** C-I-3-D-Q318  
**Collection Date:** 9/12/2018 9:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.41	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-015

**Client Sample ID:** C-I-3-S-Q318  
**Collection Date:** 9/12/2018 10:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180917B</b>	QC Batch: <b>R127648</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.38	0.032	0.050		mg/L	1	9/17/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R127648</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>
Client ID: <b>PBW</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141096</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R127648</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141097</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.565	0.050	0.5000	0	113 85 115

Sample ID <b>N032065-005EDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141101</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.504	0.050			0.4465 12.1 20

Sample ID <b>N032065-004EMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141103</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.934	0.050	0.5000	0.4076	105 75 125

Sample ID <b>N032065-004EMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141104</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.966	0.050	0.5000	0.4076	112 75 125 0.9339 3.40 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-003

**Client Sample ID:** C-R22A-D-Q318  
**Collection Date:** 9/12/2018 11:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70629			PrepDate	9/13/2018		Analyst: CEI
Iron	23	18	20		ug/L	1	9/25/2018 09:07 AM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70628			PrepDate	9/13/2018		Analyst: CEI
Iron	34	18	20		ug/L	1	9/25/2018 10:50 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-004

**Client Sample ID:** C-R22A-S-Q318  
**Collection Date:** 9/12/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70629			PrepDate	9/13/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 09:34 AM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70628			PrepDate	9/13/2018		Analyst: CEI
Iron	34	18	20		ug/L	1	9/25/2018 11:30 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-005

**Client Sample ID:** C-R27-D-Q318  
**Collection Date:** 9/12/2018 12:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70629			PrepDate	9/13/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 09:39 AM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70628			PrepDate	9/13/2018		Analyst: CEI
Iron	32	18	20		ug/L	1	9/25/2018 11:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-006

**Client Sample ID:** C-R27-S-Q318  
**Collection Date:** 9/12/2018 12:35:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70629			PrepDate	9/13/2018		Analyst: CEI
Iron	52	18	20		ug/L	1	9/25/2018 09:45 AM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70628			PrepDate	9/13/2018		Analyst: CEI
Iron	32	18	20		ug/L	1	9/25/2018 11:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-007

**Client Sample ID:** C-TAZ-D-Q318  
**Collection Date:** 9/12/2018 8:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925A	QC Batch: 70629				PrepDate	9/13/2018	Analyst: CEI
Iron	39	18	20		ug/L	1	9/25/2018 10:02 AM

**TOTAL METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925B	QC Batch: 70628				PrepDate	9/13/2018	Analyst: CEI
Iron	36	18	20		ug/L	1	9/25/2018 11:46 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-008

**Client Sample ID:** C-TAZ-S-Q318  
**Collection Date:** 9/12/2018 9:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70629			PrepDate	9/13/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 10:08 AM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70628			PrepDate	9/13/2018		Analyst: CEI
Iron	27	18	20		ug/L	1	9/25/2018 11:51 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-009

**Client Sample ID:** R-28-Q318  
**Collection Date:** 9/12/2018 1:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70629			PrepDate	9/13/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 10:13 AM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70628			PrepDate	9/13/2018		Analyst: CEI
Iron	33	18	20		ug/L	1	9/25/2018 11:57 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-010

**Client Sample ID:** R63-Q318  
**Collection Date:** 9/12/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925A	QC Batch: 70629				PrepDate	9/13/2018	Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 10:18 AM

**TOTAL METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925B	QC Batch: 70628				PrepDate	9/13/2018	Analyst: CEI
Iron	39	18	20		ug/L	1	9/25/2018 12:14 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-013

**Client Sample ID:** C-BNS-Q318  
**Collection Date:** 9/12/2018 11:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70629			PrepDate	9/13/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 10:24 AM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70628			PrepDate	9/13/2018		Analyst: CEI
Iron	36	18	20		ug/L	1	9/25/2018 12:20 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-014

**Client Sample ID:** C-I-3-D-Q318  
**Collection Date:** 9/12/2018 9:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70629			PrepDate	9/13/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 10:29 AM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70628			PrepDate	9/13/2018		Analyst: CEI
Iron	33	18	20		ug/L	1	9/25/2018 12:25 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-015

**Client Sample ID:** C-I-3-S-Q318  
**Collection Date:** 9/12/2018 10:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925A	QC Batch: 70629				PrepDate	9/13/2018	Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 10:34 AM

**TOTAL METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925B	QC Batch: 70628				PrepDate	9/13/2018	Analyst: CEI
Iron	33	18	20		ug/L	1	9/25/2018 12:30 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WDPGEPB**

Sample ID <b>MB-70629</b>	SampType: <b>MBLK</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128807</b>
Client ID: <b>PBW</b>	Batch ID: <b>70629</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151469</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Iron	ND	20			

Sample ID <b>LCS-70629</b>	SampType: <b>LCS</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128807</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70629</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151470</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Iron	104.905	20	100.0	0	105 85 115

Sample ID <b>N032065-003B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128807</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70629</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151474</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Iron	103.573	20	100.0	22.72	80.9 75 125

Sample ID <b>N032065-003B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128807</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70629</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151475</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Iron	103.785	20	100.0	22.72	81.1 75 125 103.6 0.204 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WPGEPB**

Sample ID <b>MB-70628</b>	SampType: <b>MBLK</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128810</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70628</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151582</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron ND 20

Sample ID <b>LCS-70628</b>	SampType: <b>LCS</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128810</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70628</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151583</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 104.584 20 100.0 0 105 85 115

Sample ID <b>N032065-003C-MS</b>	SampType: <b>MS</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128810</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70628</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151589</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 136.908 20 100.0 33.97 103 75 125

Sample ID <b>N032065-003C-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128810</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70628</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151590</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 135.935 20 100.0 33.97 102 75 125 136.9 0.713 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-003

**Client Sample ID:** C-R22A-D-Q318  
**Collection Date:** 9/12/2018 11:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.7	0.081	0.10	µg/L	1	9/19/2018 01:13 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 01:13 AM
Manganese	1.0	0.26	0.50	µg/L	1	9/19/2018 01:13 AM
Molybdenum	4.9	0.21	0.50	µg/L	1	9/19/2018 01:13 AM
Selenium	1.6	0.36	0.50	µg/L	1	9/26/2018 10:56 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-004

**Client Sample ID:** C-R22A-S-Q318  
**Collection Date:** 9/12/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 01:41 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 01:41 AM
Manganese	1.1	0.26	0.50	µg/L	1	9/19/2018 01:41 AM
Molybdenum	4.5	0.21	0.50	µg/L	1	9/19/2018 01:41 AM
Selenium	1.4	0.36	0.50	µg/L	1	9/26/2018 11:24 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-005

**Client Sample ID:** C-R27-D-Q318  
**Collection Date:** 9/12/2018 12:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 01:47 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 01:47 AM
Manganese	1.3	0.26	0.50	µg/L	1	9/19/2018 01:47 AM
Molybdenum	4.6	0.21	0.50	µg/L	1	9/19/2018 01:47 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 01:22 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-006

**Client Sample ID:** C-R27-S-Q318  
**Collection Date:** 9/12/2018 12:35:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 01:52 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 01:52 AM
Manganese	1.4	0.26	0.50	µg/L	1	9/19/2018 01:52 AM
Molybdenum	4.8	0.21	0.50	µg/L	1	9/19/2018 01:52 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 11:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-007

**Client Sample ID:** C-TAZ-D-Q318  
**Collection Date:** 9/12/2018 8:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 02:11 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 02:11 AM
Manganese	0.78	0.26	0.50	µg/L	1	9/19/2018 02:11 AM
Molybdenum	4.5	0.21	0.50	µg/L	1	9/19/2018 02:11 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 01:33 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-008

**Client Sample ID:** C-TAZ-S-Q318  
**Collection Date:** 9/12/2018 9:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.5	0.081	0.10	µg/L	1	9/19/2018 02:15 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 02:15 AM
Manganese	1.2	0.26	0.50	µg/L	1	9/19/2018 02:15 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 02:15 AM
Selenium	1.6	0.36	0.50	µg/L	1	9/26/2018 11:58 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-009

**Client Sample ID:** R-28-Q318  
**Collection Date:** 9/12/2018 1:10:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 02:21 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 02:21 AM
Manganese	1.3	0.26	0.50	µg/L	1	9/19/2018 02:21 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 02:21 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 01:04 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-010

**Client Sample ID:** R63-Q318  
**Collection Date:** 9/12/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 02:26 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 02:26 AM
Manganese	1.3	0.26	0.50	µg/L	1	9/19/2018 02:26 AM
Molybdenum	4.6	0.21	0.50	µg/L	1	9/19/2018 02:26 AM
Selenium	1.7	0.36	0.50	µg/L	1	9/26/2018 12:09 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-013

**Client Sample ID:** C-BNS-Q318  
**Collection Date:** 9/12/2018 11:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 02:42 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 02:42 AM
Manganese	1.2	0.26	0.50	µg/L	1	9/19/2018 02:42 AM
Molybdenum	4.6	0.21	0.50	µg/L	1	9/19/2018 02:42 AM
Selenium	1.7	0.36	0.50	µg/L	1	9/26/2018 01:17 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-014

**Client Sample ID:** C-I-3-D-Q318  
**Collection Date:** 9/12/2018 9:50:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.7	0.081	0.10	µg/L	1	9/19/2018 02:48 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 02:48 AM
Manganese	1.1	0.26	0.50	µg/L	1	9/26/2018 12:31 PM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 02:48 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 12:31 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032065-015

**Client Sample ID:** C-I-3-S-Q318  
**Collection Date:** 9/12/2018 10:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70627			PrepDate	9/13/2018	Analyst: CEI
Arsenic	2.5	0.081	0.10	µg/L	1	9/19/2018 02:53 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 02:53 AM
Manganese	1.0	0.26	0.50	µg/L	1	9/26/2018 12:37 PM
Molybdenum	4.4	0.21	0.50	µg/L	1	9/19/2018 02:53 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 12:37 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>MB-70627</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>
Client ID: <b>PBW</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145720</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Arsenic	ND	0.10			
Barium	ND	1.0			
Manganese	ND	0.50			
Molybdenum	ND	0.50			

Sample ID <b>LCS-70627</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145721</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Arsenic	10.178	0.10	10.00	0	102	85	115			
Barium	10.193	1.0	10.00	0	102	85	115			
Manganese	105.867	0.50	100.0	0	106	85	115			
Molybdenum	9.822	0.50	10.00	0	98.2	85	115			

Sample ID <b>N032065-003B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145725</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Arsenic	12.749	0.10	10.00	2.680	101	75	125			
Barium	116.194	1.0	10.00	110.8	53.5	75	125			S
Manganese	101.171	0.50	100.0	1.001	100	75	125			
Molybdenum	15.510	0.50	10.00	4.938	106	75	125			

Sample ID <b>N032065-003B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145726</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Arsenic	12.815	0.10	10.00	2.680	101	75	125	12.75	0.511	20
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>N032065-003B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145726</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	116.175	1.0	10.00	110.8	53.4	75	125	116.2	0.0159	20	S
Manganese	101.012	0.50	100.0	1.001	100	75	125	101.2	0.157	20	
Molybdenum	15.595	0.50	10.00	4.938	107	75	125	15.51	0.542	20	

Sample ID <b>MB-70627</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128842</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152573</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	ND	0.50									

Sample ID <b>LCS-70627</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128842</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152574</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	9.705	0.50	10.00	0	97.1	85	115				

Sample ID <b>N032065-003B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128842</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152578</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	10.172	0.50	10.00	1.573	86.0	75	125				

Sample ID <b>N032065-003B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/13/2018</b>	RunNo: <b>128842</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152579</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	11.602	0.50	10.00	1.573	100	75	125	10.17	13.1	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CALIFORNIA** | P: 562.219.7435 F: 562.219.7436  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
ELAP Cert 2921  
EPA ID CA01638

**NEVADA** | P: 702.307.2659 F: 702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118  
ELAP Cert 2676 | NV Cert N000922  
ORELAP/NELAP Cert 4046

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# SAMPLE RECEIVING ITEMS



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California: 11060 Artesia Blvd., Ste C, Carritos, CA 90703  
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www.assetlaboratories.com

Page **1** of **1**

Client: Arcadis Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661 Phone: 916-786-3302 Submitted By: <i>Nora Toy</i> Title: <i>sample tech</i> Signature: <i>[Signature]</i> Date: <i>9/12/18</i>			Report to: Dan Bush Company: Arcadis Email: <i>dan.bush@arcadis.com</i> <i>daniel.moore@crttgen.com</i> Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661 Phone: 916-786-3302 Sampled By: <i>Nora Toy</i> Signature: <i>[Signature]</i> Date: <i>9/12/18</i>			Bill to: Marty Bloes Address: Email to: <i>mbloes@pivox.com</i> P.O.# Phone: 949-727-1400, ext 200 Fax:			EDD Requirement Excel EDD Geotracker Labspec Others Specify: RWQCB Global ID:			QA/QC RTNE RWQCB CalTrans LEVEL III LEVEL IV Regulatory Specify State:			Sample Receipt Condition 1. Chilled 2. Headspace 3. Container Intact 4. Seal Present 5. IR number 6. Method of Cooling: Sample Temp: <i>5:10</i> Courier: Tracking No.:								
Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	CR(VI) FF (E218.6) (NH4)2, SO4, NH4, OH	Field QC Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH	Dissolved metals (SW6010B)(SW6020Adis) FF; HNO3 Cr	Dissolved metals (SW6010B)(SW6020Adis) FF; HNO3 Ca, Mg, K, Na, B	Dissolved metals (SW6010B)(SW6020Adis) FF; HNO3 As, Mn, Fe, Se, Mo, Ba	Total metals (SW6010B); HNO3 Fe	Anions (E300.0); Br, Cl, SO4	Specific Conductance (E120.1)	pH (SM4500HB)	TDS (SM2540C)	Alkalinity (Total, reported as CaCO3) (SM2320B)	TSS (SM2540)	Nitrate/Nitrite (SM4500NO3) Nitrate; H2SO4	Turn Around Time	No. of Container	Container Type	REMARKS	
	N032065-01	MW-912-Q318 • AB1-Q318	9/12/18	09:00		X	X	X	X	X	X	X	X	X	X	X	X	E 1	P	BN	Hold		
	-02	• AB2-Q318 • AB3-Q318	9/12/18	13:20			X											E 1	P	BN	Hold		
Relinquished by (Signature and Printed Name): <i>Nora Toy</i> Date/Time: <i>9/12/18 1555</i>			Relinquished by (Signature and Printed Name): <i>[Signature]</i> Date/Time: <i>9/12/18 1555</i>			Turn Around Time (TAT)			Special Instruction:														
Relinquished by (Signature and Printed Name): <i>[Signature]</i> Date/Time: <i>9/12/18 1513</i>			Relinquished by (Signature and Printed Name): <i>[Signature]</i> Date/Time: <i>9/12/18 1513</i>			<input type="checkbox"/> A < 24 Hrs or Same Day TAT <input type="checkbox"/> B = Next Workday <input type="checkbox"/> C = 2 Workdays <input type="checkbox"/> D = 3 Workdays <input checked="" type="checkbox"/> E = Routine 5-7 Workdays																	
Relinquished by (Signature and Printed Name):			Relinquished by (Signature and Printed Name):			TAT Starts at 8 AM the following day if samples received after 3:00PM.																	
Terms: 1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report. 2. Regular TAT is 5-7 business days, surcharge will apply for rush analysis Less than 24 Hrs. = 200% Next Day = 100% 2 Workdays = 50% 3 Workdays = 35% 4 Workdays = 20% 3. Custom EDD formats will be an additional 3% of the total project price. 4. Add 10% surcharge for Level III Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.						5. Trip Blanks and Equipment Blanks are billable samples. 6. Asset Laboratories is not responsible for samples collected using incorrect methodology. 7. Terms are net 30 days. 8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed. 9. For subcontract analysis, TAT and Surcharges will vary.						Preservatives: H=HCL N=HNO3 S=H2SO4 C=4°C Z=Zn(AC)2 O=NaOH T=Na2S2O3 Others/Specify: B (NH4)2SO4/NH4OH						Container Type: T=Tube V=VOA P=Plat J=Jar B=Tedlar G=Glass M=Metal M=Metal C=Can					

White=Laboratory Copy

Yellow=Customer's Copy



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 www.assetlaboratories.com

Page 1 of 1

Client: Arcadis		Report to: Dan Bush		Bill to: Marty Bloes		EDD Requirement		QA/QC		Sample Receipt Condition														
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis		Address:		Excel EDD		RTNE		Y N														
Address: Roseville, CA 95661		Email: dan.bush@arcadis.com		Address:		GeoTracker		RWQCB		1. Chilled														
Phone: 916-786-3302		Email: daniel.moore@critigen.com		Address:		Labspec		CalTrans		2. Headspace														
Fax:		Address: 1410 Rocky Ridge Dr # 330		Email to: mbloes@pivox.com		Others		LEVEL III		3. Container Intact														
Submitted By: <i>Nana Toy</i>		Roseville, CA 95661		P.O.#		Specify:		LEVEL IV		4. Seal Present														
Title: <i>sample Test</i>		Phone: 916-786-3302		Phone: 949-727-1400, ext 200		Global ID:		RWQCB		5. IR number														
Signature: <i>[Signature]</i>		Date: <i>9/12/18</i>		Sampled By: <i>Nana Toy</i>		Specify State:		Regulatory		6. Method of Cooling:														
Project Name: PG&E Topock - RMP		Signature: <i>[Signature]</i>		Date: <i>9/12/18</i>		Sample Temp: <i>22°C / 8.1°C / 20°C</i>				Courier:														
Project Number: RC000753.0601										Tracking No.:														
Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	Field QC Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH	Dissolved metals (SW6010B/SW6020A) FF; HNO3	Dissolved metals (SW6010B/SW6020A) FF; HNO3	Dissolved metals (SW6010B/SW6020A) FF; HNO3	Total metals (SW6010B); HNO3	Fe	Anions (E300.0); Br, Cl, SO4	Specific Conductance (E120.1)	pH (SM4500-HB)	TDS (SM2540C)	Alkalinity (Total, reported as CaCO3) (SM2320B)	TSS (SM2540)	Nitrate/Nitrite (SM4600N03) Nitrogen; H2SO4	Oxygen and deuterium stable isotopes (CFIRM)	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1		C-NR4-S-Q318				X	X	X	X	X	X	X	X	X	X	X	X	X	X	E 5	P	BNS		
2	N032065-03	C-R22A-D-Q318	9/12/18	11:00		X	X	X	X	X	X	X	X	X	X	X	X	X	X	E 7.5	P	BNS		
3	-04	C-R22A-S-Q318	9/12/18	11:15		X	X	X	X	X	X	X	X	X	X	X	X	X	X	E 7.5	P	BNS		
4	-05	C-R27-D-Q318	9/12/18	12:15		X	X	X	X	X	X	X	X	X	X	X	X	X	X	E 7.5	P	BNS		
5	-06	C-R27-S-Q318	9/12/18	12:35		X	X	X	X	X	X	X	X	X	X	X	X	X	X	E 7.5	P	BNS		
	-07	C-TAZ-D-Q318	9/12/18	0850		X	X	X	X	X	X	X	X	X	X	X	X	X	X	E 5	P	BNS		
7		MW-911-Q318				X	X	X	X	X	X	X	X	X	X	X	X	X	X	E 5	P	BNS		
8	-08	C-TAZ-S-Q318	9/12/18	0945		X	X	X	X	X	X	X	X	X	X	X	X	X	X	E 7.5	P	BNS		
9		R-19-Q318				X	X	X	X	X	X	X	X	X	X	X	X	X	X	E 5	P	BNS		
10	-09	R-28-Q318	9/12/18	13:10		X	X	X	X	X	X	X	X	X	X	X	X	X	X	E 7.5	P	BNS		
11	-10	R63-Q318	9/12/18	10:35		X	X	X	X	X	X	X	X	X	X	X	X	X	X	E 5	P	BNS		
12		RRB-Q318				X	X	X	X	X	X	X	X	X	X	X	X	X	X	E 5	P	BNS		
13	-11	SW1-Q318	9/12/18	14:40		X	X	X	X	X	X	X	X	X	X	X	X	X	X	E 5	P	BNS		
14	-12	SW2-Q318	9/12/18	15:00		X	X	X	X	X	X	X	X	X	X	X	X	X	X	E 7.5	P	BNS		
Relinquished by (Signature and Printed Name): <i>Nana Toy</i>		Date/Time: <i>9/12/18 1555</i>		Relinquished by (Signature and Printed Name): <i>[Signature]</i>		Date/Time: <i>9/12/18 1555</i>		Turn Around Time (TAT):		Special Instruction:														
Relinquished by (Signature and Printed Name): <i>[Signature]</i>		Date/Time: <i>9/12/18 1813</i>		Relinquished by (Signature and Printed Name): <i>[Signature]</i>		Date/Time: <i>9/12/18 1813</i>		<input type="checkbox"/> A < 24 Hrs or Same Day TAT <input type="checkbox"/> B = Next Workday <input type="checkbox"/> C = 2 Workdays <input type="checkbox"/> D = 3 Workdays <input checked="" type="checkbox"/> E = Routine 5-7 Workdays																
Relinquished by (Signature and Printed Name): <i>[Signature]</i>		Date/Time: <i>9/12/18 1813</i>		Relinquished by (Signature and Printed Name): <i>[Signature]</i>		Date/Time: <i>9/12/18 1813</i>		TAT Starts at 8 AM the following day if samples received after 3:00PM.																
Terms		5. Trip Blanks and Equipment Blanks are billable sample.		Preservatives:		Container Type:																		
1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report.		6. Asset Laboratories is not responsible for samples collected using incorrect methodology.		H=HCL		N=HNO3		S=H2SO4		C=4°C														
2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis		7. Turnover is net 30 days.		Z=Zn(AC)2		O=NaOH		T=Na2S2O3		T=Tube														
3. Custom EDD formats will be an additional 3% of the total project price.		8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed.		Others/Specify: B		(NH4)2SO4/NH4OH		M=Metal		V=VOA														
4. Add 10% surcharge for Level II Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.		9. For subcontract analysis, TAT and Surcharges will vary.						M=Metal		P=Pin														
								G=Glass		C=Can														

White=Laboratory Copy

Yellow=Customer's Copy





# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.


If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.


Cooler Received/Opened On: 9/12/2018 Workorder: N032065  
 Rep sample Temp (Deg C): 2.9/3.1/2.6 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |  |  |  |
|---|--|--|--|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>                       |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>            |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>            |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 7. Chain of custody agrees with sample labels?  | Yes <input type="checkbox"/>   | No <input checked="" type="checkbox"/>                     |  |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 11. All samples received within holding time?   | Yes <input type="checkbox"/>   | No <input checked="" type="checkbox"/>                     |  |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>                     |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input checked="" type="checkbox"/><br>Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input type="checkbox"/><br>NA <input type="checkbox"/> |

Comments: Samples for pH were past holding time upon receipt. See Correspondence.

Checklist Completed By: YR  9/17/2018

Reviewed By:  LG 091718

Mary Ann Balilu ([maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com))

---

From: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
Sent: Monday, September 17, 2018 8:22 AM  
To: Yoandra Rodriguez  
Cc: 'Andreafe. Gallardo'; 'Sonny. Lorenzo'; [maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com)  
Subject: RE: PG&E Topock - RMP, RC000753.0801 (Asset Labs No. N032065)

Hi Yoandra,

Please use PN ".0801D"

Please use "AmbientBlank-1-Q318", "AmbientBlank-2-Q318"

-----Original Message-----

From: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
Sent: Friday, September 14, 2018 6:27 PM  
To: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
Cc: 'Andreafe. Gallardo' <[andrea.gallardo@assetlaboratories.com](mailto:andrea.gallardo@assetlaboratories.com)>; 'Sonny. Lorenzo' <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>; [maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com)  
Subject: Re: PG&E Topock - RMP, RC000753.0801 (Asset Labs No. N032065)

Hi Laura,

Please also advise on the following issues:

- Which Project number to use: RC000753.0801 (pages 1 and 2) or RC000753.0801D (page 3).
- Sample 1 and 2: ID is "AB1-Q318", "AB2-Q318" on COC while "AmbientBlank-1-Q318", "AmbientBlank-2-Q318" on samples labels.

Thanks,

On 9/13/2018 1:03 PM, Madsen, Laura wrote:

- > HI,
- > That is correct. The dissolved metals on page 3 are the same as listed on page 2.
- >
- > Thanks,
- > Laura
- >

> -----Original Message-----

- > From: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>
- > Sent: Thursday, September 13, 2018 2:59 PM
- > To: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>
- > Cc: 'Marlon B. Cartin' <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>; 'Andreafe. Gallardo' <[andrea.gallardo@assetlaboratories.com](mailto:andrea.gallardo@assetlaboratories.com)>; 'Sonny. Lorenzo' <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>; [maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com)

> Subject: PG&E Topock - RMP, RC000753.0801 (Asset Labs No. N032065)

>

> Hi Laura,

>

> Please kindly inform list of dissolved metals needed for the samples on page 2 of the attached COC. For now we followed same dissolved metals requested on page 3.

>

> Thanks,

>

> --

> Yoandra Rodriguez

> Sample Control Officer

> Asset Laboratories

>

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--

Yoandra Rodriguez

Sample Control Officer

Asset Laboratories

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# ASSET Laboratories

## WORK ORDER Summary

17-Sep-18

WorkOrder: N032065

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/12/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032065-001A	AmbientBlank-1-Q318	9/12/2018 9:00:00 AM		Groundwater			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-002A	AmbientBlank-2-Q318	9/12/2018 1:20:00 PM					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-003A	C-R22A-D-Q318	9/12/2018 11:00:00 AM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-003B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-003C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-003D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-003E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-004A	C-R22A-S-Q318	9/12/2018 11:15:00 AM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-004B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-004C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

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## WORK ORDER Summary

17-Sep-18

WorkOrder: N032065

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/12/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032065-004C	C-R22A-S-Q318	9/12/2018 11:15:00 AM	9/26/2018	Groundwater	EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-004D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-004E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-005A	C-R27-D-Q318	9/12/2018 12:15:00 PM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-005B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-005C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-005D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-005E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-006A	C-R27-S-Q318	9/12/2018 12:35:00 PM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-006B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

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## WORK ORDER Summary

17-Sep-18

WorkOrder: N032065

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/12/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032065-006B	C-R27-S-Q318	9/12/2018 12:35:00 PM	9/26/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-006C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-006D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-006E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-007A	C-TAZ-D-Q318	9/12/2018 8:50:00 AM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-007B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-007C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-007D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR

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## WORK ORDER Summary

17-Sep-18

WorkOrder: N032065

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/12/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032065-007D	C-TAZ-D-Q318	9/12/2018 8:50:00 AM	9/26/2018	Groundwater		Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-007E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-008A	C-TAZ-S-Q318	9/12/2018 9:15:00 AM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-008B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-008C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-008D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-008E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-009A	R-28-Q318	9/12/2018 1:10:00 PM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-009B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW



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## WORK ORDER Summary

17-Sep-18

WorkOrder: N032065

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/12/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032065-009C	R-28-Q318	9/12/2018 1:10:00 PM	9/26/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-009D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-009E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-010A	R63-Q318	9/12/2018 10:35:00 AM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-010B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-010C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-010D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-010E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-011A	SW1-Q318	9/12/2018 2:40:00 PM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

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## WORK ORDER Summary

17-Sep-18

WorkOrder: N032065

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/12/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032065-011B	SW1-Q318	9/12/2018 2:40:00 PM	9/26/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-011C			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-012A	SW2-Q318	9/12/2018 3:00:00 PM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-012B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-012C			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-013A	C-BNS-Q318	9/12/2018 11:50:00 AM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-013B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-013C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-013D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-013E			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

17-Sep-18

WorkOrder: N032065

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/12/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032065-014A	C-I-3-D-Q318	9/12/2018 9:50:00 AM	9/26/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-014B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-014C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-014D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-014E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-015A	C-I-3-S-Q318	9/12/2018 10:10:00 AM	9/26/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-015B			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-015C			9/26/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/26/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-015D			9/26/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR

# ASSET Laboratories

## WORK ORDER Summary

17-Sep-18

**WorkOrder:** N032065

**Client ID:** ARCUS02

**Project:** PG&E Topock - RMP, RC000753.0801D

**QC Level:** Level IV

**Date Received:** 9/12/2018

**Comments:**

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032065-015D	C-I-3-S-Q318	9/12/2018 10:10:00 AM	9/26/2018	Groundwater	SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/26/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032065-015E			9/26/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032065-016A	FOLDER	9/26/2018	9/26/2018		EDD	RWQCB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			9/26/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			9/26/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

## List of Analysts

### ASSET Laboratories Work Order: N032065

NAME	TEST METHOD
Quennie Manimtim	SM 4500-NO3F
Claire Ignacio	EPA 6010B_Dissolved, EPA 6010B, EPA 6020_Dissolved
Ria Abes	EPA 218.6
Lilia Ramit	EPA 120.1, SM 4500-H+B, SM 2540D



# EPA 120.1



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R127586

Analyst: LSR

ASSET #: N032065

Date Analyzed: 13-Sep

Method: EPA 120.1

Initial Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
Continuing Calibration						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
Sample Information						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
QC Items						
10. Method blank values are below 1/2 the reporting limit.			X			
11. LCS compounds within control limits.			X			
12. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
Preliminary Report						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Jilia Ramit

Date: 9/18/2018

2nd Level Reviewer Nancy 9/26/2018

Date: \_\_\_\_\_

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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# Conductivity Logbook

Date: 9/17/18 1140

Analyst: LN

Standard	Std ID	Reading	Comments
9.91 <sup>us/cm</sup>	CIN-180731G	9.73 @ 26.7°C	% Rec: (90-110%)
1413	180515C	1450 @ 26.7°C	
9988	180731H	10120 @ 26.5°C	
99931	180515D	100100 @ 26.5°C	

Sample ID	Matrix	Reading	Comments
1 NO21976-01B	1hr0	3950 @ 25.9°C	
2 1 JB		7630 @ 25.8°C	
3 1 JB DUP		7650 @ 25.8°C	
4			
5			
6			
7			
8 1413 <sup>us/cm</sup>	CIN-180417B	1453 @ 26.7°C	
9 10000	180516A	10020 @ 27.0°C	
10 99601	180521B	102500 @ 26.8°C	
Dup			Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Date: 9/13/18 1040

Analyst: LN

Standard	Std ID	Reading	Comments
9.91 <sup>us/cm</sup>	CIN-180731G	9.89 @ 23.8°C	% Rec: (90-110%)
1413	180515C	1425 @ 24.2°C	
9988	180731H	10080 @ 24.2°C	
99931	180515D	100100 @ 24.3°C	

Sample ID	Matrix	Reading	Comments
1 NO22265-003D	1hr0	863 @ 23.7°C	
2 4D		866 @ 23.5°C	
3 5D		869 @ 23.3°C	1413 CIN 180417B
4 6D		875 @ 22.9°C	= 1426 @ 23.4°C
5 6D DUP		880 @ 23.0°C	10000 CIN 180516A
6 7D		875 @ 22.4°C	= 10330 @ 23.8°C
7 8D		879 @ 22.5°C	99601 CIN 180521B
8 9D		881 @ 22.4°C	= 101400 @ 24.0°C
9 10D		883 @ 22.5°C	
10 11C		914 @ 22.6°C	
Dup 12C		912 @ 22.2°C	Accept: 10% water, 20% soil
Std Chk: Julia Ramit	9/18/2018		% Rec: (90-110%)

Logbook # 6



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ELAP Cert 2676 | NV Cert 12522

# Conductivity Logbook

Date: 9/13/18 1040

Analyst: LSR CONTD

Standard	Std ID	Reading	Comments
9.91 <sup>us/cm</sup>	CNV-180731G	9.89 @ 22.8°C	% Rec: (90-110%)
1413	180515C	1421 @ 24.2°C	
9988	180731H	10080 @ 24.2°C	
9993	180515D	10060 @ 24.3°C	
Sample ID	Matrix	Reading	Comments
1 NO32065-013D	H <sub>2</sub> O	884 @ 22.8°C	
2   13DDP		889 @ 22.7°C	
3   14D		885 @ 22.5°C	
4   15D		887 @ 22.3°C	
5			
6			Jula Ramit
7			9/18/2018
8 1413 <sup>us/cm</sup>	CNV-180417B	1440 @ 24.2°C	
9 10000	180516A	1040 @ 24.4°C	
10 99601	180521B	10140 @ 24.6°C	
Dup			Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Date: 9/14/18 1020

Analyst: LR

Standard	Std ID	Reading	Comments
9.91 <sup>us/cm</sup>	CNV-180731G	9.88 @ 23.5°C	% Rec: (90-110%)
1413	180515C	1400 @ 23.8°C	
9988	180731H	10100 @ 23.8°C	
9993	180515D	99900 @ 24.0°C	
Sample ID	Matrix	Reading	Comments
1 NO32084-001D	H <sub>2</sub> O	850 @ 23.6°C	STANDARD: 1413 CNV-180417B
2   2D		864 @ 23.5°C	= 1324 @ 24.1°C
3   3D		862 @ 23.5°C	10000 CNV-180516A
4   4D		853 @ 23.4°C	= 10130 @ 24.2°C
5   5D		858 @ 23.2°C	868 99601 CNV-180521B
6   5DDP		870 @ 23.0°C	= 99600 @ 24.0°C
7   6D		858 @ 23.0°C	
8   7D		852 @ 23.2°C	
9   8D		859 @ 23.3°C	
10   9D		865 @ 23.3°C	865
Dup	10D	854 @ 23.3°C	Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Logbook # 6



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# SM 4500-H+B



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**pH Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

pH ARCUS  
 REV 0  
 101215

**FIRST LEVEL REVIEW:**

QC Batch Number: R127589

Instrument ID: pH meter

ASSET #: N032065

Analyst: LSR

Date Analyzed: 13-Sep

Method: EPA 150.1

pH Meter Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Was the meter calibrated using 3 buffers (4,7 and 10)?			X			
2. Was a closing buffer used at the end of analysis?			X			
3. Was the meter checked every 10 samples?			X			
<b>Sample Information</b>						
4. Are all samples analyzed within hold time.		X			)	
<b>QC Items</b>						
5. Was a duplicate sample analyzed?	X					
<b>Raw Data and Miscellaneous Information</b>						
6. Are Non-Conformances documented			X			)
7. Runlog complete and included in package.	X					
<b>Preliminary Report</b>						
8. Does the raw data match the preliminary report?	X					
9. Are analytical results correct?	X					
10. Is the QC summary report present and complete?	X					

Comments:

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Julia Ramit

Date: 9/18/2018

2nd Level Reviewer Manny 9/26/2018

Date:

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



# pH Logbook

Date: 9/13/18 1005

Analyst: LSR

Standard	Std ID	pH	Comments
Buffer 7	CNU-180515B	7.01 @ 25.0C	
Buffer 4	180515A	4.02 @ 25.0C	
Buffer 10	180131B	10.01 @ 25.0C	
Slope		98.8%	Acceptance Criteria: 95%-105%

Sample ID	Matrix	pH	Comments
1 NO32065-002D	1170	7.99 @ 25.0C	
2 3022P		8.01 @ 25.0C	
3 4D		7.98 @ 25.0C	7.98
4 5D		7.95 @ 25.0C	
5 6D		7.94 @ 25.0C	
6 7D		7.93 @ 25.0C	
7 8D		7.56 @ 25.0C	
8 9D		8.01 @ 25.0C	
9 10D		7.90 @ 25.0C	
10 11C		7.66 @ 25.0C	
Dup 12C		7.61 @ 25.0C	Accept: 10% water, 20% soil
Buffer (7, 4, 10)	CNU-180320C	7.0 @ 25.0C	Accept: +/-0.05 pH units from expected value

Date: \_\_\_\_\_

Analyst: \_\_\_\_\_

Standard	Std ID	pH	Comments
Buffer 7			
Buffer 4	C6MTD		
Buffer 10			
Slope			Acceptance Criteria: 95%-105%

Sample ID	Matrix	pH	Comments
1 NO32065-013D	1170	7.91 @ 25.0C	
2 14D		7.89 @ 25.0C	
3 15D		7.90 @ 25.0C	
4 15D Dup		7.93 @ 25.0C	
5			
6			
7			Julia Ramit 9/18/2018
8			Buffer 7 CNU180320C
9			= 7.0 @ 25.0C
10			

# SM 2540D



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: 70638/70639

Analyst: LSR

ASSET #: N032065

Date Analyzed: 14-Sep

Method: **EPA 160.2**

Initial Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
Continuing Calibration						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
Sample Information						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
QC Items						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
Preliminary Report						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer *Silia Ramit*

Date: 9/21/2018

2nd Level Reviewer *Nancy* 9/26/2018

Date: \_\_\_\_\_



# SAMPLE CALCULATION



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## SAMPLE CALCULATION

METHOD: SM 2540D

TEST NAME: Total Non-Filterable Residue

MATRIX: Water

FORMULA:

Calculate TSS concentration in mg/L, in the original sample as follows:

$$\text{TSS, mg/L} = \frac{(A-B)*1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For N032065-003D, TSS concentration in mg/L is calculated as follows:

$$\begin{aligned}\text{TSS, mg/L} &= \frac{(1.3852 - 1.3851) * 1000000}{100} \\ &= 1 \text{ mg/L}\end{aligned}$$

Since reporting limit is 10 mg/L, therefore:

$$\text{TSS} = \text{ND}$$

*Silia Ramit*

9/21/2018

# SAMPLE PREPARATION LOG



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PREP BATCH REPORT

Prep Start Date: 9/14/2018 8:09:19 A

Reviewed/ Date: *Yummy* 9/26/2018

Page: 1 of 1

Prep End Date: 9/14/2018 2:30:00 P

Initials/ Date: *Lilia Ramit* 9/21/2018

Prep Factor Units Temp. (°C):

Prep Batch 70638 Prep Code: 160.2\_W\_PRE

Technician: Lilia Ramit

mL / mL

105

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70638	Water		100	<input type="checkbox"/>	0	0	100	1.000		
MB-70638	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-003D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-003D-DU	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-004D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-005D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-006D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-007D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-008D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-009D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-010D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-013D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-014D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name	Spk ID	Spike Name	SampType	AmtAdd
10187	Glass Fiber Filter, 47mm	IWST180910A	1000 ppm Talc	LCS	100

Prep Start Date: 9/14/2018 8:09:19 A

Reviewed/ Date:

Prep End Date:

Initials/ Date: Julia Ramit 9/21/2018

Prep Batch 70638

Prep Code: 160.2\_W\_PRE

Technician: Lilia Ramit

Prep Factor Units  
mL / mL

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70638	Water	10571809107	100	<input type="checkbox"/>	0	0	100	1.000		
MB-70638	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-003D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-003D-DU	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-004D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-005D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-006D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-007D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-008D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-009D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-010D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-013D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-014D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

10187

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 9/14/2018 8:09:21 A

Reviewed/ Date: *Nancy* 9/26/2018

Page: 1 of 1

Prep End Date: 9/14/2018 2:30:00 P

Initials/ Date: *Lilia Ramit* 9/21/2018

Prep Factor Units Temp. (°C):  
mL / mL 105

Prep Batch 70639 Prep Code: 160.2\_W\_PRE

Technician: Lilia Ramit

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70639	Water		100	<input type="checkbox"/>	0	0	100	1.000		
MB-70639	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-015D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-001D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-001D-DU	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-002D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-003D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-004D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-005D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-006D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-007D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-008D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-009D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name	Spk ID	Spike Name	SampType	AmtAdd
10187	Glass Fiber Filter, 47mm	IWST180910A	1000 ppm Talc	LCS	100

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 9/14/2018 8:09:21 A  
 Prep End Date:

Reviewed/ Date: Julia Ramit 9/21/2018  
 Initials/ Date:

Page: 1 of 1

Prep Batch 70639 Prep Code: 160.2\_W\_PRE

Technician: Lilia Ramit  
 Prep Factor Units  
 mL / mL

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70639	Water	10.5180910A	100	<input type="checkbox"/>	0	0	100	1.000		
MB-70639	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-015D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-001D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-001D-DU	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-002D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-003D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-004D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-005D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-006D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-007D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-008D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-009D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

10187

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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SOLIDS RAW DATA

TEST (TSS/ TDS/TS)

Date	Sample ID	Sample Vol. (ml)	Crucible + Filter (TSS) Crucible (TDS, TS) Tare Wt.(g)	Crucible + Filter+Sample (TSS) Crucible + Sample (TDS, TS) Tare Wt.(g)	Comments
9/14/18 809	MB 70638	100	1.3939 1.3935	1.3933 1.3934	
	LCS 70638	100	1.4018 1.4017	1.4047 1.4049	
1	N032005-003D	100	1.3850 1.3851	1.3853 1.3852	
D1	3D DUP	100	1.3999 1.4001	1.4003 1.4002	
2	4D	100	1.4106 1.4104	1.4106 1.4106	
3	5D	100	1.3810 1.3807	1.3811 1.3811	
4	6D	100	1.3897 1.3899	1.3898 1.3899	
5	7D	100	1.4102 1.4101	1.4103 1.4102	
6	8D	100	1.4006 1.4006	1.4009 1.4007	
7	9D	100	1.3842 1.3843	1.3844 1.3843	

Julia Ramif

9/21/2018

ASSET Laboratories

Logbook#12



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# TOTAL SUSPENDED SOLIDS, TSS

$$\text{TSS, mg/L} = (\text{A}-\text{B}) * 10000 * \text{PF}$$

where:           A =       weight in g of aluminum dish + filter disc + residue after drying  
                       B =       weight in g of aluminum dish + filter disc  
                       PF =      100/volume of sample used in mL

	vol of sample (mL)	weight in g of aluminum dish + filter disc (B)	weight in g of aluminum dish + filter disc + residue after drying (A)	A-B*10000	Prep Fact (PF)	TSS, mg/L	Sample Type
Date:							
9/14/2018							
MB-70638	100	1.3935	1.3934	-1.0000	1.00	-1	MBLK
LCS-70638	100	1.4017	1.4949	932.0000	1.00	932	LCS
N032065-003D	100	1.3851	1.3852	1.0000	1.00	1	SAMP
N032065-003DDUP	100	1.4001	1.4002	1.0000	1.00	1	DUP
N032065-004D	100	1.4104	1.4106	2.0000	1.00	2	SAMP
N032065-005D	100	1.3807	1.3811	4.0000	1.00	4	SAMP
N032065-006D	100	1.3899	1.3899	0.0000	1.00	0	SAMP
N032065-007D	100	1.4101	1.4102	1.0000	1.00	1	SAMP
N032065-008D	100	1.4006	1.4007	1.0000	1.00	1	SAMP
N032065-009D	100	1.3843	1.3843	0.0000	1.00	0	SAMP
N032065-010D	100	1.3897	1.3896	-1.0000	1.00	-1	SAMP
N032065-013D	100	1.3953	1.3955	2.0000	1.00	2	SAMP
N032065-014D	100	1.3936	1.3939	3.0000	1.00	3	SAMP

*Lilia Ramit* 9/21/2018

SOLIDS RAW DATA

TEST: TSS/TDS/TS

Date	Sample ID	Sample Vol. (ml)	Crucible + Filter (TSS) Crucible (TDS, TS) Tare Wt.(g)	Crucible + Filter+Sample (TSS) Crucible + Sample (TDS, TS) Tare Wt.(g)	Comments
9/14/18 809 40	NB 70639	100	1.3801 1.3798	1.3796 1.3796	
	LC8 70639	100	1.3999 1.3996	1.4959 1.4958	
11	N032065-01SD	100	1.4076 1.4075	1.4078 1.4077	
12	N032084-001D	100	1.3826 1.3823	1.3827 1.3826	
D2	10 AIP	100	1.3732 1.3730	1.3734 1.3732	
13	20	100	1.3973 1.3971	1.3971 1.3971	
14	30	100	1.3880 1.3880	1.3883 1.3882	
15	40	100	1.3950 1.3952	1.3986 1.3988	
16	50	100	1.3920 1.3918	1.3939 1.3939	
17	60	100	1.3916 1.3915	1.3916 1.3916	

Silvia Ramit

9/21/2018

ASSET Laboratories

Logbook#12



**SOLIDS RAW DATA**

TEST TSS/ TDS/TS

Date	Sample ID	Sample Vol. (ml)	Crucible + Filter (TSS) Crucible (TDS, TS) Tare Wt.(g)	Crucible + Filter+Sample (TSS) Crucible + Sample (TDS, TS) Tare Wt.(g)	Comments
9/11/18	N032081-0070	100	1.3869 1.3868	1.3873 1.3871	
18					
19	80	100	1.4004 1.4006	1.4009 1.4009	
20	90	100	1.3971 1.3973	1.3978 1.3976	
	Lilia Ramit		9/21/2018		
	Closing of 1.000		@ 1430	9/11/18	US

ASSET Laboratories

Logbook#12



# TOTAL SUSPENDED SOLIDS, TSS

$$\text{TSS, mg/L} = (\text{A}-\text{B}) * 10000 * \text{PF}$$

where:           A =       weight in g of aluminum dish + filter disc + residue after drying  
                       B =       weight in g of aluminum dish + filter disc  
                       PF =      100/volume of sample used in mL

	vol of sample (mL)	weight in g of aluminum dish + filter disc (B)	weight in g of aluminum dish + filter disc + residue after drying (A)	A-B*10000	Prep Fact (PF)	TSS, mg/L	Sample Type
Date:							
9/14/2018							
MB-70639	100	1.3798	1.3796	-2.0000	1.00	-2	MBLK
LCS-70639	100	1.3996	1.4958	962.0000	1.00	962	LCS
N032065-015D	100	1.4075	1.4077	2.0000	1.00	2	SAMP
N032084-001D	100	1.3823	1.3826	3.0000	1.00	3	SAMP
N032084-001DDUP	100	1.373	1.3732	2.0000	1.00	2	DUP
N032084-002D	100	1.3971	1.3972	1.0000	1.00	1	SAMP
N032084-003D	100	1.388	1.3882	2.0000	1.00	2	SAMP
N032084-004D	100	1.3952	1.3988	36.0000	1.00	36	SAMP
N032084-005D	100	1.3918	1.3939	21.0000	1.00	21	SAMP
N032084-006D	100	1.3915	1.3916	1.0000	1.00	1	SAMP
N032084-007D	100	1.3868	1.3871	3.0000	1.00	3	SAMP
N032084-008D	100	1.4006	1.4009	3.0000	1.00	3	SAMP
N032084-009D	100	1.3973	1.3976	3.0000	1.00	3	SAMP

*Julia Ramit*

9/21/2018

# EPA 218.6



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IC Technical Batch Review Checklist (ARCUS02)  
ASSET LABORATORIES - LAS VEGAS

IC ARCUS  
REV 2.0  
011416

QC Batch Number: R127606  
ASSET #: N032065

Instrument ID: IC-07  
Analyst: RBA  
Date Analyzed: 9/13/2018

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)	X					
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?	X					
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?	X					
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)	X					
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X					
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)	X					
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X					
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments:

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer RBA

Date: 9/19/2018

2nd Level Reviewer Thurmy 9/26/2018

Date: \_\_\_\_\_





IC Technical Batch Review Checklist (ARCUS02)  
ASSET LABORATORIES - LAS VEGAS

IC ARCUS  
REV 2.0  
011416

QC Batch Number: R127607  
ASSET #: N032065

Instrument ID: IC-07  
Analyst: RBA  
Date Analyzed: 9/13/2018

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)	X					
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?	X					
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?	X					
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)	X					
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X					
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)	X					
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X					
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments:

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer *rba*

Date: 9/19/2018

2nd Level Reviewer *Nancy* 9/26/2018

Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 218.6  
**TEST NAME:** HEXAVALENT CHROMIUM BY IC  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Hexavalent Chromium concentration, in  $\mu\text{g/L}$ , in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

A =  $\mu\text{g/L}$ , IC Cr+6 calculated concentration

DF = dilution factor

For Sample **N032065-003A**, the concentration in  $\mu\text{g/L}$  is calculated as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = 0.0826 * 1$$

$$\text{Cr}^{+6}, \mu\text{g/L} = 0.0826$$

Since PQL is  $0.2 \mu\text{g/L}$ ,

$$\text{Cr}^{+6}, \mu\text{g/L} = \text{ND}$$

*rba* 9/19/2018

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
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P: 702.307.2659 F: 702.307.2691

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**INJECTION LOG: 180827A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:10 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:21 AM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:30 AM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/27/18 11:08 AM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:20 AM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:29 AM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:38 AM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:48 AM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:57 AM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 12:07 PM	Reported
11	ICV	ICV	1	Hexavalent Chromium	08/27/18 12:41 PM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	08/27/18 12:53 PM	Reported
13	ICB	ICB	1	Hexavalent Chromium	08/27/18 1:02 PM	Reported

*rba* 9/5/2018


## Injection Log Summary

## Sequence Details

Name:	IC-07_180827A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	27/Aug/18 14:07:57
No. of Injections:	16	Updated By:	ics 5000

## Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/27/2018 10:10	Finished	BLANK
2	BLANK	2	1000	Unknown		08/27/2018 10:21	Finished	BLANK
3	BLANK	3	1000	Unknown		08/27/2018 10:30	Finished	BLANK
4	iBLANK	5	1000	Unknown		08/27/2018 11:08	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	6	1000	Calibration Standard	01	08/27/2018 11:20	Finished	0.2 ppb, IWST-180622A
6	STD2-1.0 ppb	7	1000	Calibration Standard	02	08/27/2018 11:29	Finished	1.0 ppb, IWST-180622A
7	STD3-5.0 ppb	8	1000	Calibration Standard	03	08/27/2018 11:38	Finished	5.0 ppb, IWST-180622A
8	STD4-10.0 ppb	9	1000	Calibration Standard	04	08/27/2018 11:48	Finished	10 ppb, IWST-180622A
9	STD5-15.0 ppb	10	1000	Calibration Standard	05	08/27/2018 11:57	Finished	15 ppb, IWST-180622A
10	STD6-20.0 ppb	11	1000	Calibration Standard	06	08/27/2018 12:07	Finished	20 ppb, IWST-180622A
11	ICV.ICV.1.	13	1000	Unknown		08/27/2018 12:41	Finished	ICV @5ppb, IWST-180622B
12	PQL@0.2ppb.CCV2.	14	1000	Unknown		08/27/2018 12:53	Finished	PQL @ 0.2ppb
13	ICB.ICB.1.	15	1000	Unknown		08/27/2018 13:02	Finished	ICB R180806A
14	SHUTDOWN	17	1000	Unknown		08/27/2018 13:45	Finished	
15	Eluent: R180824A	18	1000	Unknown		n.a.	Finished	Eluent
16	PCR: R180824B	19	1000	Unknown		n.a.	Finished	Post-Column Reagent


  
 jba 9/5/2018

**INJECTION LOG: 180913A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:10 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:21 AM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:30 AM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/27/18 11:08 AM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:20 AM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:29 AM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:38 AM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:48 AM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:57 AM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 12:07 PM	Reported
11	BLANK	BLANK	1	Hexavalent Chromium	09/13/18 9:35 AM	Not Reported
12	BLANK	BLANK	1	Hexavalent Chromium	09/13/18 9:46 AM	Not Reported
13	CCV-1	CCV	1	Hexavalent Chromium	09/13/18 9:55 AM	Reported
14	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/13/18 10:05 AM	Reported
15	CCB-1	CCB	1	Hexavalent Chromium	09/13/18 10:14 AM	Reported
16	MB-R127606	MBLK	1	Hexavalent Chromium	09/13/18 10:24 AM	Reported
17	LCS-R127606	LCS	1	Hexavalent Chromium	09/13/18 10:33 AM	Reported
18	N032065-001A	SAMP	1	Hexavalent Chromium	09/13/18 10:53 AM	Not Reported
19	N032065-001AMS	MS	1	Hexavalent Chromium	09/13/18 11:05 AM	Not Reported
20	N032065-002A	SAMP	1	Hexavalent Chromium	09/13/18 11:14 AM	Not Reported
21	N032065-002AMS	MS	1	Hexavalent Chromium	09/13/18 11:24 AM	Not Reported
22	N032065-003A	SAMP	1	Hexavalent Chromium	09/13/18 11:34 AM	Reported
23	N032065-003AMS	MS	1	Hexavalent Chromium	09/13/18 11:43 AM	Reported
24	N032065-004A	SAMP	1	Hexavalent Chromium	09/13/18 11:52 AM	Reported
25	N032065-004AMS	MS	1	Hexavalent Chromium	09/13/18 12:02 PM	Reported
26	CCV-2	CCV1	1	Hexavalent Chromium	09/13/18 12:11 PM	Reported
27	CCB-2	CCB	1	Hexavalent Chromium	09/13/18 12:21 PM	Reported
28	N032065-005A	SAMP	1	Hexavalent Chromium	09/13/18 12:30 PM	Reported
29	N032065-005AMS	MS	1	Hexavalent Chromium	09/13/18 12:40 PM	Reported
30	N032065-006A	SAMP	1	Hexavalent Chromium	09/13/18 12:49 PM	Reported
31	N032065-006AMS	MS	1	Hexavalent Chromium	09/13/18 12:58 PM	Reported
32	N032065-007A	SAMP	1	Hexavalent Chromium	09/13/18 1:10 PM	Reported
33	N032065-007AMS	MS	1	Hexavalent Chromium	09/13/18 1:22 PM	Reported
34	N032062-001A	SAMP	1	Hexavalent Chromium	09/13/18 1:31 PM	Reported
35	N032071-010A	SAMP	50	Hexavalent Chromium	09/13/18 1:40 PM	Reported
36	N032071-001A	SAMP	2000	Hexavalent Chromium	09/13/18 1:50 PM	Reported
37	N032071-002A	SAMP	2000	Hexavalent Chromium	09/13/18 1:59 PM	Reported
38	CCV-3	CCV	1	Hexavalent Chromium	09/13/18 2:09 PM	Reported
39	CCB-3	CCB	1	Hexavalent Chromium	09/13/18 2:18 PM	Reported
40	N032071-003A	SAMP	2000	Hexavalent Chromium	09/13/18 2:28 PM	Reported
41	N032071-004A	SAMP	2000	Hexavalent Chromium	09/13/18 2:37 PM	Reported
42	N032071-005A	SAMP	2000	Hexavalent Chromium	09/13/18 2:47 PM	Reported

**INJECTION LOG: 180913A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N032071-006A	SAMP	2000	Hexavalent Chromium	09/13/18 2:56 PM	Reported
44	N032071-007A	SAMP	2000	Hexavalent Chromium	09/13/18 3:06 PM	Reported
45	N032071-008A	SAMP	2000	Hexavalent Chromium	09/13/18 3:15 PM	Reported
46	N032071-011A	SAMP	2000	Hexavalent Chromium	09/13/18 3:24 PM	Reported
47	BLANK	BLANK	1	Hexavalent Chromium	09/13/18 4:18 PM	Not Reported
48	BLANK	BLANK	1	Hexavalent Chromium	09/13/18 4:29 PM	Not Reported
49	CCV-4	CCV1	1	Hexavalent Chromium	09/13/18 4:39 PM	Reported
50	CCB-4	CCB	1	Hexavalent Chromium	09/13/18 4:57 PM	Reported
51	N032071-007A	SAMP	2000	Hexavalent Chromium	09/13/18 5:08 PM	Reported
52	N032071-009A	SAMP	1	Hexavalent Chromium	09/13/18 5:18 PM	Reported
53	N032065-003AMSD	MSD	1	Hexavalent Chromium	09/13/18 5:27 PM	Reported
54	N032071-001ADUP	DUP	2000	Hexavalent Chromium	09/13/18 5:40 PM	Reported
55	N032071-003A	SAMP	2000	Hexavalent Chromium	09/13/18 5:51 PM	Reported
56	N032071-004A	SAMP	2000	Hexavalent Chromium	09/13/18 6:00 PM	Reported
57	N032071-005A	SAMP	2000	Hexavalent Chromium	09/13/18 6:10 PM	Reported
58	N032071-006A	SAMP	2000	Hexavalent Chromium	09/13/18 6:19 PM	Reported
59	N032071-008A	SAMP	2000	Hexavalent Chromium	09/13/18 6:29 PM	Reported
60	N032071-011A	SAMP	2000	Hexavalent Chromium	09/13/18 6:38 PM	Reported
61	CCV-5	CCV	1	Hexavalent Chromium	09/13/18 6:48 PM	Reported
62	CCB-5	CCB	1	Hexavalent Chromium	09/13/18 6:57 PM	Reported
63	LCS-R127607	LCS	1	Hexavalent Chromium	09/13/18 7:07 PM	Reported
64	MB-R127607	MBLK	1	Hexavalent Chromium	09/13/18 7:16 PM	Reported
65	N032065-008A	SAMP	1	Hexavalent Chromium	09/13/18 7:26 PM	Reported
66	N032065-008AMS	MS	1	Hexavalent Chromium	09/13/18 7:35 PM	Reported
67	N032065-008AMSD	MSD	1	Hexavalent Chromium	09/13/18 7:44 PM	Reported
68	N032065-011A	SAMP	1	Hexavalent Chromium	09/13/18 7:54 PM	Reported
69	N032065-011AMS	MS	1	Hexavalent Chromium	09/13/18 8:03 PM	Reported
70	N032065-011ADUP	DUP	1	Hexavalent Chromium	09/13/18 8:13 PM	Reported
71	N032065-009A	SAMP	1	Hexavalent Chromium	09/13/18 8:22 PM	Reported
72	N032065-009AMS	MS	1	Hexavalent Chromium	09/13/18 8:32 PM	Reported
73	CCV-6	CCV1	1	Hexavalent Chromium	09/13/18 8:41 PM	Reported
74	CCB-6	CCB	1	Hexavalent Chromium	09/13/18 8:51 PM	Reported
75	N032065-010A	SAMP	1	Hexavalent Chromium	09/13/18 9:00 PM	Reported
76	N032065-010AMS	MS	1	Hexavalent Chromium	09/13/18 9:10 PM	Reported
77	N032065-012A	SAMP	1	Hexavalent Chromium	09/13/18 9:19 PM	Reported
78	N032065-012AMS	MS	1	Hexavalent Chromium	09/13/18 9:29 PM	Reported
79	N032065-013A	SAMP	1	Hexavalent Chromium	09/13/18 9:38 PM	Reported
80	N032065-013AMS	MS	1	Hexavalent Chromium	09/13/18 9:48 PM	Reported
81	N032065-014A	SAMP	1	Hexavalent Chromium	09/13/18 9:57 PM	Reported
82	N032065-014AMS	MS	1	Hexavalent Chromium	09/13/18 10:06 PM	Reported
83	N032065-015A	SAMP	1	Hexavalent Chromium	09/13/18 10:16 PM	Reported
84	N032065-015AMS	MS	1	Hexavalent Chromium	09/13/18 10:25 PM	Reported



**INJECTION LOG: 180913A**

**Instrument ID: IC-07**

<b>Sample No</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Peak Name</b>	<b>Injection Date/Time</b>	<b>Comments</b>
85	CCV-7	CCV	1	Hexavalent Chromium	09/13/18 10:35 PM	Reported
86	CCB-7	CCB	1	Hexavalent Chromium	09/13/18 10:44 PM	Reported

### Injection Log Summary

**Sequence Details**

Name:	IC-07_180913A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	13/Sep/18 23:15:02
No. of Injections:	89	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/27/2018 10:10	Finished	BLANK
2	BLANK	2	1000	Unknown		08/27/2018 10:21	Finished	BLANK
3	BLANK	3	1000	Unknown		08/27/2018 10:30	Finished	BLANK
4	iBLANK	5	1000	Unknown		08/27/2018 11:08	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	6	1000	Calibration Standard	01	08/27/2018 11:20	Finished	0.2 ppb, IWST-180622A
6	STD2-1.0 ppb	7	1000	Calibration Standard	02	08/27/2018 11:29	Finished	1.0 ppb, IWST-180622A
7	STD3-5.0 ppb	8	1000	Calibration Standard	03	08/27/2018 11:38	Finished	5.0 ppb, IWST-180622A
8	STD4-10.0 ppb	9	1000	Calibration Standard	04	08/27/2018 11:48	Finished	10 ppb, IWST-180622A
9	STD5-15.0 ppb	10	1000	Calibration Standard	05	08/27/2018 11:57	Finished	15 ppb, IWST-180622A
10	STD6-20.0 ppb	11	1000	Calibration Standard	06	08/27/2018 12:07	Finished	20 ppb, IWST-180622A
11	BLANK	1	1000	Unknown		09/13/2018 09:35	Finished	BLANK
12	BLANK	2	1000	Unknown		09/13/2018 09:46	Finished	BLANK
13	CCV-1.CCV,1,	3	1000	Unknown		09/13/2018 09:55	Finished	CCV @5ppb, IWST-180622A
14	PQL@0.2ppb.CCV,2,	4	1000	Unknown		09/13/2018 10:05	Finished	PQL @ 0.2ppb
15	CCB-1.CCB,1,	5	1000	Unknown		09/13/2018 10:14	Finished	CCB R180806A
16	MB-H2O.MBLK,1,	6	1000	Unknown		09/13/2018 10:24	Finished	MBLK R180806A
17	LCS-H2O.LCS,1,	7	1000	Unknown		09/13/2018 10:33	Finished	LCS @5ppb, IWST-180622B
18	N032065-001A,SAMF	9	1000	Unknown		09/13/2018 10:53	Finished	SAMP, 10mL
19	N032065-001AMS,MS	10	1000	Unknown		09/13/2018 11:05	Finished	MS (1ppb), IWST-180622B,10
20	N032065-002A,SAMF	11	1000	Unknown		09/13/2018 11:14	Finished	SAMP, 10mL
21	N032065-002AMS,MS	12	1000	Unknown		09/13/2018 11:24	Finished	MS (1ppb), IWST-180622B,10
22	N032065-003A,SAMF	13	1000	Unknown		09/13/2018 11:34	Finished	SAMP, 10mL
23	N032065-003AMS,MS	14	1000	Unknown		09/13/2018 11:43	Finished	MS (1ppb), IWST-180622B,10
24	N032065-004A,SAMF	15	1000	Unknown		09/13/2018 11:52	Finished	SAMP, 10mL
25	N032065-004AMS,MS	16	1000	Unknown		09/13/2018 12:02	Finished	MS (1ppb), IWST-180622B,10
26	CCV-2.CCV,1,	17	1000	Unknown		09/13/2018 12:11	Finished	CCV @10ppb, IWST-180622A
27	CCB-2.CCB,1,	18	1000	Unknown		09/13/2018 12:21	Finished	CCB R180806A
28	N032065-005A,SAMF	19	1000	Unknown		09/13/2018 12:30	Finished	SAMP, 10mL
29	N032065-005AMS,MS	20	1000	Unknown		09/13/2018 12:40	Finished	MS (1ppb), IWST-180622B,10
30	N032065-006A,SAMF	21	1000	Unknown		09/13/2018 12:49	Finished	SAMP, 10mL
31	N032065-006AMS,MS	22	1000	Unknown		09/13/2018 12:58	Finished	MS (1ppb), IWST-180622B,10
32	N032065-007A,SAMF	24	1000	Unknown		09/13/2018 13:10	Finished	SAMP, 10mL
33	N032065-007AMS,MS	25	1000	Unknown		09/13/2018 13:22	Finished	MS (1ppb), IWST-180622B,10
34	N032062-001A,SAMF	26	1000	Unknown		09/13/2018 13:31	Finished	SAMP, 10mL
35	N032071-010A,SAMF	27	1000	Unknown		09/13/2018 13:40	Finished	SAMP, 0.2>10mL
36	N032071-001A,SAMF	28	1000	Unknown		09/13/2018 13:50	Finished	SAMP,0.005> 10mL
37	N032071-002A,SAMF	29	1000	Unknown		09/13/2018 13:59	Finished	SAMP,0.005> 10mL
38	CCV-3.CCV,1,	30	1000	Unknown		09/13/2018 14:09	Finished	CCV @5ppb, IWST-180622A
39	CCB-3.CCB,1,	31	1000	Unknown		09/13/2018 14:18	Finished	CCB R180806A
40	N032071-003A,SAMF	32	1000	Unknown		09/13/2018 14:28	Finished	SAMP,0.005> 10mL
41	N032071-004A,SAMF	33	1000	Unknown		09/13/2018 14:37	Finished	SAMP,0.005> 10mL
42	N032071-005A,SAMF	34	1000	Unknown		09/13/2018 14:47	Finished	SAMP,0.005> 10mL
43	N032071-006A,SAMF	35	1000	Unknown		09/13/2018 14:56	Finished	SAMP,0.005> 10mL
44	N032071-007A,SAMF	36	1000	Unknown		09/13/2018 15:06	Finished	SAMP,0.005> 10mL
45	N032071-008A,SAMF	37	1000	Unknown		09/13/2018 15:15	Finished	SAMP,0.005> 10mL
46	N032071-011A,SAMF	38	1000	Unknown		09/13/2018 15:24	Interrupted	SAMP,0.005> 10mL
47	BLANK	39	1000	Unknown		09/13/2018 16:18	Finished	BLANK
48	BLANK	40	1000	Unknown		09/13/2018 16:29	Finished	BLANK
49	CCV-4.CCV,1,	43	1000	Unknown		09/13/2018 16:39	Finished	CCV @10ppb, IWST-180622A
50	CCB-4.CCB,1,	28	1000	Unknown		09/13/2018 16:57	Finished	CCB R180806A
51	N032071-007A,SAMF	29	1000	Unknown		09/13/2018 17:08	Finished	SAMP,0.005> 10mL
52	N032071-009A,SAMF	30	1000	Unknown		09/13/2018 17:18	Finished	SAMP,10mL
53	N032065-003AMSD,N	31	1000	Unknown		09/13/2018 17:27	Finished	MSD (1ppb), IWST-180622B,10
54	N032071-001ADUP,D	2	1000	Unknown		09/13/2018 17:40	Finished	DUP,0.005> 10mL
55	N032071-003A,SAMF	3	1000	Unknown		09/13/2018 17:51	Finished	SAMP,0.005> 10mL
56	N032071-004A,SAMF	4	1000	Unknown		09/13/2018 18:00	Finished	SAMP,0.005> 10mL
57	N032071-005A,SAMF	5	1000	Unknown		09/13/2018 18:10	Finished	SAMP,0.005> 10mL
58	N032071-006A,SAMF	6	1000	Unknown		09/13/2018 18:19	Finished	SAMP,0.005> 10mL
59	N032071-008A,SAMF	7	1000	Unknown		09/13/2018 18:29	Finished	SAMP,0.005> 10mL
60	N032071-011A,SAMF	8	1000	Unknown		09/13/2018 18:38	Finished	SAMP,0.005> 10mL

61	CCV-5.CCV,1,	9	1000	Unknown	09/13/2018 18:48	Finished	CCV @5ppb, IWST-180622A
62	CCB-5.CCB,1,	10	1000	Unknown	09/13/2018 18:57	Finished	CCB R180806A
63	LCS-2.LCS,1,	11	1000	Unknown	09/13/2018 19:07	Finished	LCS @5ppb, IWST-180622B
64	MB-2.MBLK,1,	12	1000	Unknown	09/13/2018 19:16	Finished	MBLK R180806A
65	N032065-008A,SAMP	13	1000	Unknown	09/13/2018 19:26	Finished	SAMP,10mL
66	N032065-008AMS,MS	14	1000	Unknown	09/13/2018 19:35	Finished	MS (1ppb), IWST-180622B,10
67	N032065-008AMSD,N	15	1000	Unknown	09/13/2018 19:44	Finished	MSD (1ppb), IWST-180622B,10
68	N032065-011A,SAMP	16	1000	Unknown	09/13/2018 19:54	Finished	SAMP,10mL
69	N032065-011AMS,MS	17	1000	Unknown	09/13/2018 20:03	Finished	MS (1ppb), IWST-180622B,10
70	N032065-011ADUP,D	18	1000	Unknown	09/13/2018 20:13	Finished	DUP,10mL
71	N032065-009A,SAMP	19	1000	Unknown	09/13/2018 20:22	Finished	SAMP,10mL
72	N032065-009AMS,MS	20	1000	Unknown	09/13/2018 20:32	Finished	MS (1ppb), IWST-180622B,10
73	CCV-6.CCV1,1,	21	1000	Unknown	09/13/2018 20:41	Finished	CCV @5ppb, IWST-180622A
74	CCB-6.CCB,1,	22	1000	Unknown	09/13/2018 20:51	Finished	CCB R180806A
75	N032065-010A,SAMP	23	1000	Unknown	09/13/2018 21:00	Finished	SAMP,10mL
76	N032065-010AMS,MS	24	1000	Unknown	09/13/2018 21:10	Finished	MS (1ppb), IWST-180622B,10
77	N032065-012A,SAMP	25	1000	Unknown	09/13/2018 21:19	Finished	SAMP,10mL
78	N032065-012AMS,MS	26	1000	Unknown	09/13/2018 21:29	Finished	MS (1ppb), IWST-180622B,10
79	N032065-013A,SAMP	27	1000	Unknown	09/13/2018 21:38	Finished	SAMP,10mL
80	N032065-013AMS,MS	28	1000	Unknown	09/13/2018 21:48	Finished	MS (1ppb), IWST-180622B,10
81	N032065-014A,SAMP	29	1000	Unknown	09/13/2018 21:57	Finished	SAMP,10mL
82	N032065-014AMS,MS	30	1000	Unknown	09/13/2018 22:06	Finished	MS (1ppb), IWST-180622B,10
83	N032065-015A,SAMP	31	1000	Unknown	09/13/2018 22:16	Finished	SAMP,10mL
84	N032065-015AMS,MS	32	1000	Unknown	09/13/2018 22:25	Finished	MS (1ppb), IWST-180622B,10
85	CCV-7.CCV,1,	33	1000	Unknown	09/13/2018 22:35	Finished	CCV @10ppb, IWST-180622A
86	CCB-7.CCB,1,	34	1000	Unknown	09/13/2018 22:44	Finished	CCB R180806A
87	SHUTDOWN	35	1000	Unknown	09/13/2018 22:54	Finished	
88	Eluent: R180912B	36	1000	Unknown	n.a.	Finished	Eluent
89	PCR: R180912C	37	1000	Unknown	n.a.	Finished	Post-Column Reagent

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## Hexavalent Chromium Preparation and Runlog

### Sample Preparation

Date Prepared: <u>9/13/18</u>	<i>Slope: 90.87</i>	Reagent ID: _____
Time Prepared: <u>10:44</u>	<i>4.4: 4.02 @ 25.0°C</i>	Sulfuric Acid: <u>10125</u>
Prepared By: <u>NSA</u>	<i>7: 7.01 @ 25.0°C</i>	Diphenylcarbazide: <u>C1N1 - 180516 B</u>
	<i>10: 10.01 @ 25.0°C</i>	NH4OH + NH4SO4 eluent: <u>NSO 912 B</u>
	<i>NS: 7.02 @ 25.0°C</i>	NH4OH + NH4SO4 buffer: <u>NSO 806 A</u>

1)	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
	NO32065-001A	9.44	-	~20mL	~20mL		1/1
2)	2A	9.49	-				1/1
3)	3A	9.33	-				1/3
4)	3A	9.32	-				2/3
5)	3A	9.35	-				3/3
6)	4A	9.34	-				1/3
7)	4A	9.36	-				2/3
8)	4A	9.32	-				3/3
9)	5A	9.28	-				1/3
10)	5A	9.34	-				2/3
11)	5A	9.36	-				3/3
12)	6A	9.31	-				1/3
13)	6A	9.30	-				2/3
14)	6A	9.33	-				3/3
15)	7A	9.35	-				1/3
	7A	9.36	-				2/3

### Sample Preparation

Date Prepared: <u>9/13/18</u>	Reagent ID: _____
Time Prepared: <u>10:44</u>	Sulfuric Acid: <u>10125</u>
Prepared By: <u>NSA</u>	Diphenylcarbazide: <u>C1N1 - 180516 B</u>
	NH4OH + NH4SO4 eluent: <u>NSO 912 B</u>
	NH4OH + NH4SO4 buffer: <u>NSO 806 A</u>

1)	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
	NO32065-7A	9.36	-	~20mL	~20mL		3/3
2)	8A	9.37	-				1/3
3)	8A	9.37	-				2/3
4)	8A	9.39	-				3/3
5)	9A	9.34	-				1/3
6)	9A	9.37	-				2/3
7)	9A	9.35	-				3/3
8)	10A	9.32	-				1/3
9)	10A	9.32	-				2/3
10)	10A	9.30	-				3/3
11)	11A	9.33	-				1/3
12)	11A	9.35	-				2/3
13)	11A	9.37	-				3/3
14)	12A	9.38	-				1/3
15)	12A	9.39	-				2/3
	12A	9.41	-				3/3

Logbook No. 15

*rlba* 9/19/2018



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENT & CHEMISTRY

"Serving Clients with Passion and Professionalism"

CALIFORNIA | P: 562.219.7435 F: 562.219.7436  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
ELAP Cert 2921  
6 of 100 ID CA01638

NEVADA | P: 702.307.2659 F: 702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118  
ELAP Cert 2676 | NV Cert 10922  
ORELAP/NELAP Cert 4046

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## Hexavalent Chromium Preparation and Runlog

### Sample Preparation

Date Prepared: 9/13/18  
 Time Prepared: 1034H  
 Prepared By: NBA

Reagent ID:  
 Sulfuric Acid: 10125  
 Diphenylcarbazide: CINU-180516K  
 NH4OH + NH4SO4 eluent: NV8912A  
 NH4OH + NH4SO4 buffer: NV806A

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	NV2065-17A	9.40	-	~250uL	~280uL		1/3
2)	17A	9.39	-				2/3
3)	17A	9.39	-				3/3
4)	NV2062-001A	7.77	8.00	~150uL	~150uL		
5)	NV2065-14A	9.36	-	~250uL	~280uL		1/3
6)	14A	9.33	-				2/3
7)	14A	9.34	-				3/3
8)	15A	9.38	-				1/3
9)	15A	9.35	-				2/3
10)	15A	9.37	-				3/3
11)							
12)							
13)							
14)							
15)							

### Sample Preparation

Date Prepared: 9/14/18  
 Time Prepared: 1116H  
 Prepared By: NBA

Slope: 98.12  
 pH 4: 4.030V  
 7: 7.002V  
 10: 10.002V  
 12: 12.002V

Reagent ID:  
 Sulfuric Acid: 10125  
 Diphenylcarbazide: CINU-180516K  
 NH4OH + NH4SO4 eluent: NV8914A  
 NH4OH + NH4SO4 buffer: NV806A NV8913A

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	NV2084-001A	9.32	-	~250uL	~280uL		1/3
2)	1A	9.34	-				2/3
3)	1A	9.32	-				3/3
4)	2A	9.30	-				1/3
5)	2A	9.30	-				2/3
6)	2A	9.31	-				3/3
7)	3A	9.26	-				1/3
8)	3A	9.25	-				2/3
9)	3A	9.24	-				3/3
10)	4A	9.20	-				1/3
11)	4A	9.31	-				2/3
12)	4A	9.31	-				3/3
13)	5A	9.21	-				1/3
14)	5A	9.32	-				2/3
15)	5A	9.24	-				3/3
	6A	9.33	-				1/3

Logbook No. 15



**nba** 9/19/2018

**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR THE ENVIRONMENT

"Serving Clients with Passion and Professionalism"

CALIFORNIA | P: 562.219.7435 F: 562.219.7436  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 ELAP Cert 2921  
 ID CA01638

NEVADA | P: 702.307.2659 F: 702.307.2691  
 3151 W. Post Rd., Las Vegas, NV 89118  
 ELAP Cert 2676 | NV Cert 1620922  
 ORELAP/NE LAP Cert 4046

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07  
Date Calibrated: 8/27/2018

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R <sup>2</sup>
Area,mAU*min	0.0542	0.2463	1.2679	2.5360	3.7695	5.0211	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST-170814H	IWST-180622A

Calibration Acceptance Criteria: > 0.999 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.



# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/27/2018</b>	SeqNo: <b>3139828</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.148	0.20	5.000	0	103	90	110				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/27/2018</b>	SeqNo: <b>3139829</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.219	0.20	0.2000	0	110	80	120				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139831</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.104	0.20	5.000	0	102	95	105				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139832</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.194	0.20	0.2000	0	97.1	80	120				

Sample ID <b>CCV-2</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139840</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.263	0.20	10.00	0	103	95	105				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139852</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.039	0.20	5.000	0	101	95	105				

Sample ID <b>CCV-4</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139854</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.332	0.20	10.00	0	103	95	105				

Sample ID <b>CCV-5</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139866</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.137	0.20	5.000	0	103	95	105				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>
Client ID: <b>ICV</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/27/2018</b>	SeqNo: <b>3139868</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.148	0.20	5.000	0	103 90 110

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/27/2018</b>	SeqNo: <b>3139869</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	0.219	0.20	0.2000	0	110 80 120

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139871</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	0.194	0.20	0.2000	0	97.1 80 120

Sample ID <b>CCV-5</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>
Client ID: <b>CCV</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139872</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.137	0.20	5.000	0	103 95 105

Sample ID <b>CCV-6</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>
Client ID: <b>CCV</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139884</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.112	0.20	5.000	0	102 95 105

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCV-7</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b> Units: <b>µg/L</b>				Prep Date:			RunNo: <b>127607</b>		
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>				Analysis Date: <b>9/13/2018</b>			SeqNo: <b>3139896</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.295	0.20	10.00	0	103	95	105				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>
Client ID: <b>ICB</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/27/2018</b>	SeqNo: <b>3139830</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139833</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139841</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium 0.038 0.20

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139853</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139855</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

CCB-2 has detect > 0.02ppb, however, samples are non-detect.

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

*Handwritten signature*  
9/26/2018

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCB-5</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127606</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127606</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139867</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>
Client ID: <b>ICB</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/27/2018</b>	SeqNo: <b>3139870</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium

ND 0.20

Sample ID <b>CCB-5</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139873</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium

ND 0.20

Sample ID <b>CCB-6</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139885</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium

ND 0.20

Sample ID <b>CCB-7</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127607</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127607</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/13/2018</b>	SeqNo: <b>3139897</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium

ND 0.20

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 9/13/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.131	
CCV-1	4.115	
CCV-2	4.115	
CCV-3	4.106	
CCV-4	4.115	
CCV-5	4.115	
CCV-6	4.115	
CCV-7	4.115	

**Average** 4.114

**Actual RT Window** 4.034 - 4.194

**Applied RT Window** 3.914 - 4.314

MB-R127606	N.A.	N.A.
LCS-R127606	4.115	PASS
N032065-001A	4.090	PASS
N032065-001AMS	4.115	PASS
N032065-002A	4.115	PASS
N032065-002AMS	4.115	PASS
N032065-003A	4.081	PASS
N032065-003AMS	4.106	PASS
N032065-004A	4.081	PASS
N032065-004AMS	4.098	PASS
N032065-005A	4.106	PASS
N032065-005AMS	4.106	PASS
N032065-006A	4.090	PASS
N032065-006AMS	4.106	PASS
N032065-007A	4.081	PASS
N032065-007AMS	4.106	PASS
N032062-001A	4.048	PASS
N032071-010A	4.106	PASS
N032071-001A	4.115	PASS
N032071-002A	4.115	PASS

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 9/13/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.131	
CCV-1	4.115	
CCV-2	4.115	
CCV-3	4.106	
CCV-4	4.115	
CCV-5	4.115	
CCV-6	4.115	
CCV-7	4.115	

**Average** 4.114

**Actual RT Window** 4.034 - 4.194

**Applied RT Window** 3.914 - 4.314

N032071-003A	4.106	PASS
N032071-004A	4.106	PASS
N032071-005A	4.106	PASS
N032071-006A	4.106	PASS
N032071-007A	4.148	PASS
N032071-008A	4.148	PASS
N032071-011A	N.A.	N.A.
N032071-007A	4.115	PASS
N032071-009A	N.A.	N.A.
N032065-003AMSD	4.106	PASS
N032071-001ADUP	4.115	PASS
N032071-003A	4.115	PASS
N032071-004A	4.115	PASS
N032071-005A	4.115	PASS
N032071-006A	4.115	PASS
N032071-008A	4.115	PASS
N032071-011A	4.115	PASS
LCS-R127607	4.115	PASS
MB-R127607	N.A.	N.A.
N032065-008A	4.098	PASS
N032065-008AMS	4.106	PASS

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 9/13/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.131	
CCV-1	4.115	
CCV-2	4.115	
CCV-3	4.106	
CCV-4	4.115	
CCV-5	4.115	
CCV-6	4.115	
CCV-7	4.115	

**Average** 4.114

**Actual RT Window** 4.034 - 4.194

**Applied RT Window** 3.914 - 4.314

N032065-008AMSD	4.115	PASS
N032065-011A	4.123	PASS
N032065-011AMS	4.106	PASS
N032065-011ADUP	4.098	PASS
N032065-009A	4.098	PASS
N032065-009AMS	4.106	PASS
N032065-010A	4.098	PASS
N032065-010AMS	4.106	PASS
N032065-012A	4.115	PASS
N032065-012AMS	4.106	PASS
N032065-013A	4.081	PASS
N032065-013AMS	4.106	PASS
N032065-014A	4.090	PASS
N032065-014AMS	4.106	PASS
N032065-015A	4.106	PASS
N032065-015AMS	4.106	PASS

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENTAL PROFESSION

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## METHOD DETECTION LIMIT 2017

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**  
 Method Number: EPA 218.6  
 Analysis Date(s): 5/5/2017, 5/8/2017, 5/9/2017, 5/10/2017, 5/11/2017, 5/12/2017, 5/15/2017  
 Analyst: Ria Abes

Matrix: **WATER**  
 Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

	Datafile	170505	170508	170509	170510	170511	170512	170515						
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	t <sub>(n-1)</sub> value	MDL	PQL	Remarks	
Hexavalent Chromium	0.1949	0.2135	0.1840	0.1828	0.2011	0.1936	0.1911	0.20	0.0105	3.143	<b>0.0331</b>	<b>0.20</b>	OK,meets criteria	

Students' t Values at 99% CL

#	t <sub>(n-1)</sub>
10	2.821
9	2.896
8	2.998
7	3.143



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL AND INDUSTRIAL APPLICATIONS

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

## LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Hexavalent Chromium by IC**                      Matrix: **WATER**  
 Method Number: EPA Method 218.6/7199                      Unit: µg/L  
 Analysis Date(s): 3/21/2018  
 Analyst: Ria Abes  
  
 Instrument Name: **IC-07**

Compound	MDL	LOD Spike Conc., µg/L	LOD actual Conc., µg/L
Hexavalent Chromium	0.0331	0.100	0.116

Compound	PQL	PQL Spike Conc., µg/L	PQL actual Conc., µg/L	% Recovery
Hexavalent Chromium	0.200	0.200	0.201	<u>100</u>





# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691



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# INITIAL CALIBRATION



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**INJECTION LOG: 180827A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:10 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:21 AM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:30 AM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/27/18 11:08 AM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:20 AM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:29 AM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:38 AM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:48 AM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:57 AM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 12:07 PM	Reported
11	ICV	ICV	1	Hexavalent Chromium	08/27/18 12:41 PM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	08/27/18 12:53 PM	Reported
13	ICB	ICB	1	Hexavalent Chromium	08/27/18 1:02 PM	Reported

*rba* 9/5/2018

*Nancy* 9/12/2018

IC-07 RBA 8/28/2018 5:31 PM

## Injection Log Summary

## Sequence Details

Name:	IC-07_180827A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	27/Aug/18 14:07:57
No. of Injections:	16	Updated By:	ics 5000

## Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/27/2018 10:10	Finished	BLANK
2	BLANK	2	1000	Unknown		08/27/2018 10:21	Finished	BLANK
3	BLANK	3	1000	Unknown		08/27/2018 10:30	Finished	BLANK
4	iBLANK	5	1000	Unknown		08/27/2018 11:08	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	6	1000	Calibration Standard	01	08/27/2018 11:20	Finished	0.2 ppb, IWST-180622A
6	STD2-1.0 ppb	7	1000	Calibration Standard	02	08/27/2018 11:29	Finished	1.0 ppb, IWST-180622A
7	STD3-5.0 ppb	8	1000	Calibration Standard	03	08/27/2018 11:38	Finished	5.0 ppb, IWST-180622A
8	STD4-10.0 ppb	9	1000	Calibration Standard	04	08/27/2018 11:48	Finished	10 ppb, IWST-180622A
9	STD5-15.0 ppb	10	1000	Calibration Standard	05	08/27/2018 11:57	Finished	15 ppb, IWST-180622A
10	STD6-20.0 ppb	11	1000	Calibration Standard	06	08/27/2018 12:07	Finished	20 ppb, IWST-180622A
11	ICV,ICV,1,	13	1000	Unknown		08/27/2018 12:41	Finished	ICV @5ppb, IWST-180622B
12	PQL@0.2ppb.CCV2,	14	1000	Unknown		08/27/2018 12:53	Finished	PQL @ 0.2ppb
13	ICB,ICB,1,	15	1000	Unknown		08/27/2018 13:02	Finished	ICB R180806A
14	SHUTDOWN	17	1000	Unknown		08/27/2018 13:45	Finished	
15	Eluent: R180824A	18	1000	Unknown		n.a.	Finished	Eluent
16	PCR: R180824B	19	1000	Unknown		n.a.	Finished	Post-Column Reagent

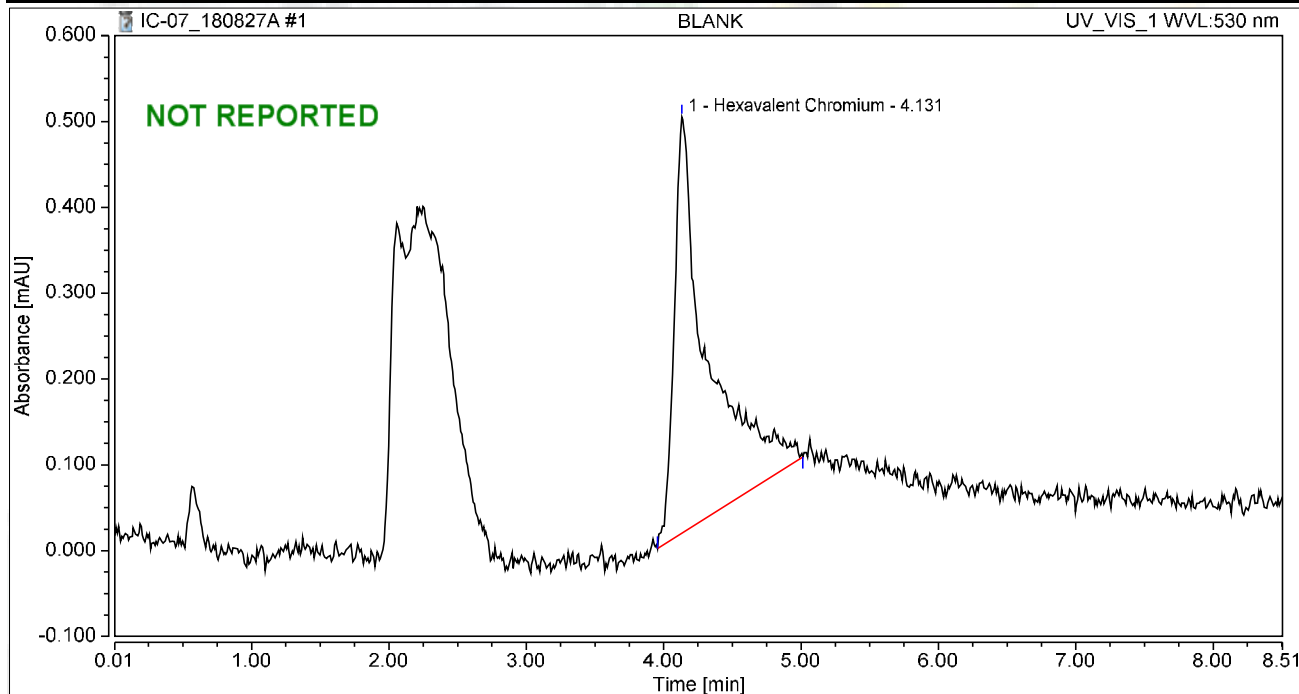
rba 9/5/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 10:10	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

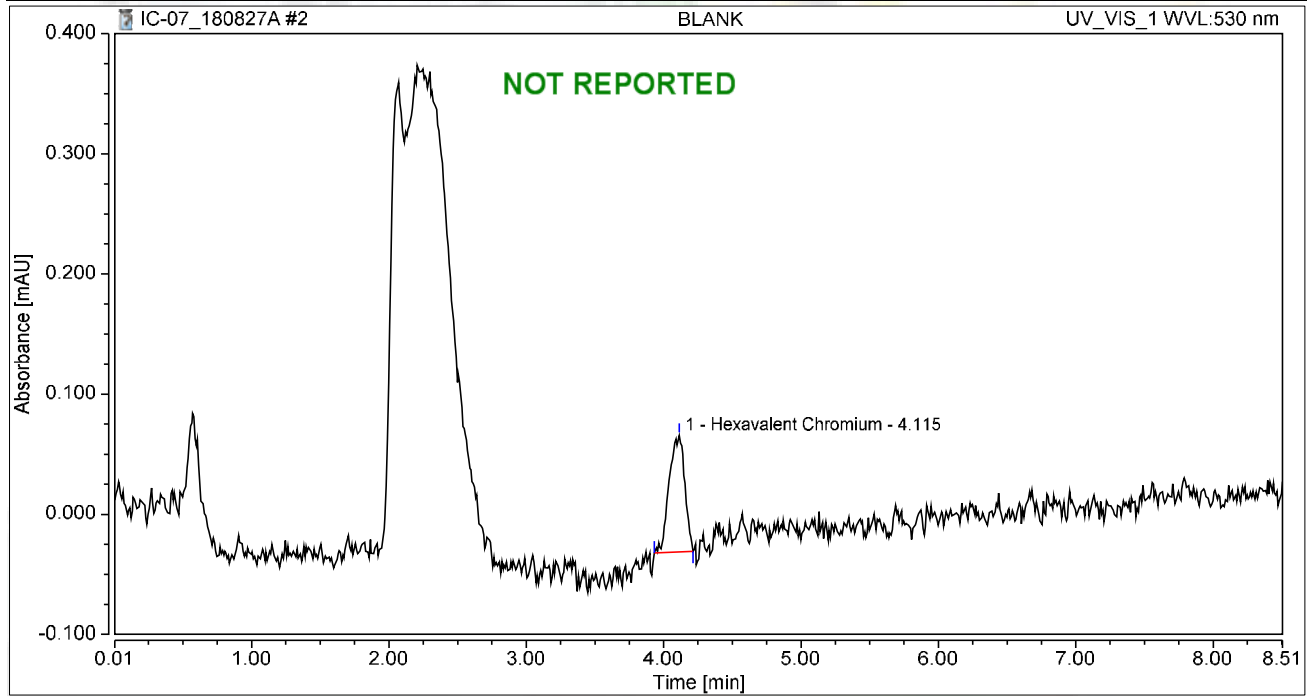
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.139	0.485	100.00	100.00	0.5516
<b>Total:</b>			<b>0.139</b>	<b>0.485</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 10:21	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

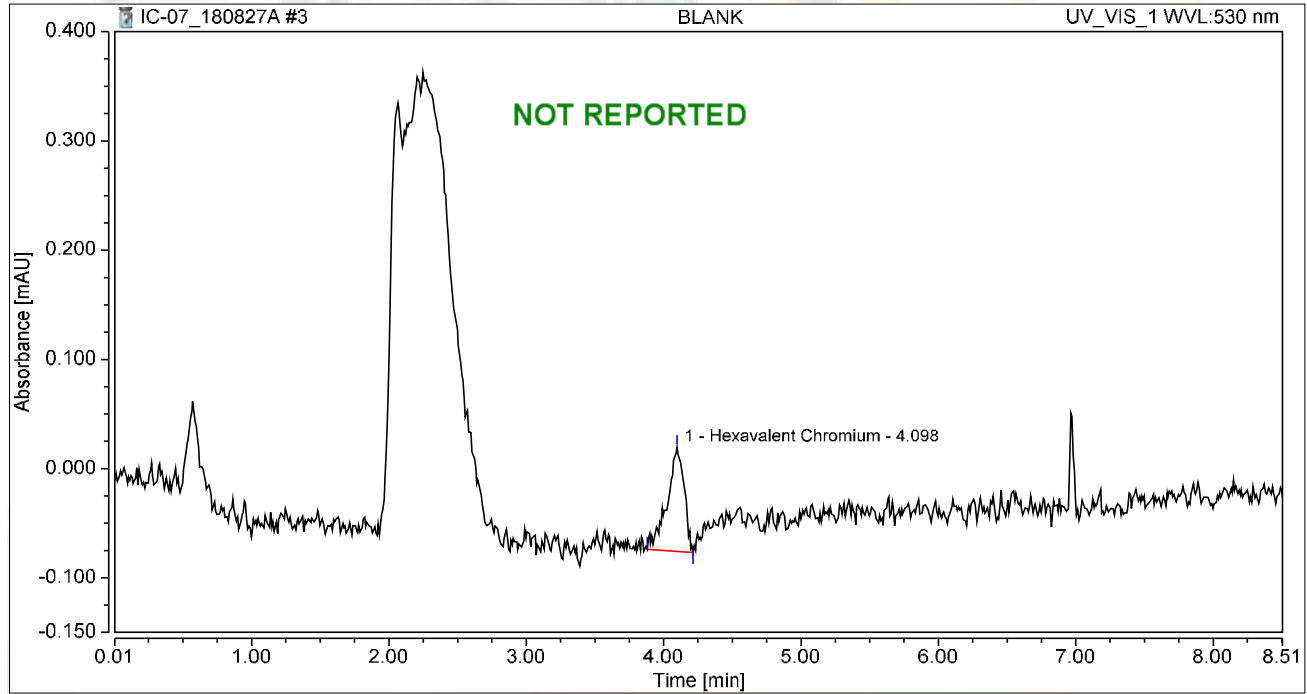
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.013	0.097	100.00	100.00	0.0500
<b>Total:</b>			<b>0.013</b>	<b>0.097</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 10:30	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

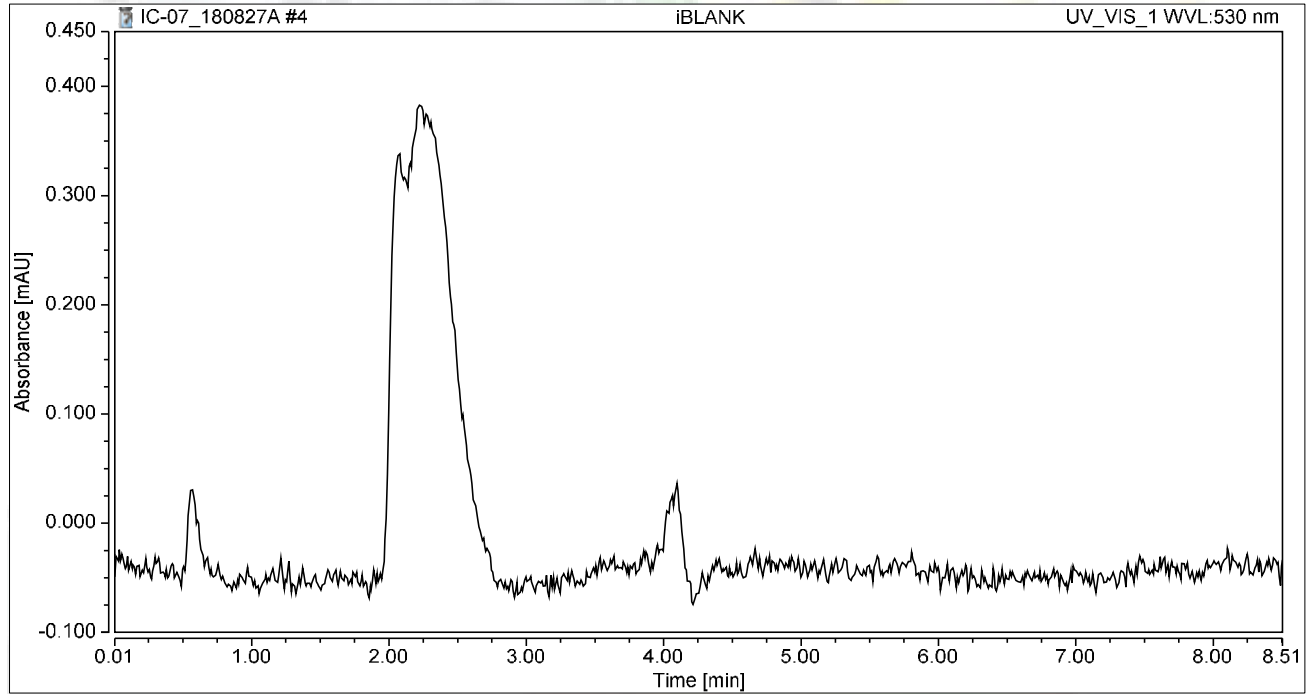
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.014	0.095	100.00	100.00	0.0543
<b>Total:</b>			<b>0.014</b>	<b>0.095</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	iBLANK	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:08	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

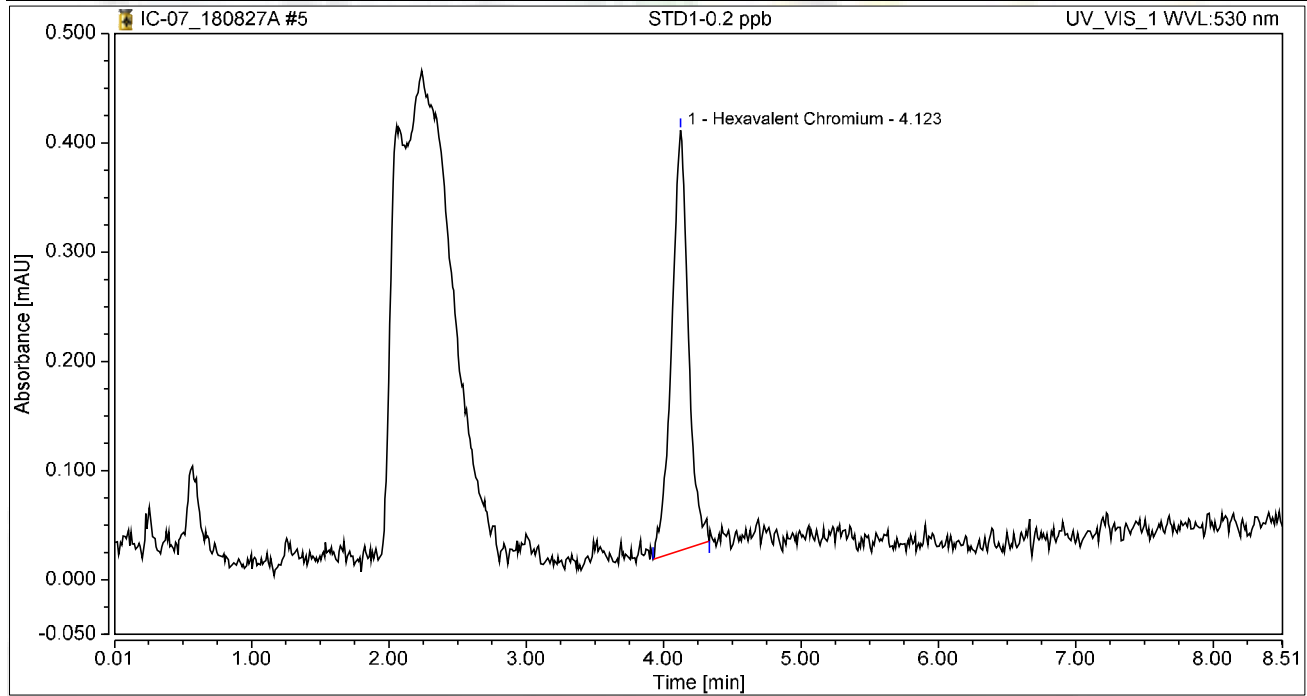


### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:20	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

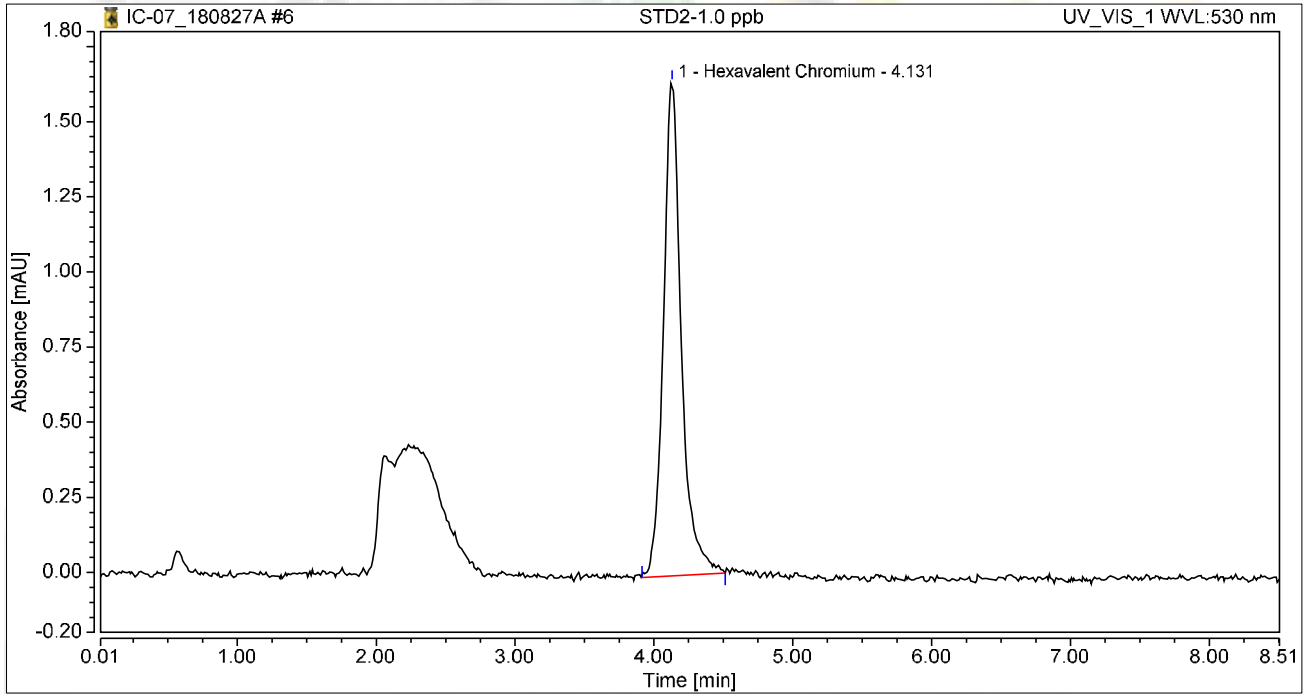
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.054	0.385	100.00	100.00	0.2156
<b>Total:</b>			<b>0.054</b>	<b>0.385</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD2-1.0 ppb	Run Time (min):	8.49
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	02	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:29	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

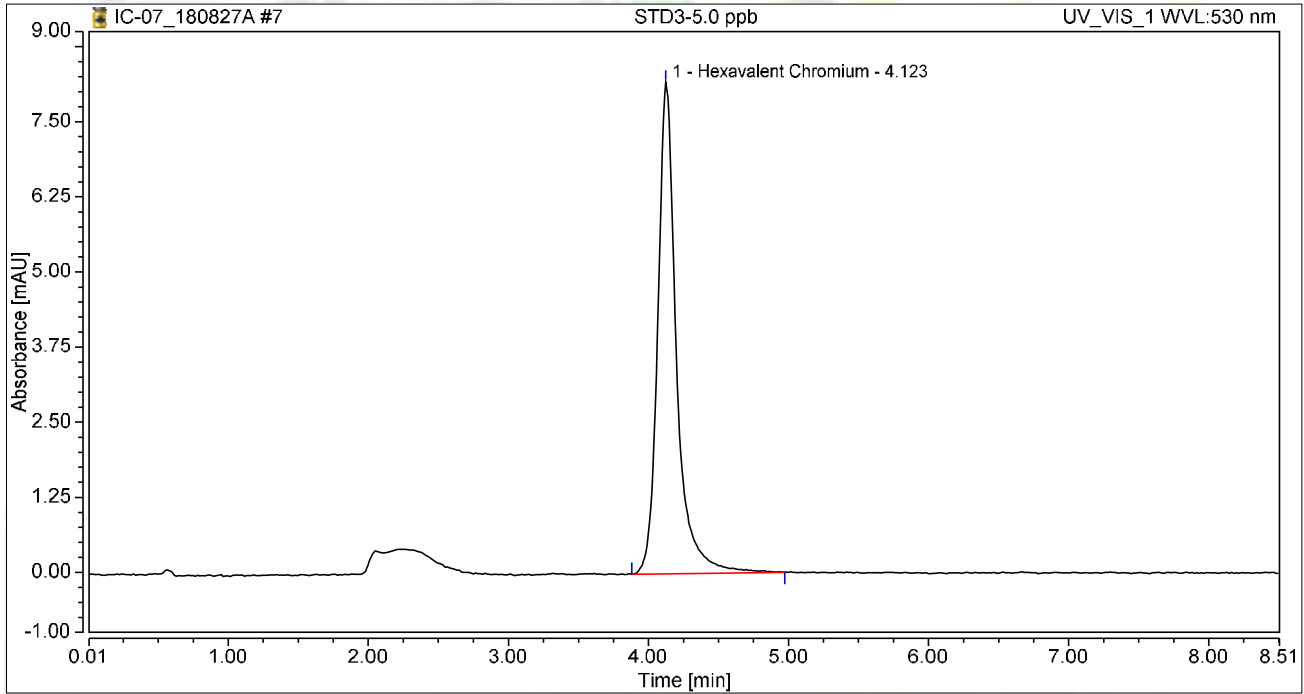
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.246	1.643	100.00	100.00	0.9792
<b>Total:</b>			<b>0.246</b>	<b>1.643</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD3-5.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	03	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

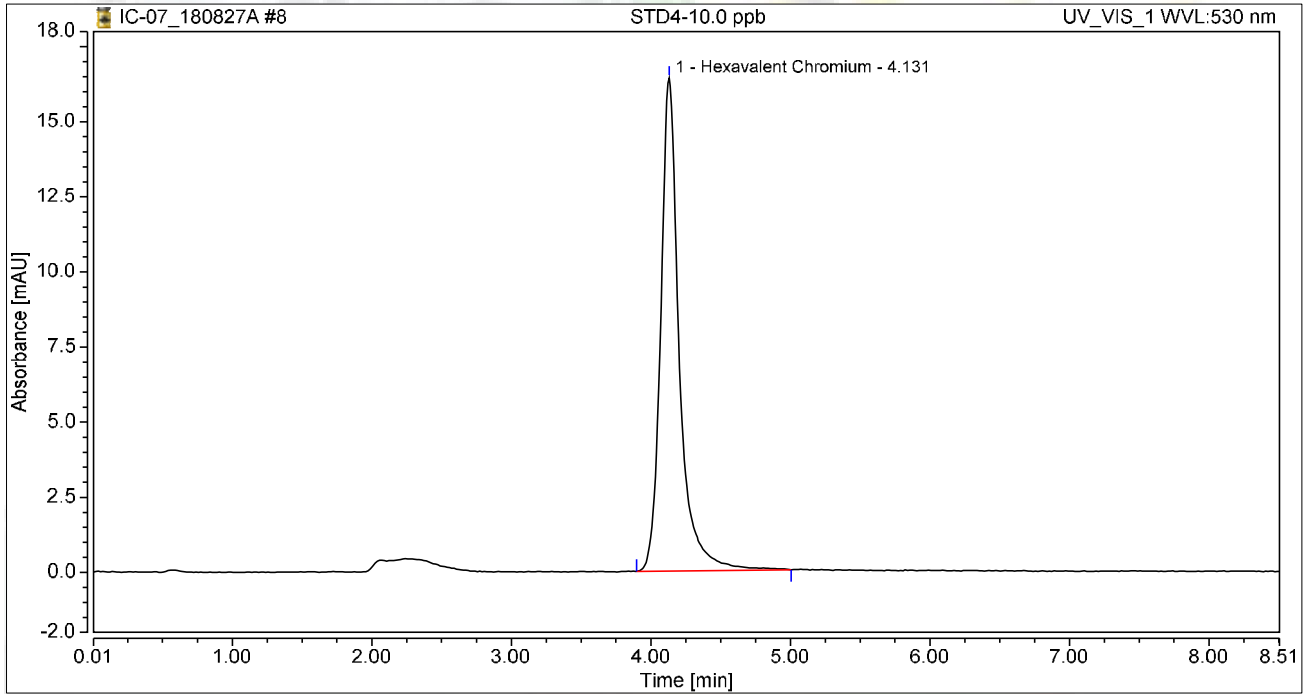
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	1.268	8.180	100.00	100.00	5.0404
<b>Total:</b>			<b>1.268</b>	<b>8.180</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:48	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

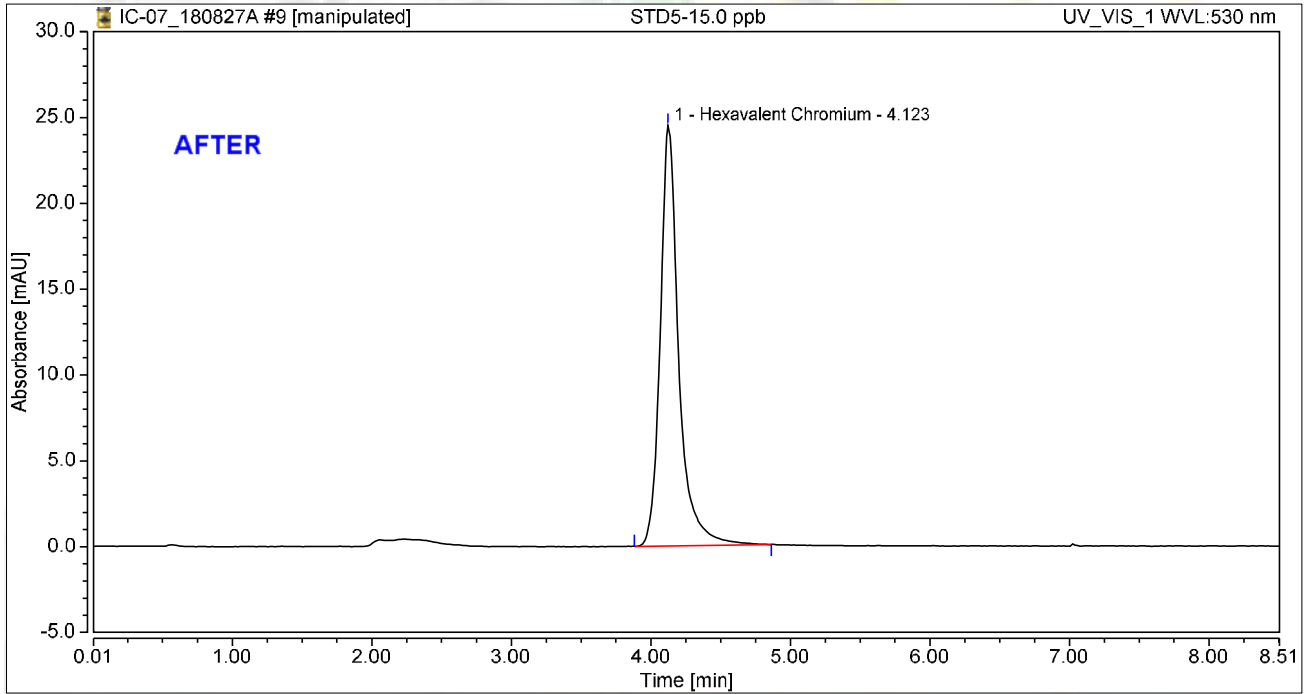
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.536	16.409	100.00	100.00	10.0817
<b>Total:</b>			<b>2.536</b>	<b>16.409</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	3.770	24.491	100.00	100.00	14.9855
<b>Total:</b>			<b>3.770</b>	<b>24.491</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/5/2018

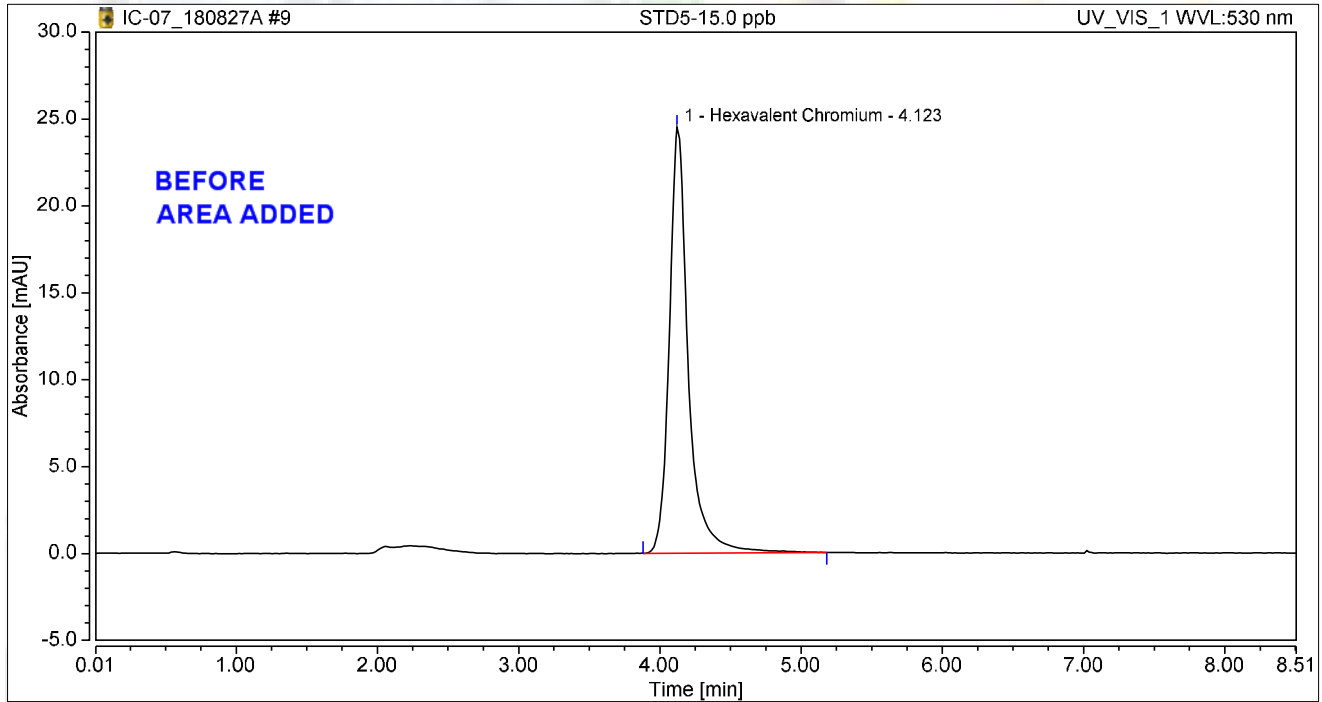
Reviewed by:  
*Nancy* 9/12/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	3.830	24.514	100.00	100.00	15.0503
<b>Total:</b>			<b>3.830</b>	<b>24.514</b>	<b>100.00</b>	<b>100.00</b>	

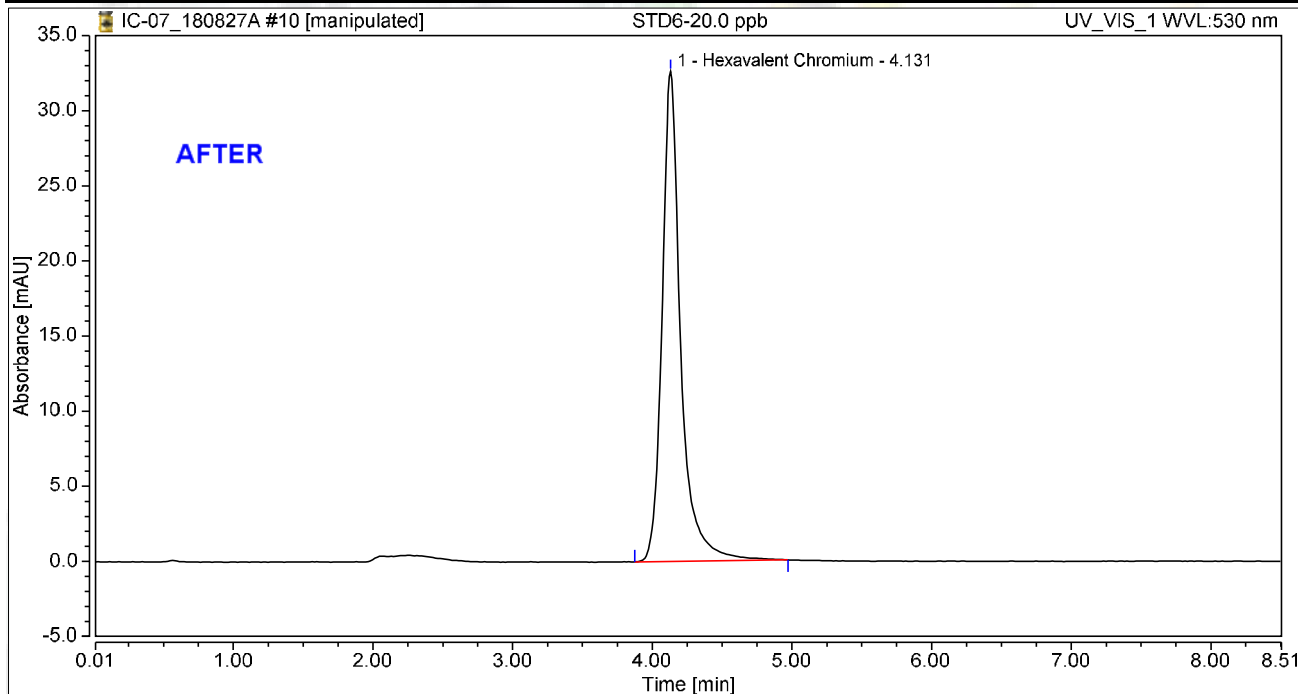
rba 9/5/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 12:07	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	5.021	32.611	100.00	100.00	19.9608
<b>Total:</b>			<b>5.021</b>	<b>32.611</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/5/2018

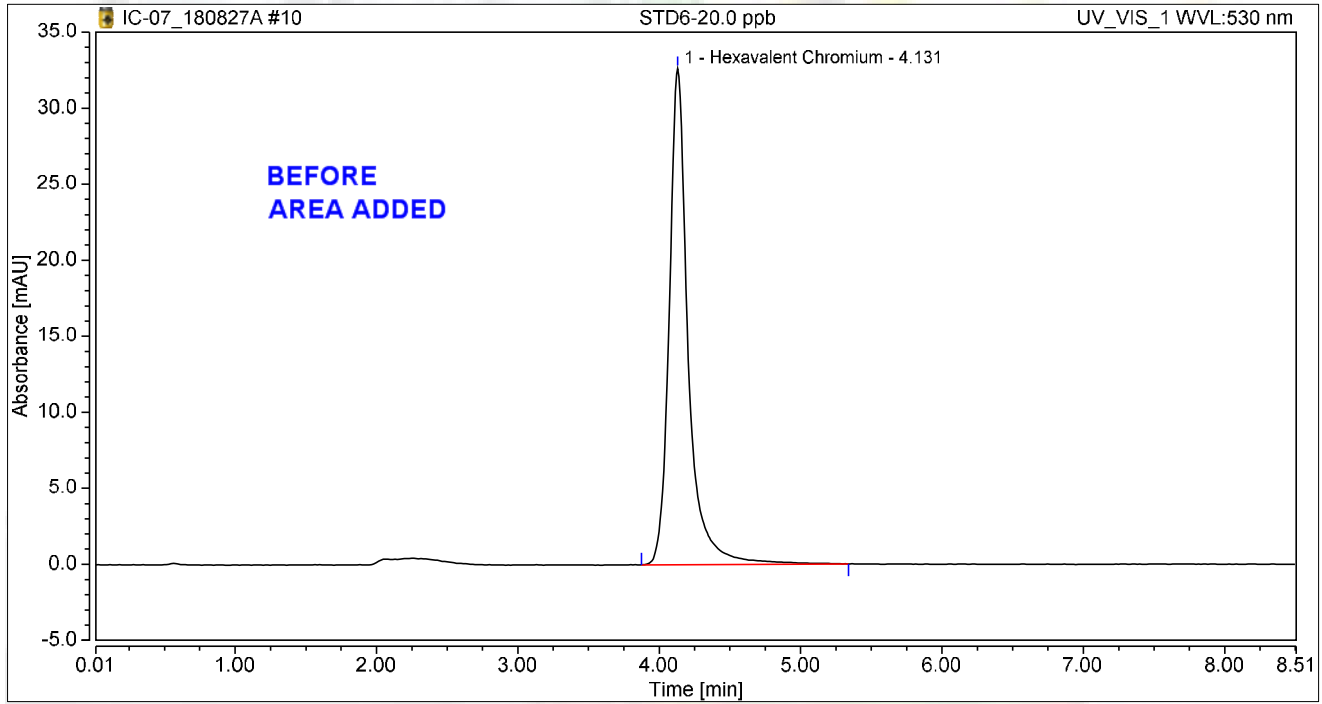
Reviewed by:  
My [Signature] 9/12/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 12:07	Sample Weight:	1.0000

**Chromatogram**



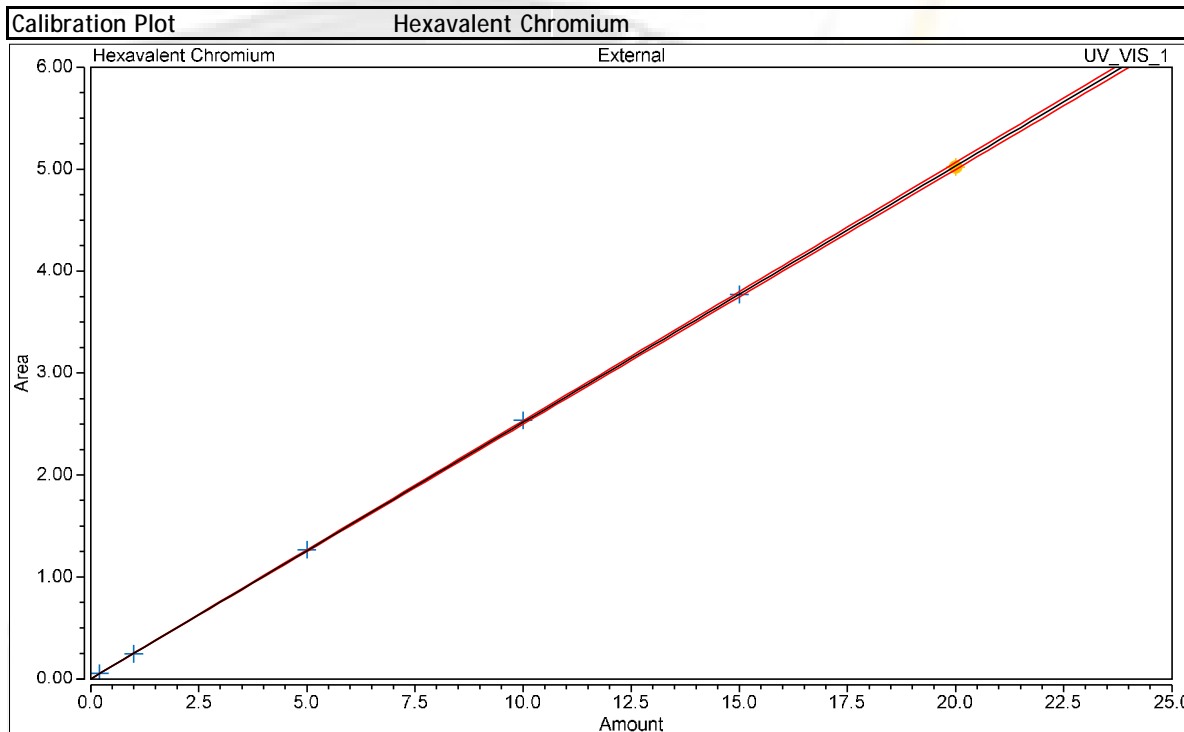
**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	5.085	32.631	100.00	100.00	19.9848
<b>Total:</b>			<b>5.085</b>	<b>32.631</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/5/2018



Initial Calibration Summary			
Calibration Details		Hexavalent Chromium	
Calibration Type	Lin	Offset (C0)	0.0000
Evaluation Type	Area	Slope (C1)	0.2515
Number of Calibration Points	6	Curve (C2)	0.0000
Number of disabled Calibration Points	0	R-Square	0.99997



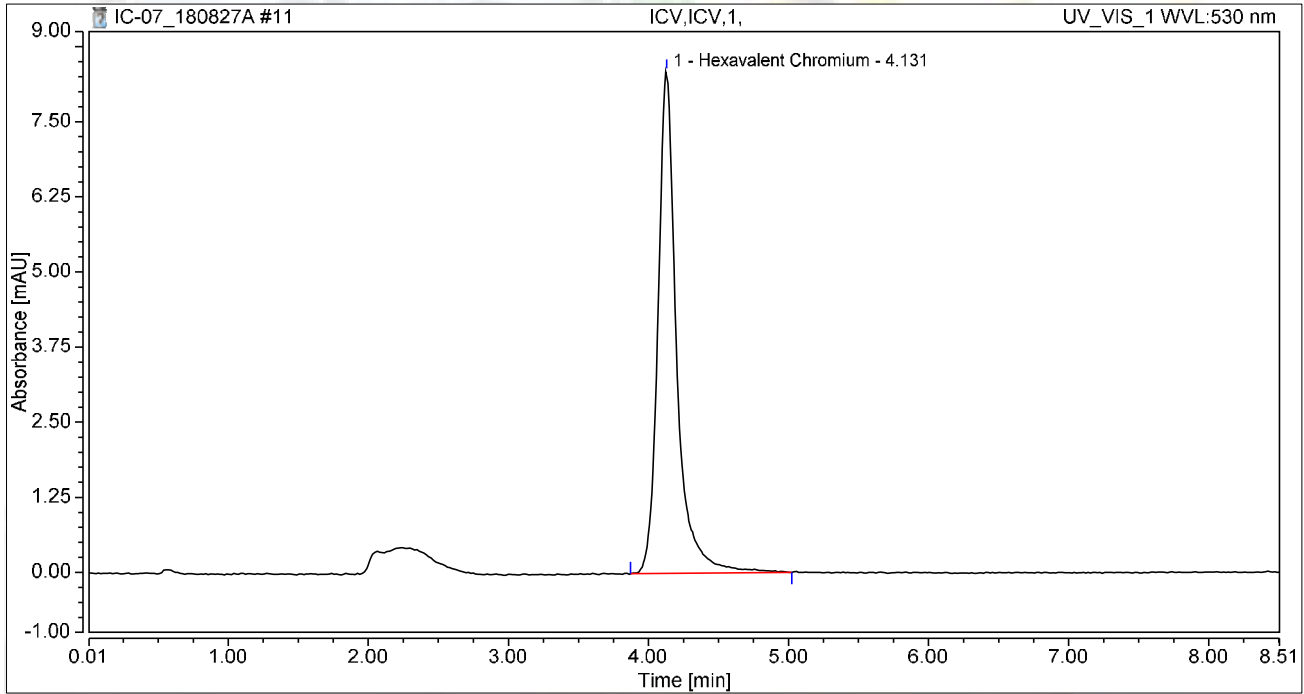
Calibration Results		Hexavalent Chromium				
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
5	STD1-0.2 ppb	01	0.2000	0.0542	0.054	0.385
6	STD2-1.0 ppb	02	1.0000	0.2463	0.246	1.643
7	STD3-5.0 ppb	03	5.0000	1.2679	1.268	8.180
8	STD4-10.0 ppb	04	10.0000	2.5360	2.536	16.409
9	STD5-15.0 ppb	05	15.0000	3.7695	3.770	24.491
10	STD6-20.0 ppb	06	20.0000	5.0211	5.021	32.611

### Chromatogram and Results

**Injection Details**

Injection Name:	ICV,ICV,1,	Run Time (min):	8.50
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 12:41	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

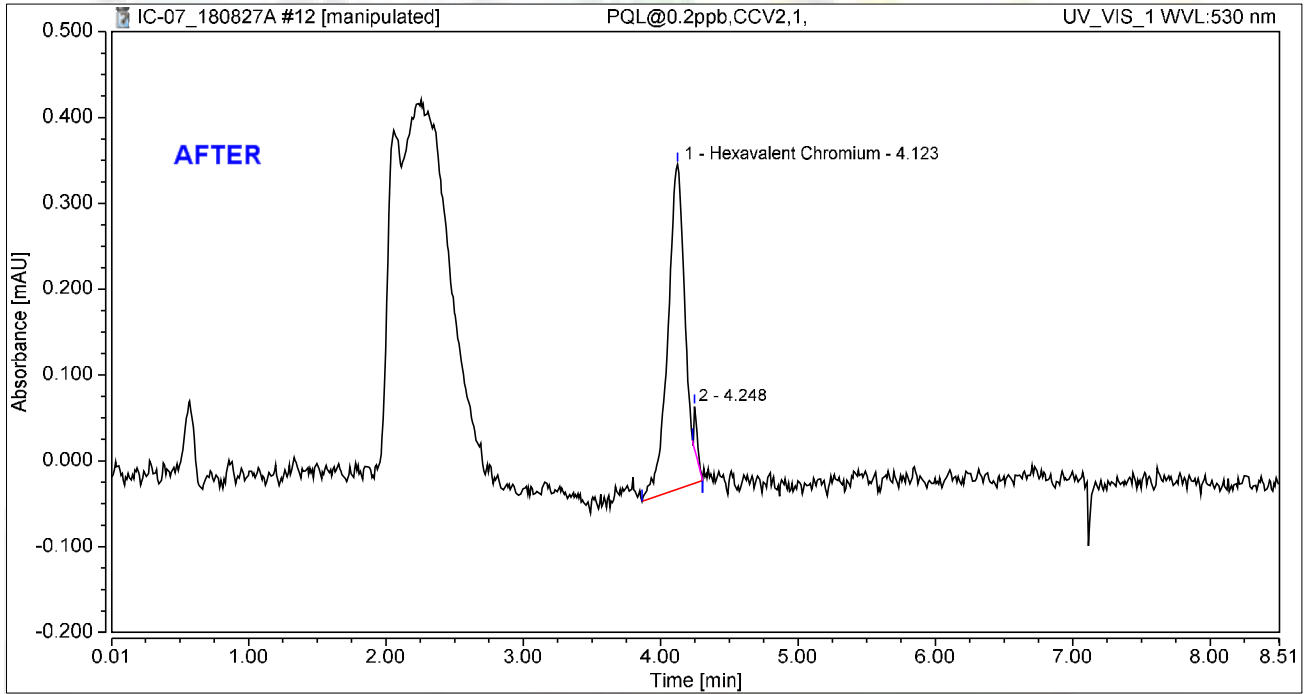
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.295	8.351	100.00	100.00	5.1484
<b>Total:</b>			<b>1.295</b>	<b>8.351</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 12:53	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.055	0.378	97.76	88.34	0.2190
2		4.248	0.001	0.050	2.24	11.66	n.a.
<b>Total:</b>			<b>0.056</b>	<b>0.428</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/5/2018

Reviewed by:

*Moncy* 9/12/2018

My first report/Integration

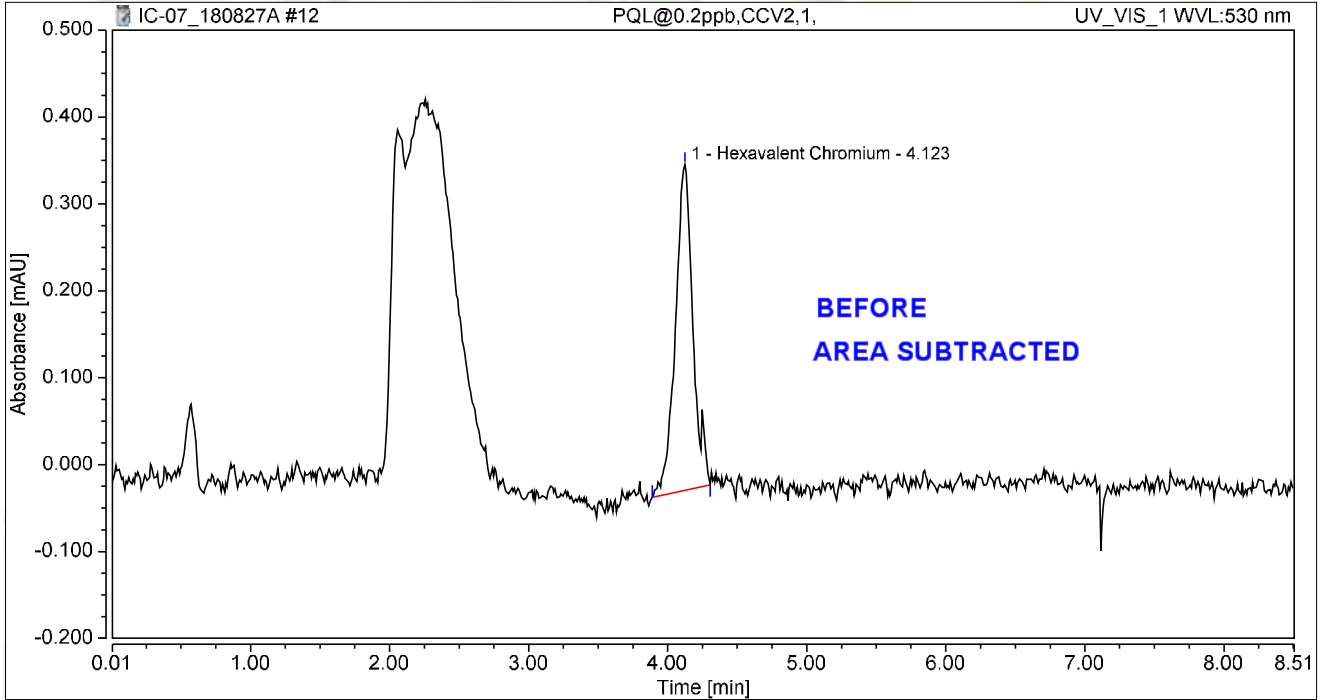
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 12:53	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.055	0.375	100.00	100.00	0.2143
<b>Total:</b>			<b>0.055</b>	<b>0.375</b>	<b>100.00</b>	<b>100.00</b>	

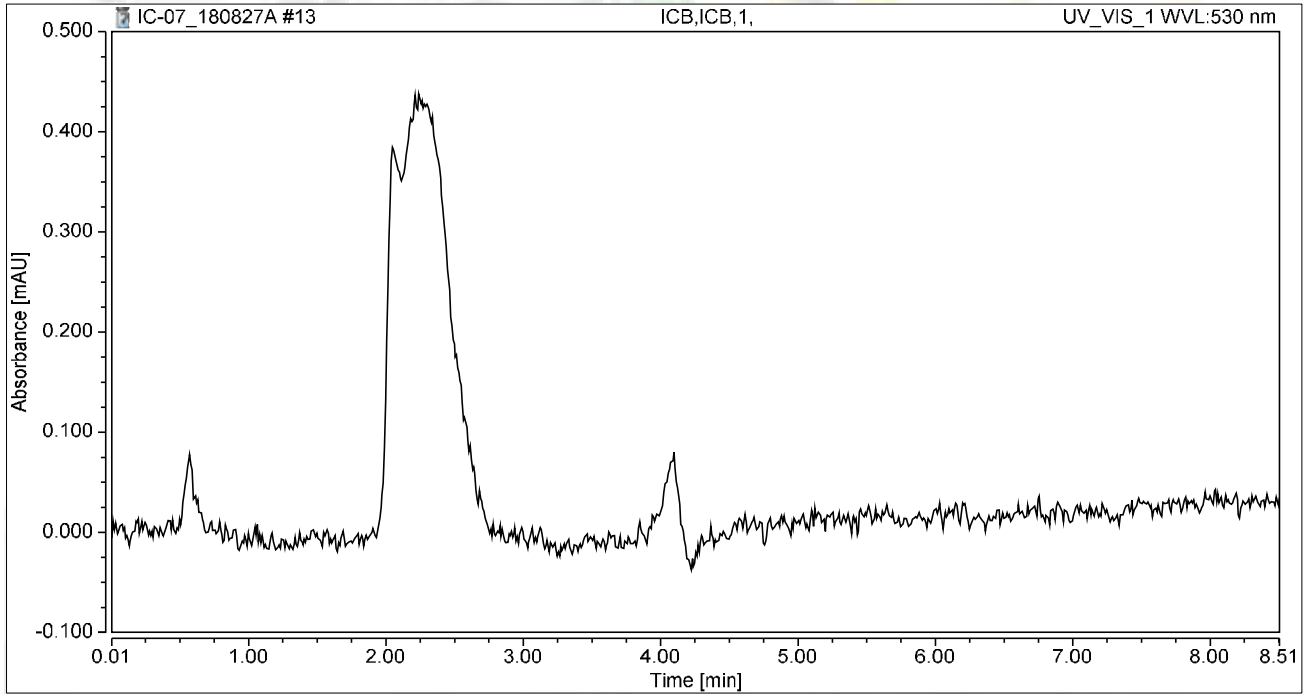
*rba* 9/5/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	ICB,ICB,1,	Run Time (min):	8.50
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 13:02	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691



**202**

*"Serving Clients with Passion and Professionalism"*

INJECTION LOG: 180913A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:10 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:21 AM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:30 AM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/27/18 11:08 AM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:20 AM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:29 AM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:38 AM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:48 AM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:57 AM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 12:07 PM	Reported
11	BLANK	BLANK	1	Hexavalent Chromium	09/13/18 9:35 AM	Not Reported
12	BLANK	BLANK	1	Hexavalent Chromium	09/13/18 9:46 AM	Not Reported
13	CCV-1	CCV	1	Hexavalent Chromium	09/13/18 9:55 AM	Reported
14	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/13/18 10:05 AM	Reported
15	CCB-1	CCB	1	Hexavalent Chromium	09/13/18 10:14 AM	Reported
16	MB-R127606	MBLK	1	Hexavalent Chromium	09/13/18 10:24 AM	Reported
17	LCS-R127606	LCS	1	Hexavalent Chromium	09/13/18 10:33 AM	Reported
18	N032065-001A	SAMP	1	Hexavalent Chromium	09/13/18 10:53 AM	Not Reported
19	N032065-001AMS	MS	1	Hexavalent Chromium	09/13/18 11:05 AM	Not Reported
20	N032065-002A	SAMP	1	Hexavalent Chromium	09/13/18 11:14 AM	Not Reported
21	N032065-002AMS	MS	1	Hexavalent Chromium	09/13/18 11:24 AM	Not Reported
22	N032065-003A	SAMP	1	Hexavalent Chromium	09/13/18 11:34 AM	Reported
23	N032065-003AMS	MS	1	Hexavalent Chromium	09/13/18 11:43 AM	Reported
24	N032065-004A	SAMP	1	Hexavalent Chromium	09/13/18 11:52 AM	Reported
25	N032065-004AMS	MS	1	Hexavalent Chromium	09/13/18 12:02 PM	Reported
26	CCV-2	CCV1	1	Hexavalent Chromium	09/13/18 12:11 PM	Reported
27	CCB-2	CCB	1	Hexavalent Chromium	09/13/18 12:21 PM	Reported
28	N032065-005A	SAMP	1	Hexavalent Chromium	09/13/18 12:30 PM	Reported
29	N032065-005AMS	MS	1	Hexavalent Chromium	09/13/18 12:40 PM	Reported
30	N032065-006A	SAMP	1	Hexavalent Chromium	09/13/18 12:49 PM	Reported
31	N032065-006AMS	MS	1	Hexavalent Chromium	09/13/18 12:58 PM	Reported
32	N032065-007A	SAMP	1	Hexavalent Chromium	09/13/18 1:10 PM	Reported
33	N032065-007AMS	MS	1	Hexavalent Chromium	09/13/18 1:22 PM	Reported
34	N032062-001A	SAMP	1	Hexavalent Chromium	09/13/18 1:31 PM	Reported
35	N032071-010A	SAMP	50	Hexavalent Chromium	09/13/18 1:40 PM	Reported
36	N032071-001A	SAMP	2000	Hexavalent Chromium	09/13/18 1:50 PM	Reported
37	N032071-002A	SAMP	2000	Hexavalent Chromium	09/13/18 1:59 PM	Reported
38	CCV-3	CCV	1	Hexavalent Chromium	09/13/18 2:09 PM	Reported
39	CCB-3	CCB	1	Hexavalent Chromium	09/13/18 2:18 PM	Reported
40	N032071-003A	SAMP	2000	Hexavalent Chromium	09/13/18 2:28 PM	Not Reported
41	N032071-004A	SAMP	2000	Hexavalent Chromium	09/13/18 2:37 PM	Not Reported
42	N032071-005A	SAMP	2000	Hexavalent Chromium	09/13/18 2:47 PM	Not Reported
43	N032071-006A	SAMP	2000	Hexavalent Chromium	09/13/18 2:56 PM	Not Reported
44	N032071-007A	SAMP	2000	Hexavalent Chromium	09/13/18 3:06 PM	Not Reported
45	N032071-008A	SAMP	2000	Hexavalent Chromium	09/13/18 3:15 PM	Not Reported
46	N032071-011A	SAMP	2000	Hexavalent Chromium	09/13/18 3:24 PM	Not Reported
47	BLANK	BLANK	1	Hexavalent Chromium	09/13/18 4:18 PM	Not Reported
48	BLANK	BLANK	1	Hexavalent Chromium	09/13/18 4:29 PM	Not Reported
49	CCV-4	CCV1	1	Hexavalent Chromium	09/13/18 4:39 PM	Reported

**INJECTION LOG: 180913A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
50	CCB-4	CCB	1	Hexavalent Chromium	09/13/18 4:57 PM	Reported
51	N032071-007A	SAMP	2000	Hexavalent Chromium	09/13/18 5:08 PM	Reported
52	N032071-009A	SAMP	1	Hexavalent Chromium	09/13/18 5:18 PM	Reported
53	N032065-003AMSD	MSD	1	Hexavalent Chromium	09/13/18 5:27 PM	Reported
54	N032071-001ADUP	DUP	2000	Hexavalent Chromium	09/13/18 5:40 PM	Reported
55	N032071-003A	SAMP	2000	Hexavalent Chromium	09/13/18 5:51 PM	Reported
56	N032071-004A	SAMP	2000	Hexavalent Chromium	09/13/18 6:00 PM	Reported
57	N032071-005A	SAMP	2000	Hexavalent Chromium	09/13/18 6:10 PM	Reported
58	N032071-006A	SAMP	2000	Hexavalent Chromium	09/13/18 6:19 PM	Reported
59	N032071-008A	SAMP	2000	Hexavalent Chromium	09/13/18 6:29 PM	Reported
60	N032071-011A	SAMP	2000	Hexavalent Chromium	09/13/18 6:38 PM	Reported
61	CCV-5	CCV	1	Hexavalent Chromium	09/13/18 6:48 PM	Reported
62	CCB-5	CCB	1	Hexavalent Chromium	09/13/18 6:57 PM	Reported
63	LCS-R127607	LCS	1	Hexavalent Chromium	09/13/18 7:07 PM	Reported
64	MB-R127607	MBLK	1	Hexavalent Chromium	09/13/18 7:16 PM	Reported
65	N032065-008A	SAMP	1	Hexavalent Chromium	09/13/18 7:26 PM	Reported
66	N032065-008AMS	MS	1	Hexavalent Chromium	09/13/18 7:35 PM	Reported
67	N032065-008AMSD	MSD	1	Hexavalent Chromium	09/13/18 7:44 PM	Reported
68	N032065-011A	SAMP	1	Hexavalent Chromium	09/13/18 7:54 PM	Reported
69	N032065-011AMS	MS	1	Hexavalent Chromium	09/13/18 8:03 PM	Reported
70	N032065-011ADUP	DUP	1	Hexavalent Chromium	09/13/18 8:13 PM	Reported
71	N032065-009A	SAMP	1	Hexavalent Chromium	09/13/18 8:22 PM	Reported
72	N032065-009AMS	MS	1	Hexavalent Chromium	09/13/18 8:32 PM	Reported
73	CCV-6	CCV1	1	Hexavalent Chromium	09/13/18 8:41 PM	Reported
74	CCB-6	CCB	1	Hexavalent Chromium	09/13/18 8:51 PM	Reported
75	N032065-010A	SAMP	1	Hexavalent Chromium	09/13/18 9:00 PM	Reported
76	N032065-010AMS	MS	1	Hexavalent Chromium	09/13/18 9:10 PM	Reported
77	N032065-012A	SAMP	1	Hexavalent Chromium	09/13/18 9:19 PM	Reported
78	N032065-012AMS	MS	1	Hexavalent Chromium	09/13/18 9:29 PM	Reported
79	N032065-013A	SAMP	1	Hexavalent Chromium	09/13/18 9:38 PM	Reported
80	N032065-013AMS	MS	1	Hexavalent Chromium	09/13/18 9:48 PM	Reported
81	N032065-014A	SAMP	1	Hexavalent Chromium	09/13/18 9:57 PM	Reported
82	N032065-014AMS	MS	1	Hexavalent Chromium	09/13/18 10:06 PM	Reported
83	N032065-015A	SAMP	1	Hexavalent Chromium	09/13/18 10:16 PM	Reported
84	N032065-015AMS	MS	1	Hexavalent Chromium	09/13/18 10:25 PM	Reported
85	CCV-7	CCV	1	Hexavalent Chromium	09/13/18 10:35 PM	Reported
86	CCB-7	CCB	1	Hexavalent Chromium	09/13/18 10:44 PM	Reported



### Injection Log Summary

**Sequence Details**

Name:	IC-07_180913A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	13/Sep/18 23:15:02
No. of Injections:	89	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume $\mu$ L	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/27/2018 10:10	Finished	BLANK
2	BLANK	2	1000	Unknown		08/27/2018 10:21	Finished	BLANK
3	BLANK	3	1000	Unknown		08/27/2018 10:30	Finished	BLANK
4	iBLANK	5	1000	Unknown		08/27/2018 11:08	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	6	1000	Calibration Standard	01	08/27/2018 11:20	Finished	0.2 ppb, IWST-180622A
6	STD2-1.0 ppb	7	1000	Calibration Standard	02	08/27/2018 11:29	Finished	1.0 ppb, IWST-180622A
7	STD3-5.0 ppb	8	1000	Calibration Standard	03	08/27/2018 11:38	Finished	5.0 ppb, IWST-180622A
8	STD4-10.0 ppb	9	1000	Calibration Standard	04	08/27/2018 11:48	Finished	10 ppb, IWST-180622A
9	STD5-15.0 ppb	10	1000	Calibration Standard	05	08/27/2018 11:57	Finished	15 ppb, IWST-180622A
10	STD6-20.0 ppb	11	1000	Calibration Standard	06	08/27/2018 12:07	Finished	20 ppb, IWST-180622A
11	BLANK	1	1000	Unknown		09/13/2018 09:35	Finished	BLANK
12	BLANK	2	1000	Unknown		09/13/2018 09:46	Finished	BLANK
13	CCV-1.CCV,1,	3	1000	Unknown		09/13/2018 09:55	Finished	CCV @5ppb, IWST-180622A
14	PQL@0.2ppb.CCV,2,	4	1000	Unknown		09/13/2018 10:05	Finished	PQL @ 0.2ppb
15	CCB-1.CCB,1,	5	1000	Unknown		09/13/2018 10:14	Finished	CCB R180806A
16	MB-H2O.MBLK,1,	6	1000	Unknown		09/13/2018 10:24	Finished	MBLK R180806A
17	LCS-H2O.LCS,1,	7	1000	Unknown		09/13/2018 10:33	Finished	LCS @5ppb, IWST-180622B
18	N032065-001A,SAMF	9	1000	Unknown		09/13/2018 10:53	Finished	SAMP, 10mL
19	N032065-001AMS,MS	10	1000	Unknown		09/13/2018 11:05	Finished	MS (1ppb), IWST-180622B,10
20	N032065-002A,SAMF	11	1000	Unknown		09/13/2018 11:14	Finished	SAMP, 10mL
21	N032065-002AMS,MS	12	1000	Unknown		09/13/2018 11:24	Finished	MS (1ppb), IWST-180622B,10
22	N032065-003A,SAMF	13	1000	Unknown		09/13/2018 11:34	Finished	SAMP, 10mL
23	N032065-003AMS,MS	14	1000	Unknown		09/13/2018 11:43	Finished	MS (1ppb), IWST-180622B,10
24	N032065-004A,SAMF	15	1000	Unknown		09/13/2018 11:52	Finished	SAMP, 10mL
25	N032065-004AMS,MS	16	1000	Unknown		09/13/2018 12:02	Finished	MS (1ppb), IWST-180622B,10
26	CCV-2.CCV,1,	17	1000	Unknown		09/13/2018 12:11	Finished	CCV @10ppb, IWST-180622A
27	CCB-2.CCB,1,	18	1000	Unknown		09/13/2018 12:21	Finished	CCB R180806A
28	N032065-005A,SAMF	19	1000	Unknown		09/13/2018 12:30	Finished	SAMP, 10mL
29	N032065-005AMS,MS	20	1000	Unknown		09/13/2018 12:40	Finished	MS (1ppb), IWST-180622B,10
30	N032065-006A,SAMF	21	1000	Unknown		09/13/2018 12:49	Finished	SAMP, 10mL
31	N032065-006AMS,MS	22	1000	Unknown		09/13/2018 12:58	Finished	MS (1ppb), IWST-180622B,10
32	N032065-007A,SAMF	24	1000	Unknown		09/13/2018 13:10	Finished	SAMP, 10mL
33	N032065-007AMS,MS	25	1000	Unknown		09/13/2018 13:22	Finished	MS (1ppb), IWST-180622B,10
34	N032062-001A,SAMF	26	1000	Unknown		09/13/2018 13:31	Finished	SAMP, 10mL
35	N032071-010A,SAMF	27	1000	Unknown		09/13/2018 13:40	Finished	SAMP, 0.2>10mL
36	N032071-001A,SAMF	28	1000	Unknown		09/13/2018 13:50	Finished	SAMP,0.005> 10mL
37	N032071-002A,SAMF	29	1000	Unknown		09/13/2018 13:59	Finished	SAMP,0.005> 10mL
38	CCV-3.CCV,1,	30	1000	Unknown		09/13/2018 14:09	Finished	CCV @5ppb, IWST-180622A
39	CCB-3.CCB,1,	31	1000	Unknown		09/13/2018 14:18	Finished	CCB R180806A
40	N032071-003A,SAMF	32	1000	Unknown		09/13/2018 14:28	Finished	SAMP,0.005> 10mL
41	N032071-004A,SAMF	33	1000	Unknown		09/13/2018 14:37	Finished	SAMP,0.005> 10mL
42	N032071-005A,SAMF	34	1000	Unknown		09/13/2018 14:47	Finished	SAMP,0.005> 10mL
43	N032071-006A,SAMF	35	1000	Unknown		09/13/2018 14:56	Finished	SAMP,0.005> 10mL
44	N032071-007A,SAMF	36	1000	Unknown		09/13/2018 15:06	Finished	SAMP,0.005> 10mL
45	N032071-008A,SAMF	37	1000	Unknown		09/13/2018 15:15	Finished	SAMP,0.005> 10mL
46	N032071-011A,SAMF	38	1000	Unknown		09/13/2018 15:24	Interrupted	SAMP,0.005> 10mL
47	BLANK	39	1000	Unknown		09/13/2018 16:18	Finished	BLANK
48	BLANK	40	1000	Unknown		09/13/2018 16:29	Finished	BLANK
49	CCV-4.CCV,1,	43	1000	Unknown		09/13/2018 16:39	Finished	CCV @10ppb, IWST-180622A
50	CCB-4.CCB,1,	28	1000	Unknown		09/13/2018 16:57	Finished	CCB R180806A
51	N032071-007A,SAMF	29	1000	Unknown		09/13/2018 17:08	Finished	SAMP,0.005> 10mL
52	N032071-009A,SAMF	30	1000	Unknown		09/13/2018 17:18	Finished	SAMP,10mL
53	N032065-003AMSD,N	31	1000	Unknown		09/13/2018 17:27	Finished	MSD (1ppb), IWST-180622B,10
54	N032071-001ADUP,D	2	1000	Unknown		09/13/2018 17:40	Finished	DUP,0.005> 10mL
55	N032071-003A,SAMF	3	1000	Unknown		09/13/2018 17:51	Finished	SAMP,0.005> 10mL
56	N032071-004A,SAMF	4	1000	Unknown		09/13/2018 18:00	Finished	SAMP,0.005> 10mL
57	N032071-005A,SAMF	5	1000	Unknown		09/13/2018 18:10	Finished	SAMP,0.005> 10mL
58	N032071-006A,SAMF	6	1000	Unknown		09/13/2018 18:19	Finished	SAMP,0.005> 10mL
59	N032071-008A,SAMF	7	1000	Unknown		09/13/2018 18:29	Finished	SAMP,0.005> 10mL
60	N032071-011A,SAMF	8	1000	Unknown		09/13/2018 18:38	Finished	SAMP,0.005> 10mL

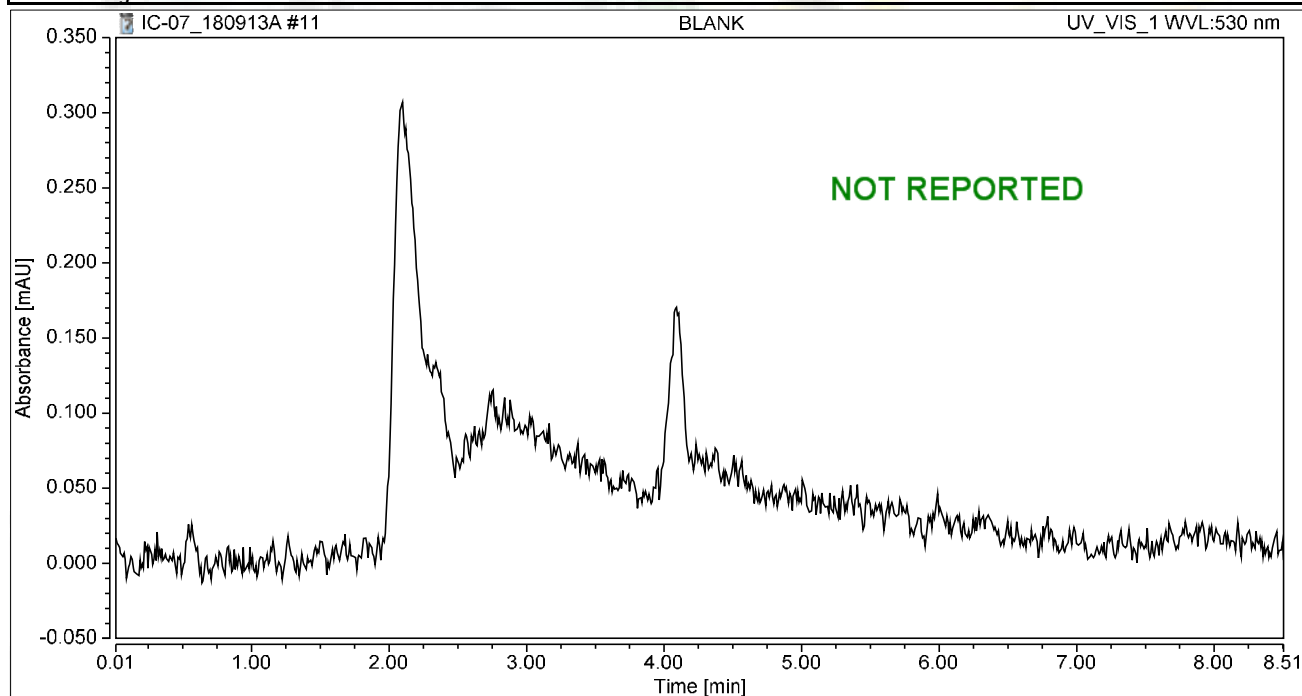
61	CCV-5.CCV,1,	9	1000	Unknown	09/13/2018 18:48	Finished	CCV @5ppb, IWST-180622A
62	CCB-5.CCB,1,	10	1000	Unknown	09/13/2018 18:57	Finished	CCB R180806A
63	LCS-2.LCS,1,	11	1000	Unknown	09/13/2018 19:07	Finished	LCS @5ppb, IWST-180622B
64	MB-2.MBLK,1,	12	1000	Unknown	09/13/2018 19:16	Finished	MBLK R180806A
65	N032065-008A,SAMP	13	1000	Unknown	09/13/2018 19:26	Finished	SAMP,10mL
66	N032065-008AMS,MS	14	1000	Unknown	09/13/2018 19:35	Finished	MS (1ppb), IWST-180622B,10
67	N032065-008AMSD,N	15	1000	Unknown	09/13/2018 19:44	Finished	MSD (1ppb), IWST-180622B,10
68	N032065-011A,SAMP	16	1000	Unknown	09/13/2018 19:54	Finished	SAMP,10mL
69	N032065-011AMS,MS	17	1000	Unknown	09/13/2018 20:03	Finished	MS (1ppb), IWST-180622B,10
70	N032065-011ADUP,D	18	1000	Unknown	09/13/2018 20:13	Finished	DUP,10mL
71	N032065-009A,SAMP	19	1000	Unknown	09/13/2018 20:22	Finished	SAMP,10mL
72	N032065-009AMS,MS	20	1000	Unknown	09/13/2018 20:32	Finished	MS (1ppb), IWST-180622B,10
73	CCV-6.CCV,1,	21	1000	Unknown	09/13/2018 20:41	Finished	CCV @5ppb, IWST-180622A
74	CCB-6.CCB,1,	22	1000	Unknown	09/13/2018 20:51	Finished	CCB R180806A
75	N032065-010A,SAMP	23	1000	Unknown	09/13/2018 21:00	Finished	SAMP,10mL
76	N032065-010AMS,MS	24	1000	Unknown	09/13/2018 21:10	Finished	MS (1ppb), IWST-180622B,10
77	N032065-012A,SAMP	25	1000	Unknown	09/13/2018 21:19	Finished	SAMP,10mL
78	N032065-012AMS,MS	26	1000	Unknown	09/13/2018 21:29	Finished	MS (1ppb), IWST-180622B,10
79	N032065-013A,SAMP	27	1000	Unknown	09/13/2018 21:38	Finished	SAMP,10mL
80	N032065-013AMS,MS	28	1000	Unknown	09/13/2018 21:48	Finished	MS (1ppb), IWST-180622B,10
81	N032065-014A,SAMP	29	1000	Unknown	09/13/2018 21:57	Finished	SAMP,10mL
82	N032065-014AMS,MS	30	1000	Unknown	09/13/2018 22:06	Finished	MS (1ppb), IWST-180622B,10
83	N032065-015A,SAMP	31	1000	Unknown	09/13/2018 22:16	Finished	SAMP,10mL
84	N032065-015AMS,MS	32	1000	Unknown	09/13/2018 22:25	Finished	MS (1ppb), IWST-180622B,10
85	CCV-7.CCV,1,	33	1000	Unknown	09/13/2018 22:35	Finished	CCV @10ppb, IWST-180622A
86	CCB-7.CCB,1,	34	1000	Unknown	09/13/2018 22:44	Finished	CCB R180806A
87	SHUTDOWN	35	1000	Unknown	09/13/2018 22:54	Finished	
88	Eluent: R180912B	36	1000	Unknown	n.a.	Finished	Eluent
89	PCR: R180912C	37	1000	Unknown	n.a.	Finished	Post-Column Reagent

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.49
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 09:35	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

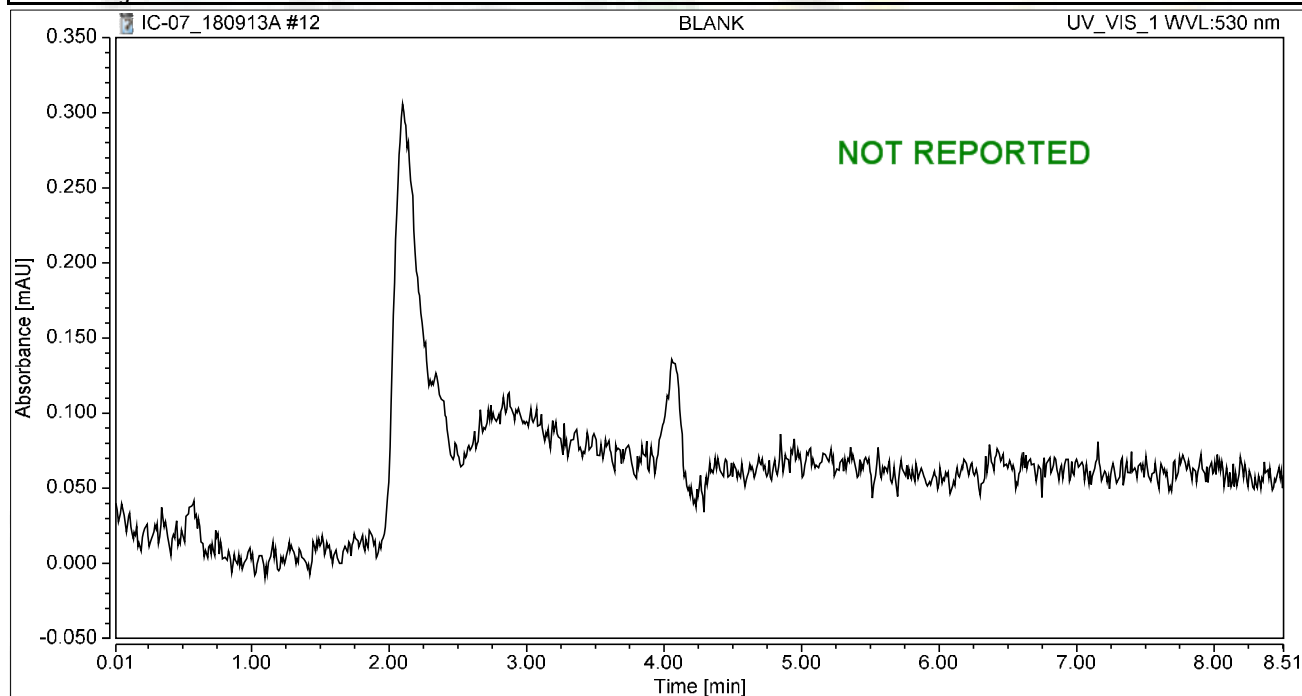
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.49
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 09:46	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

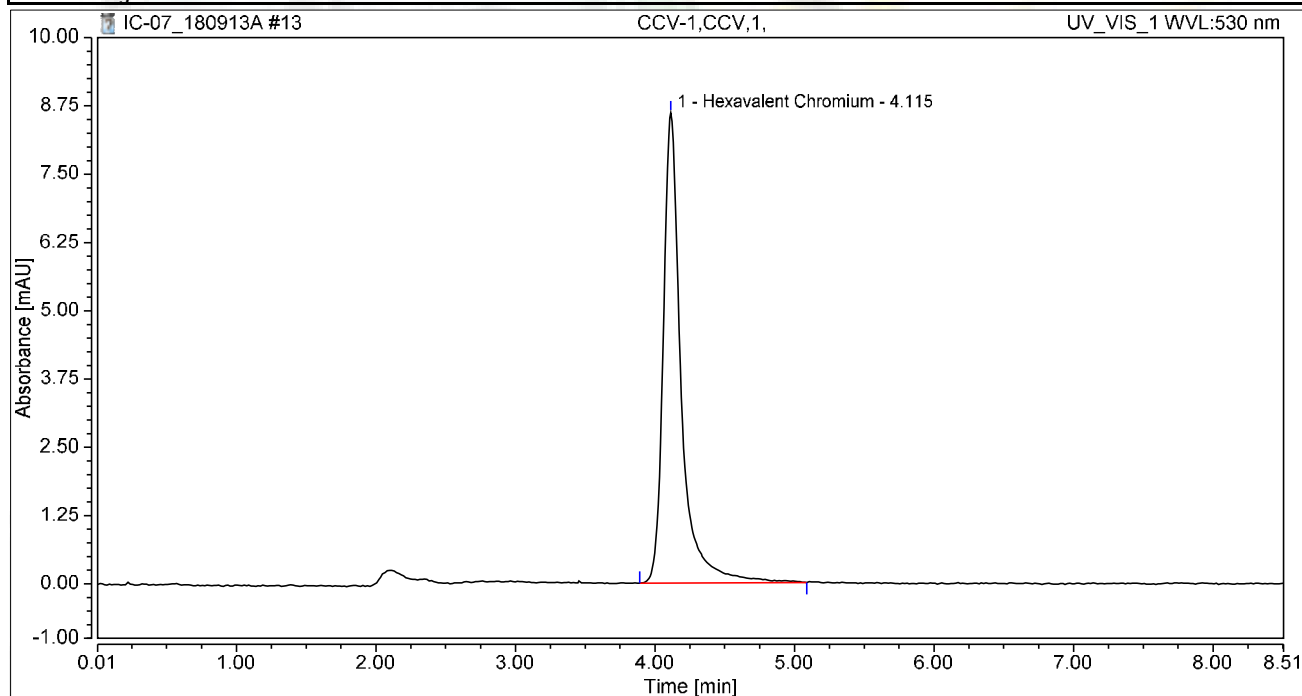
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-1,CCV,1,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 09:55	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

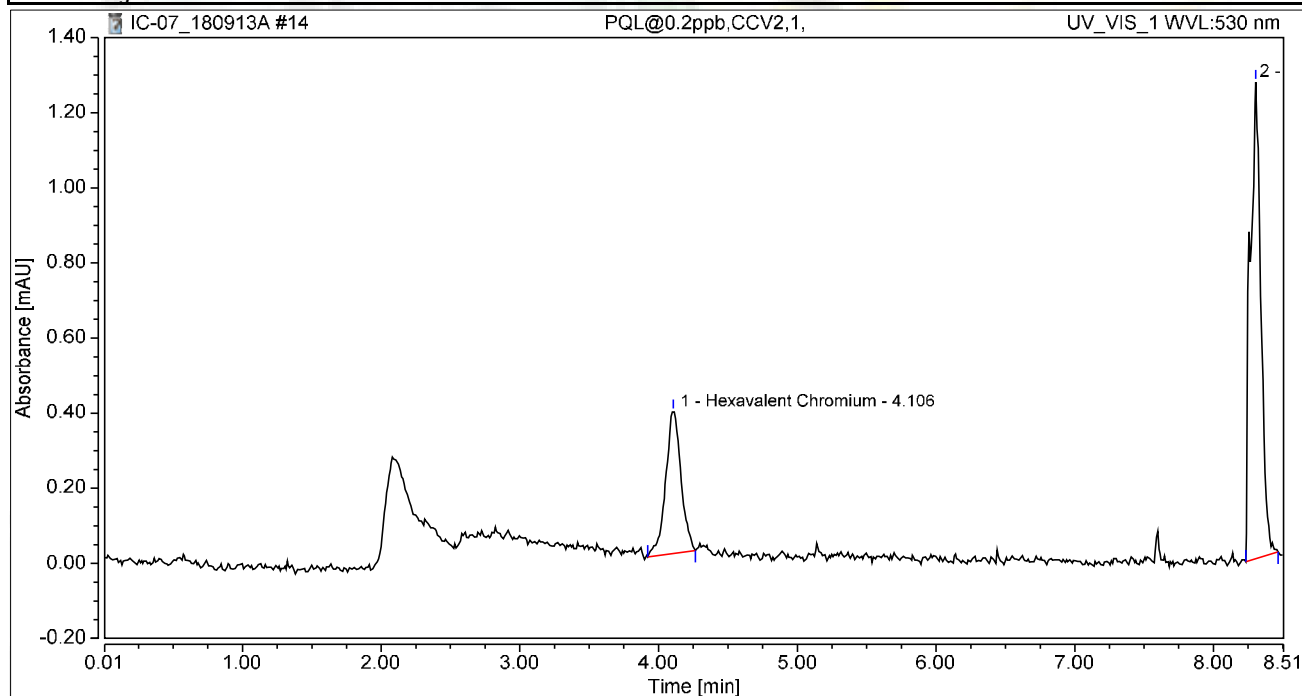
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.284	8.614	100.00	100.00	5.1038
<b>Total:</b>			<b>1.284</b>	<b>8.614</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 10:05	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

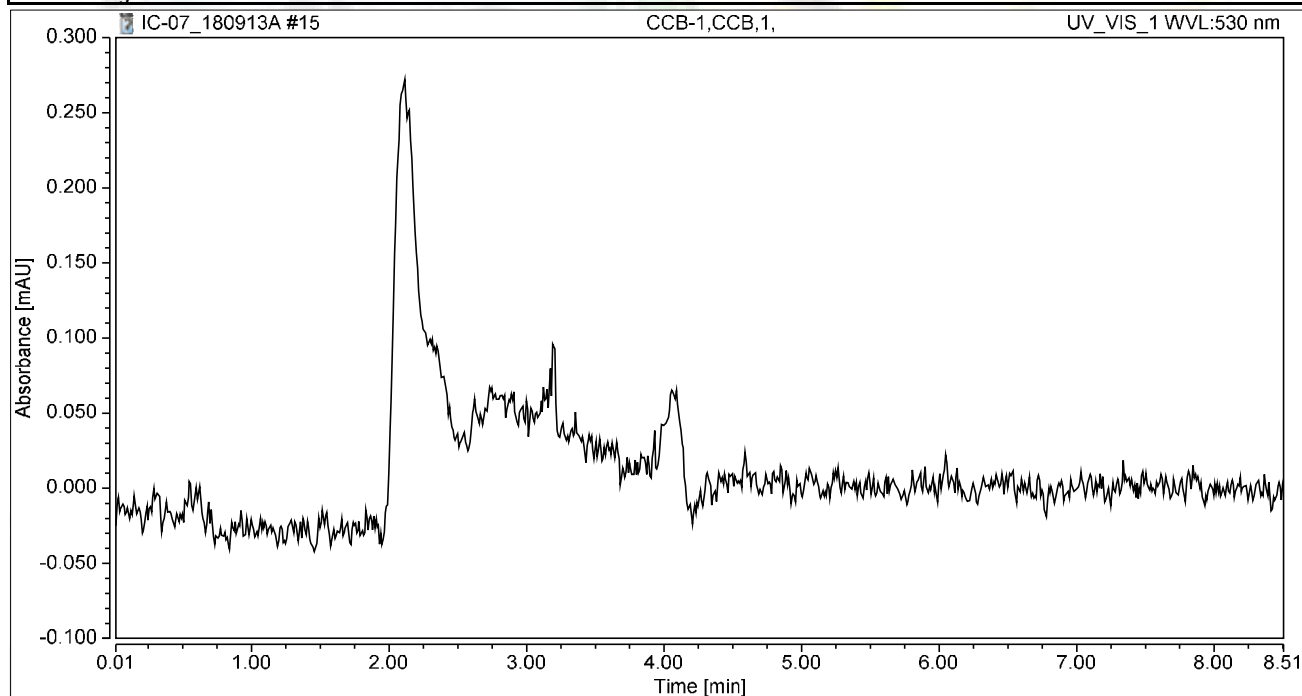
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.049	0.377	30.32	22.92	0.1942
2		8.306	0.112	1.269	69.68	77.08	n.a.
<b>Total:</b>			<b>0.161</b>	<b>1.647</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-1,CCB,1,	Run Time (min):	8.49
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 10:14	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

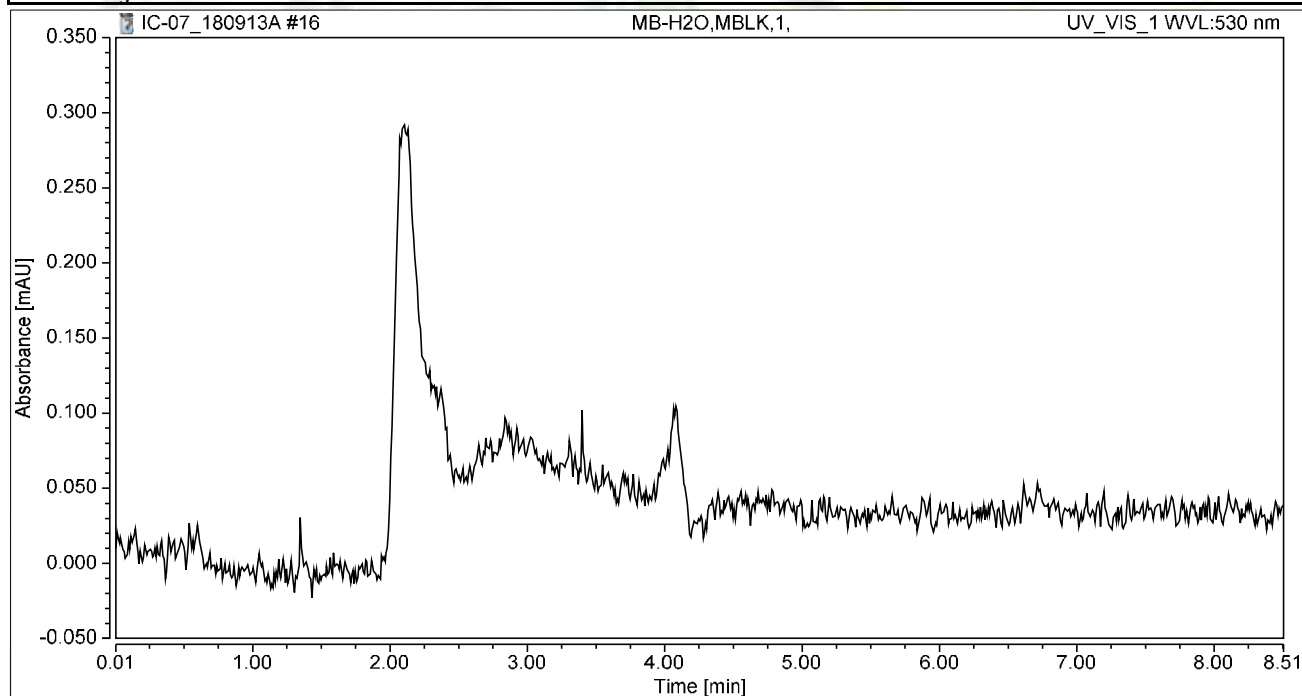
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	MB-H2O,MBLK,1,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 10:24	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

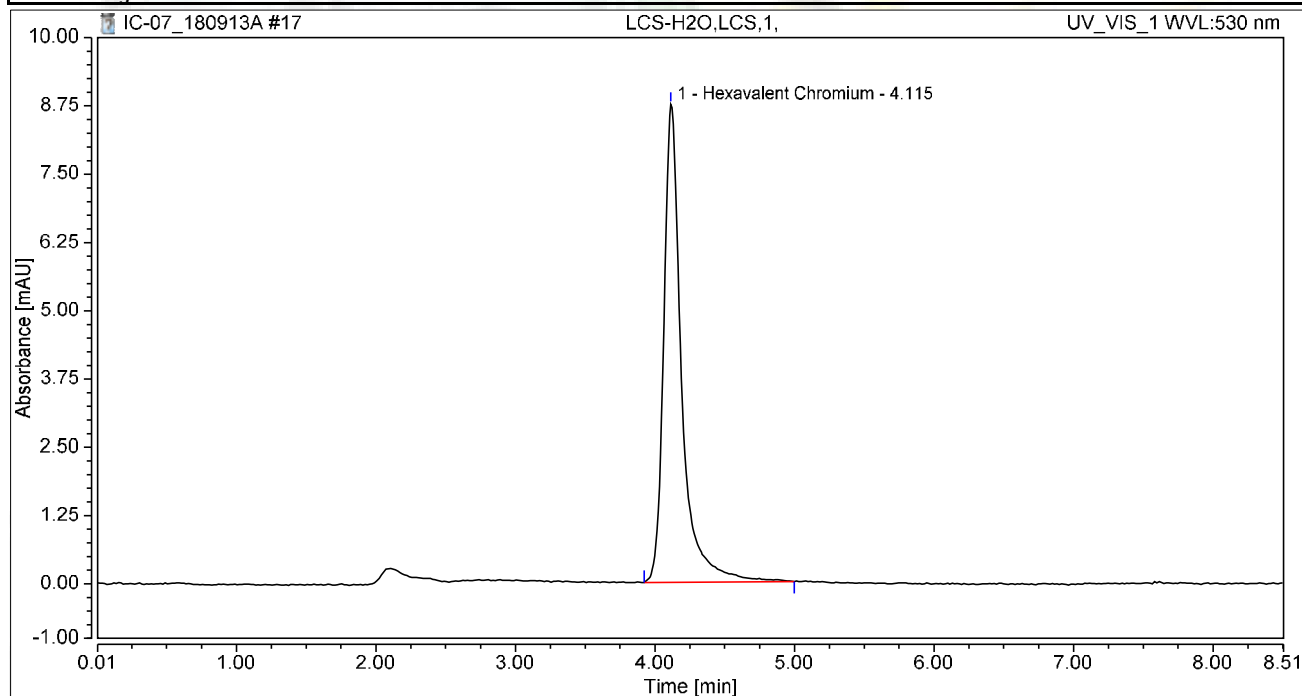


### Chromatogram and Results

**Injection Details**

Injection Name:	LCS-H2O,LCS,1,	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 10:33	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

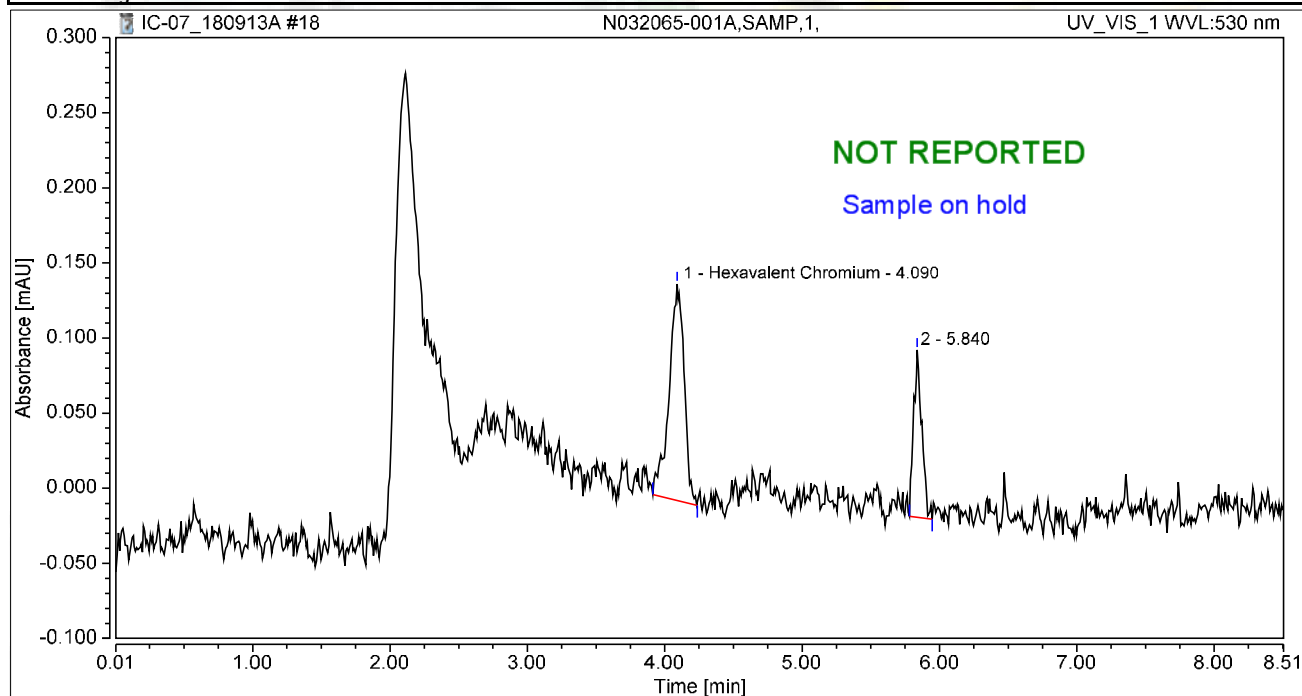
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.302	8.751	100.00	100.00	5.1746
<b>Total:</b>			<b>1.302</b>	<b>8.751</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 10:53	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

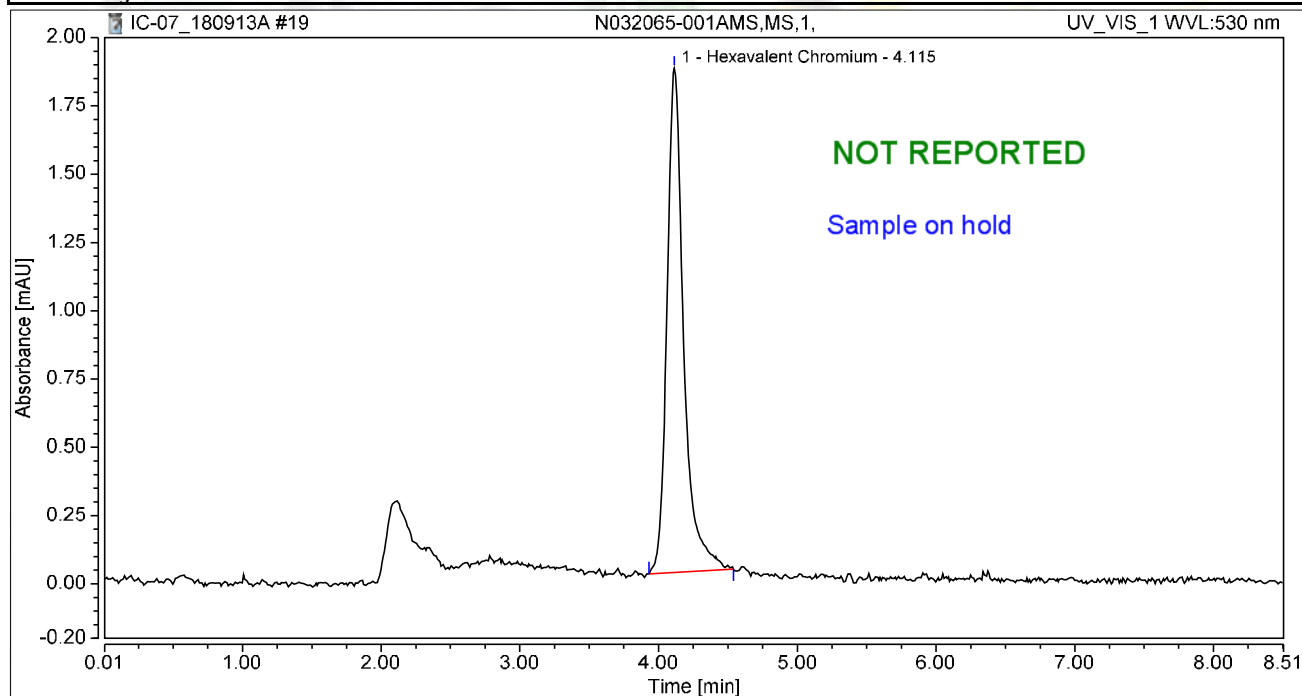
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	0.018	0.144	70.34	56.41	0.0726
2		5.840	0.008	0.111	29.66	43.59	n.a.
<b>Total:</b>			<b>0.026</b>	<b>0.256</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 11:05	Sample Weight:	1.0000

**Chromatogram**



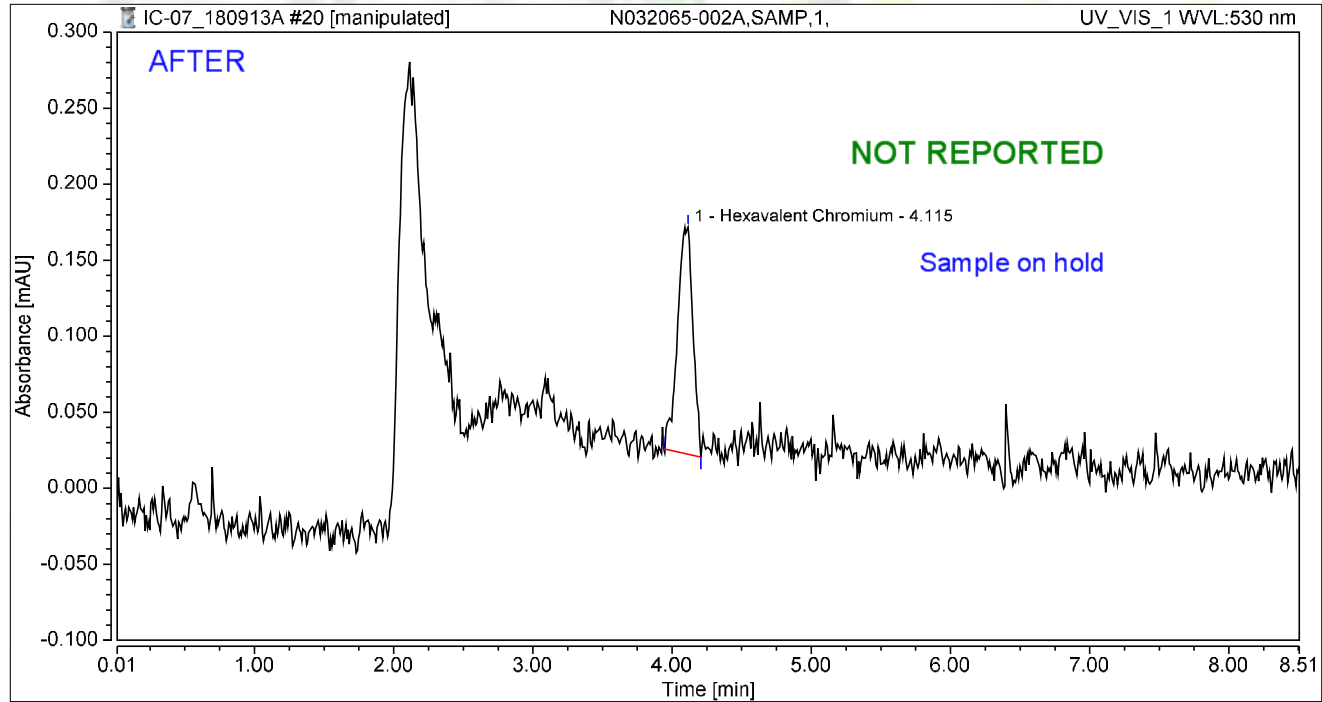
**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.258	1.846	100.00	100.00	1.0251
<b>Total:</b>			<b>0.258</b>	<b>1.846</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

Injection Details		
Injection Name:	N032065-002A,SAMP,1,	Run Time (min): 8.49
Vial Number:	11	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	13/Sep/18 11:14	Sample Weight: 1.0000

### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.019	0.149	100.00	100.00	0.0755
<b>Total:</b>			<b>0.019</b>	<b>0.149</b>	<b>100.00</b>	<b>100.00</b>	

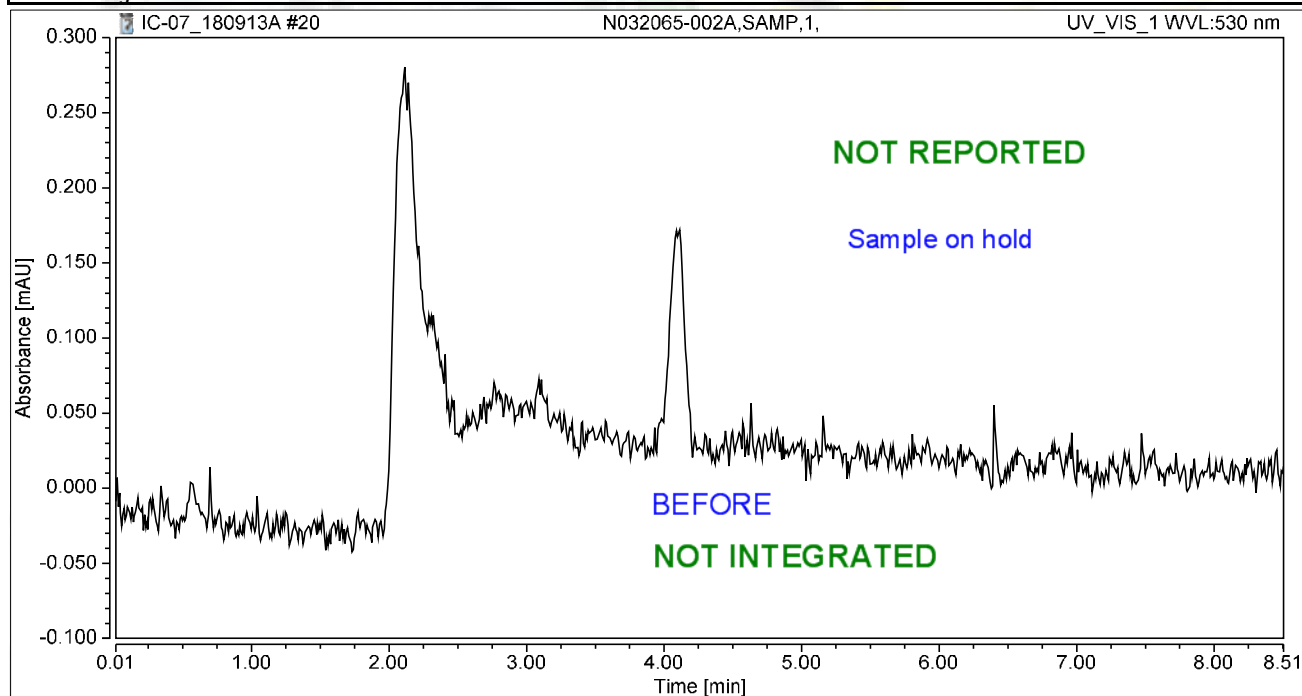
rba 9/19/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-002A,SAMP,1,	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 11:14	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

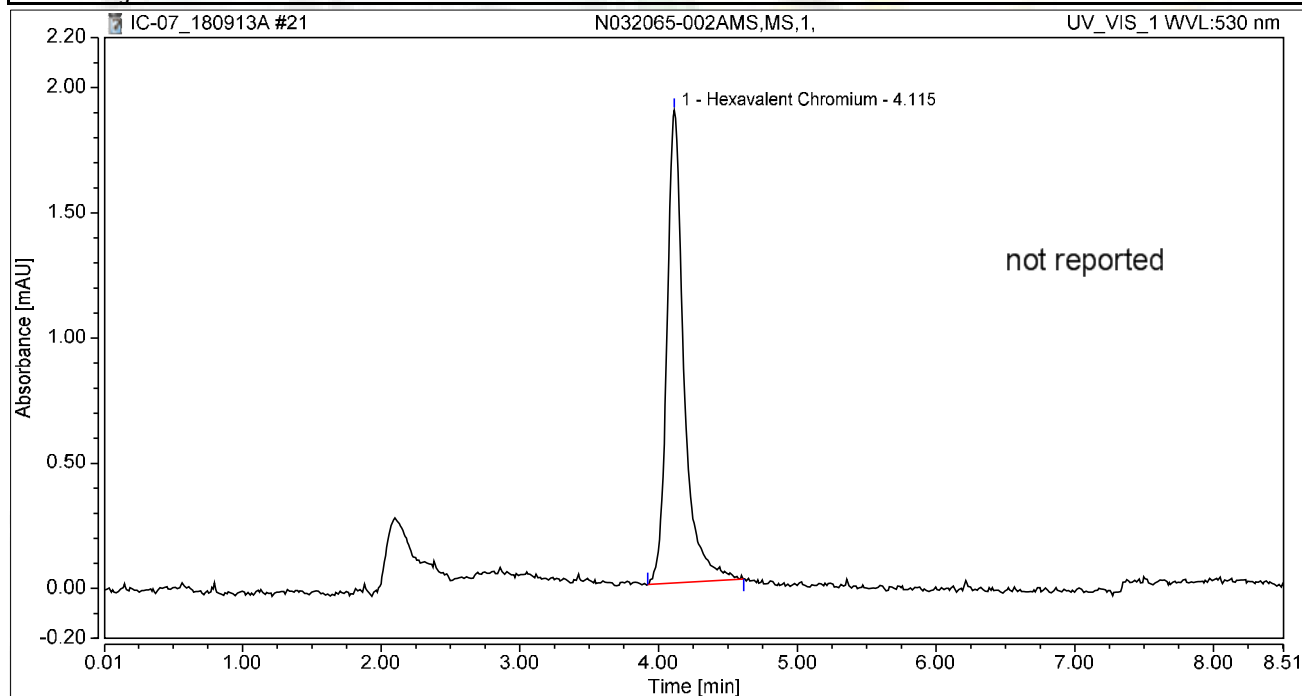
jba 9/19/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-002AMS,MS,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 11:24	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

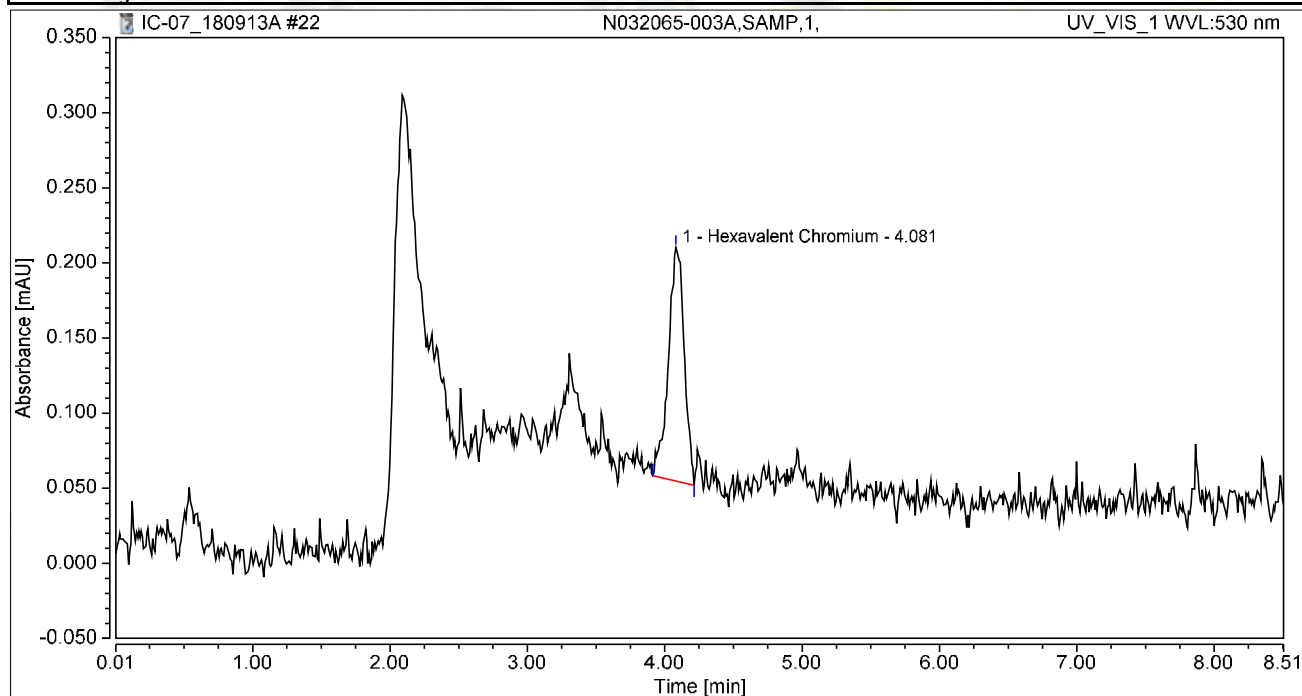
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.270	1.889	100.00	100.00	1.0730
<b>Total:</b>			<b>0.270</b>	<b>1.889</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032065-003A,SAMP,1,	Run Time (min):	8.50
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 11:34	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

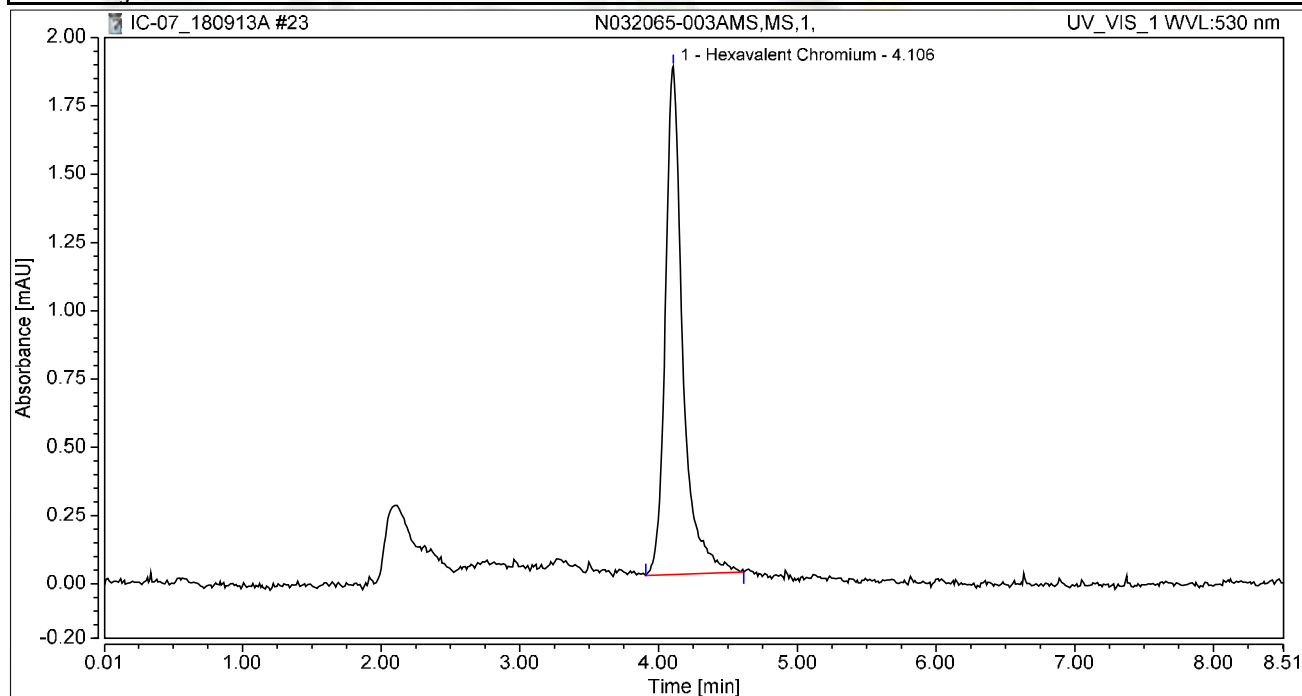
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.021	0.156	100.00	100.00	0.0826
<b>Total:</b>			<b>0.021</b>	<b>0.156</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-003AMS,MS,1,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 11:43	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.271	1.861	100.00	100.00	1.0755
<b>Total:</b>			<b>0.271</b>	<b>1.861</b>	<b>100.00</b>	<b>100.00</b>	

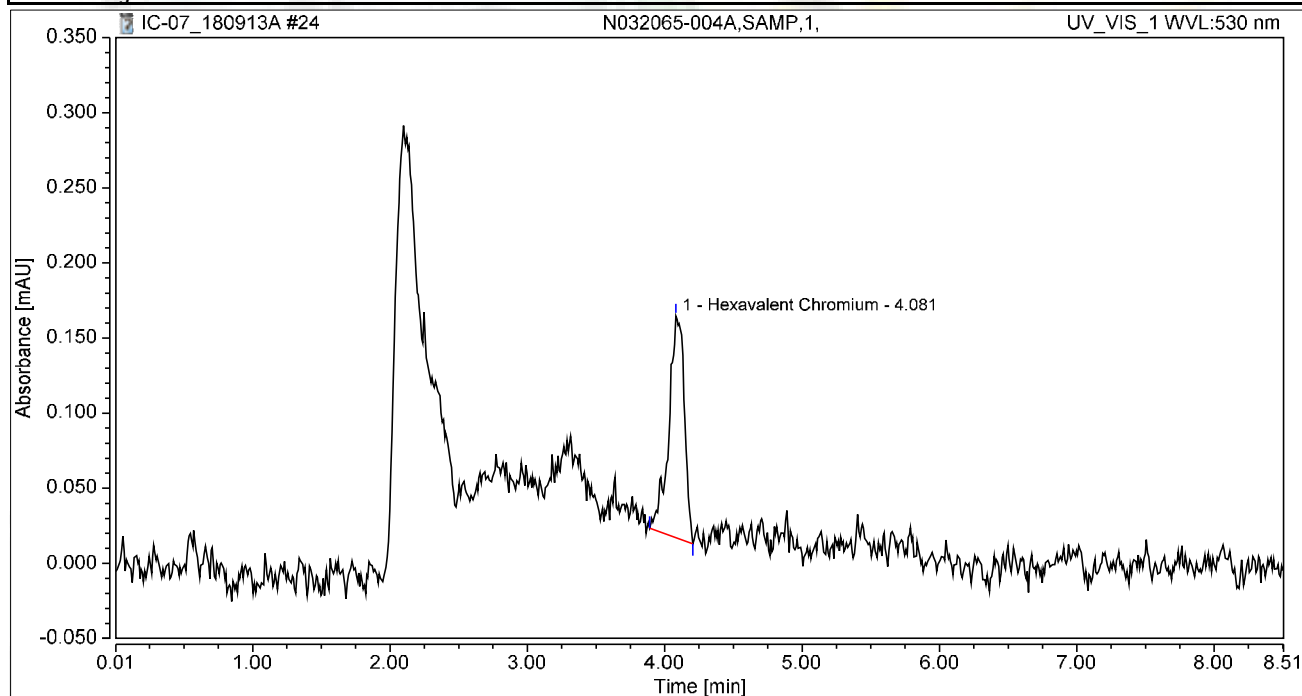


### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-004A,SAMP,1,	Run Time (min):	8.50
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 11:52	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

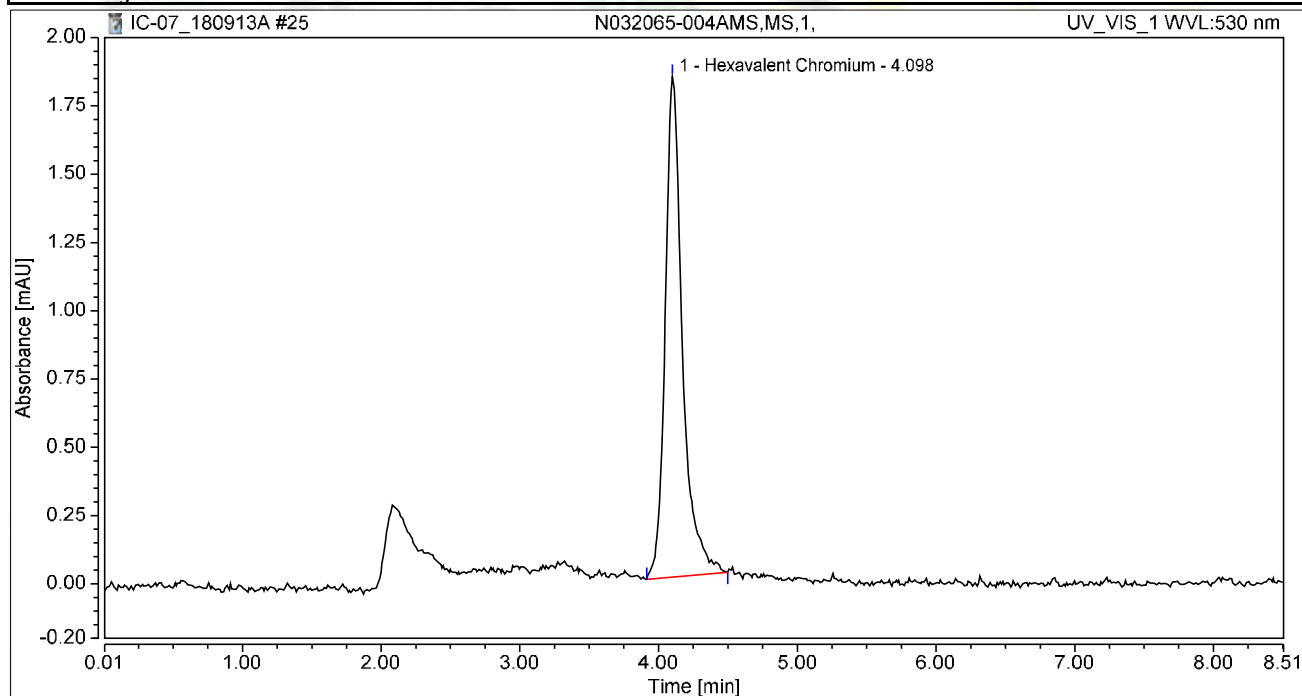
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.019	0.148	100.00	100.00	0.0772
<b>Total:</b>			<b>0.019</b>	<b>0.148</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032065-004AMS,MS,1,	Run Time (min):	8.50
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 12:02	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

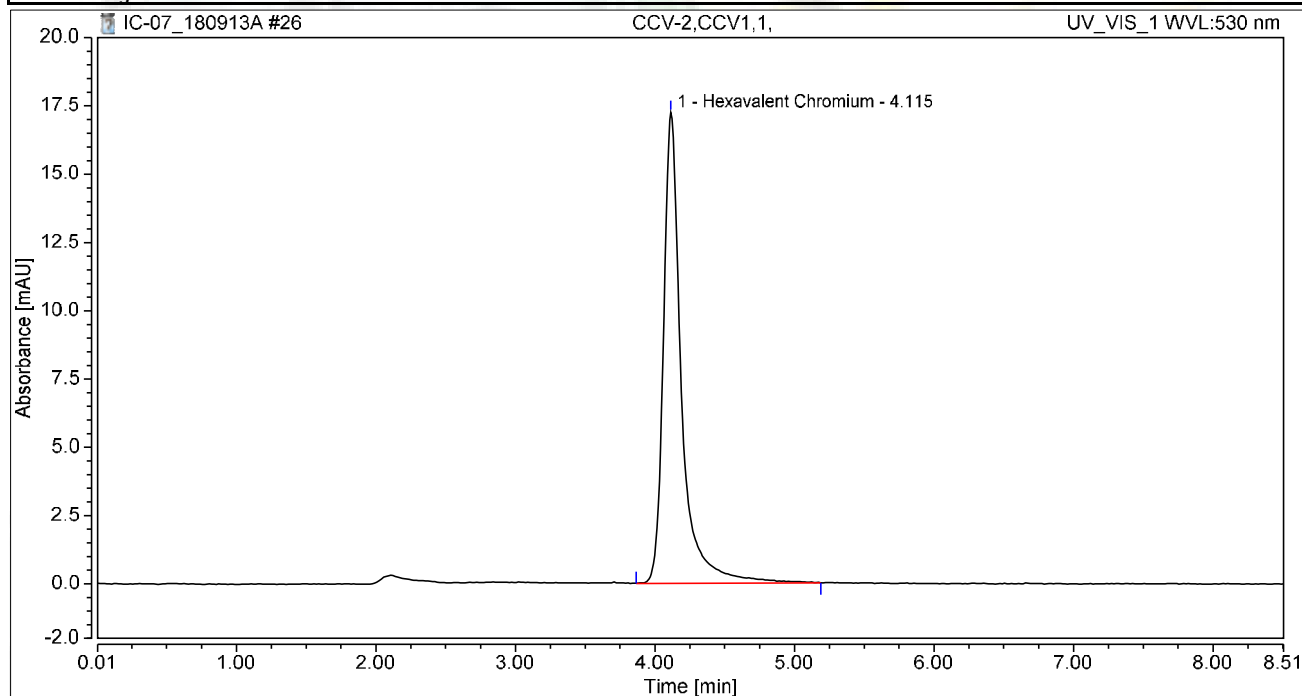
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.264	1.833	100.00	100.00	1.0495
<b>Total:</b>			<b>0.264</b>	<b>1.833</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-2,CCV1,1,	Run Time (min):	8.50
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 12:11	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

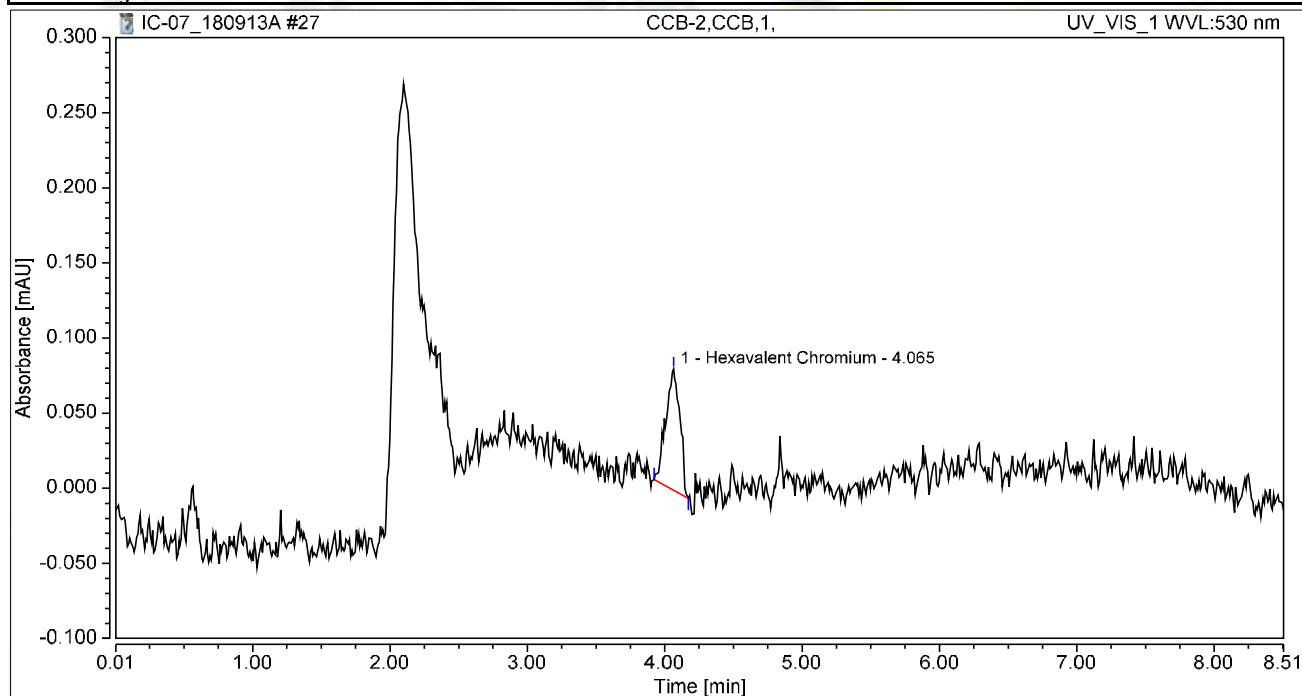
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.582	17.237	100.00	100.00	10.2630
<b>Total:</b>			<b>2.582</b>	<b>17.237</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-2,CCB,1,	Run Time (min):	8.50
Vial Number:	18	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 12:21	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

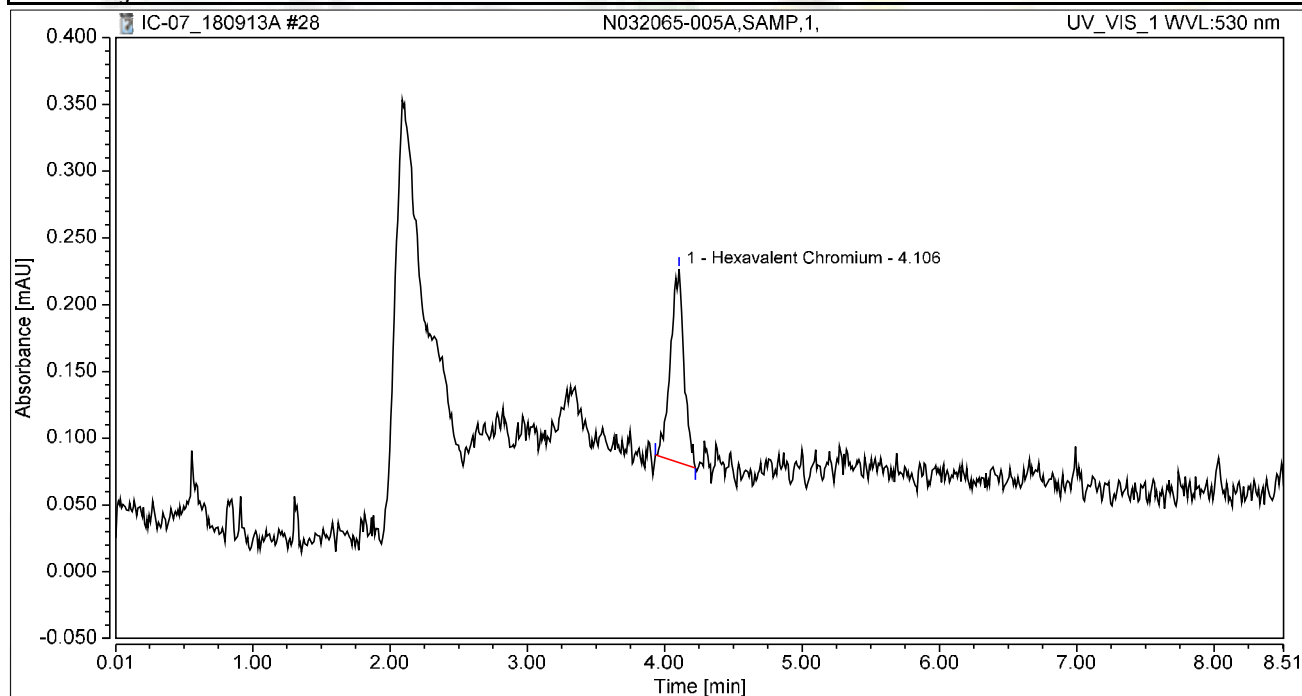
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.065	0.009	0.081	100.00	100.00	0.0376
<b>Total:</b>			<b>0.009</b>	<b>0.081</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-005A,SAMP,1,	Run Time (min):	8.50
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 12:30	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

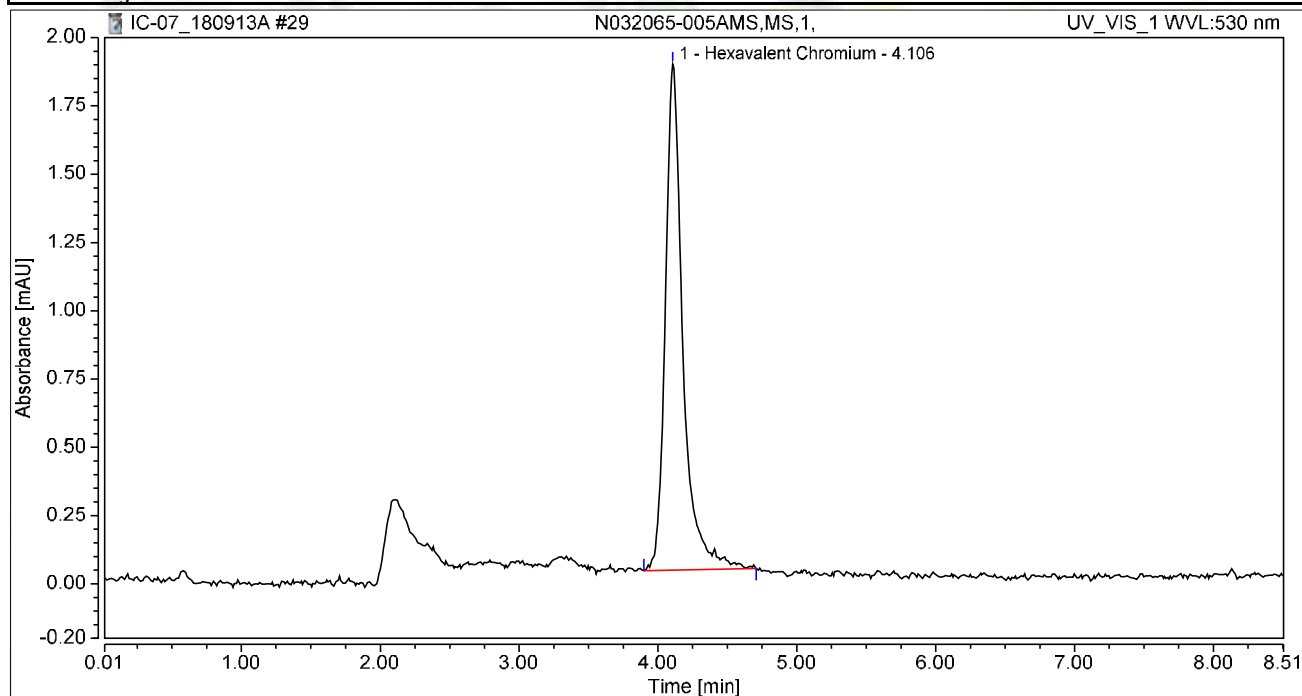
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.016	0.145	100.00	100.00	0.0651
<b>Total:</b>			<b>0.016</b>	<b>0.145</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-005AMS,MS,1,	Run Time (min):	8.49
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 12:40	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

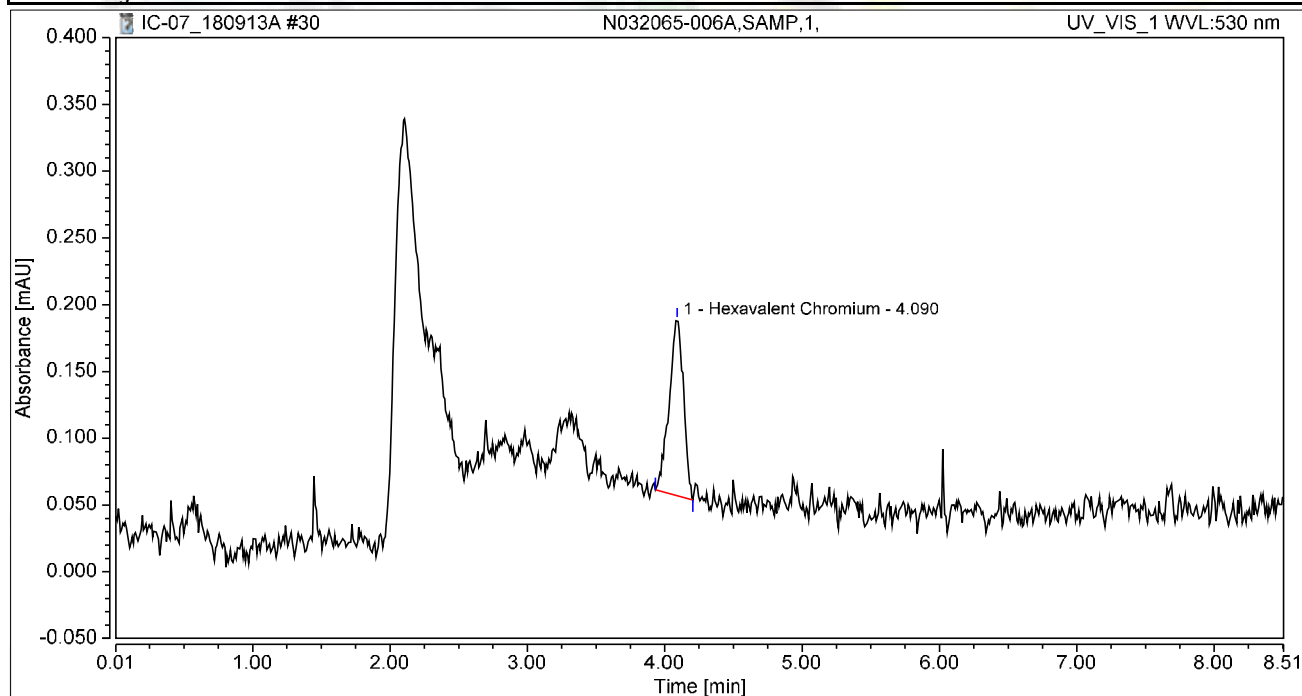
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.271	1.853	100.00	100.00	1.0772
<b>Total:</b>			<b>0.271</b>	<b>1.853</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-006A,SAMP,1,	Run Time (min):	8.50
Vial Number:	21	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 12:49	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

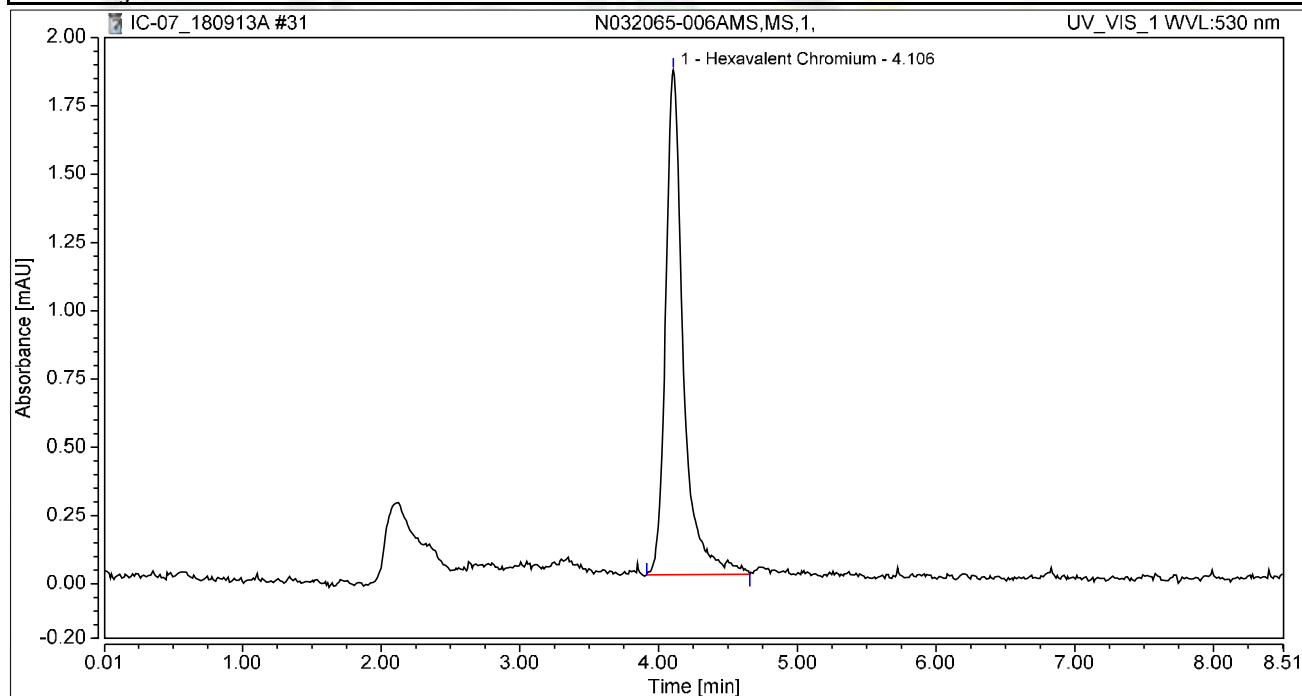
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	0.016	0.131	100.00	100.00	0.0633
<b>Total:</b>			<b>0.016</b>	<b>0.131</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032065-006AMS,MS,1,	Run Time (min):	8.50
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 12:58	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.273	1.848	100.00	100.00	1.0850
<b>Total:</b>			<b>0.273</b>	<b>1.848</b>	<b>100.00</b>	<b>100.00</b>	

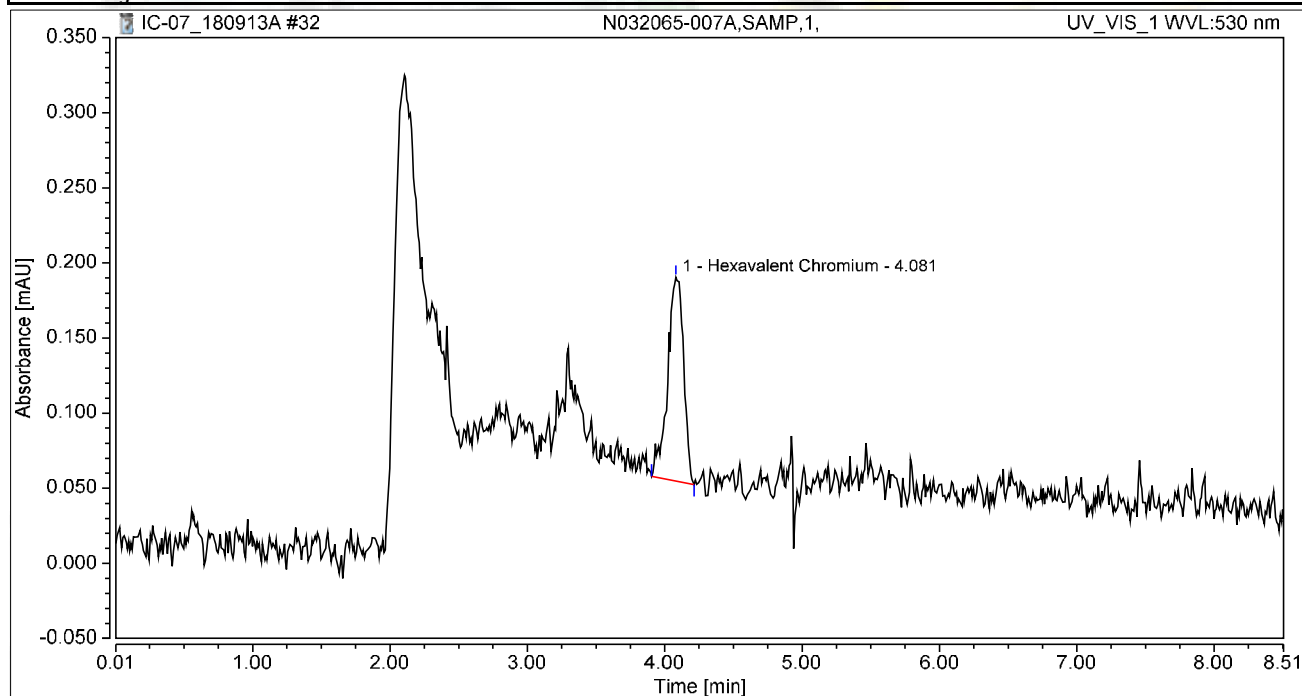


### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-007A,SAMP,1,	Run Time (min):	8.50
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 13:10	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

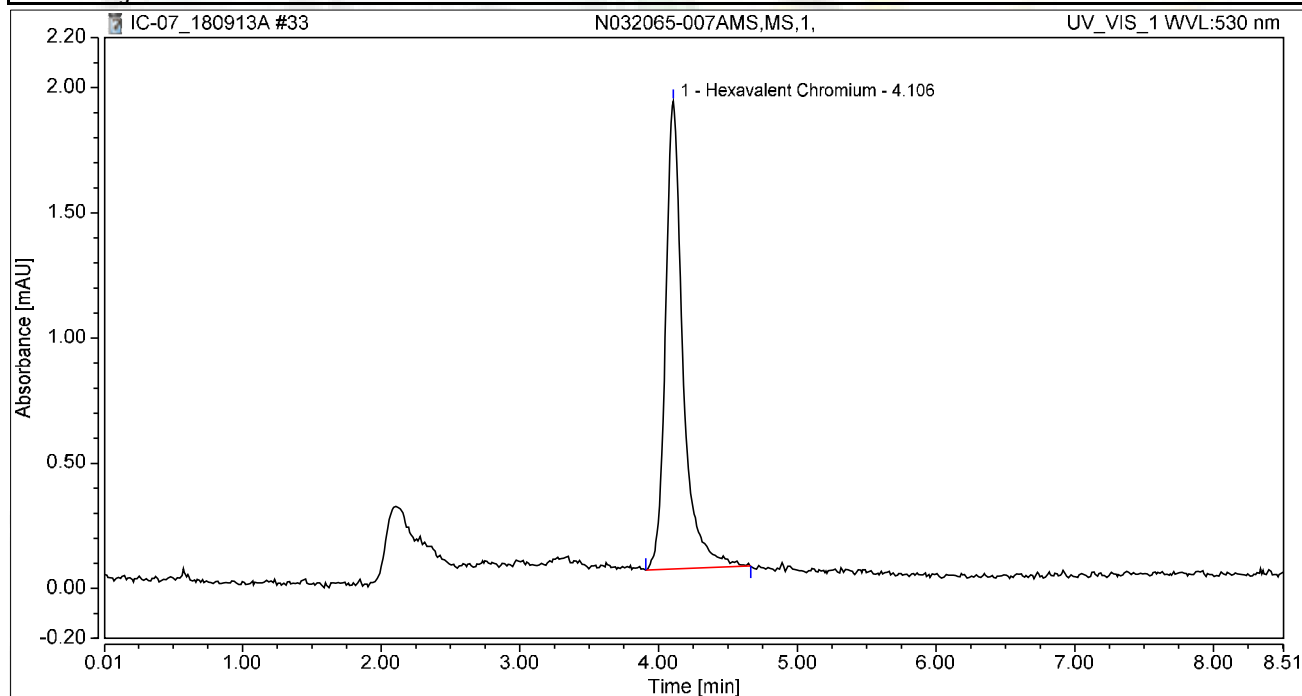
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.018	0.136	100.00	100.00	0.0722
<b>Total:</b>			<b>0.018</b>	<b>0.136</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-007AMS,MS,1,	Run Time (min):	8.50
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 13:22	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

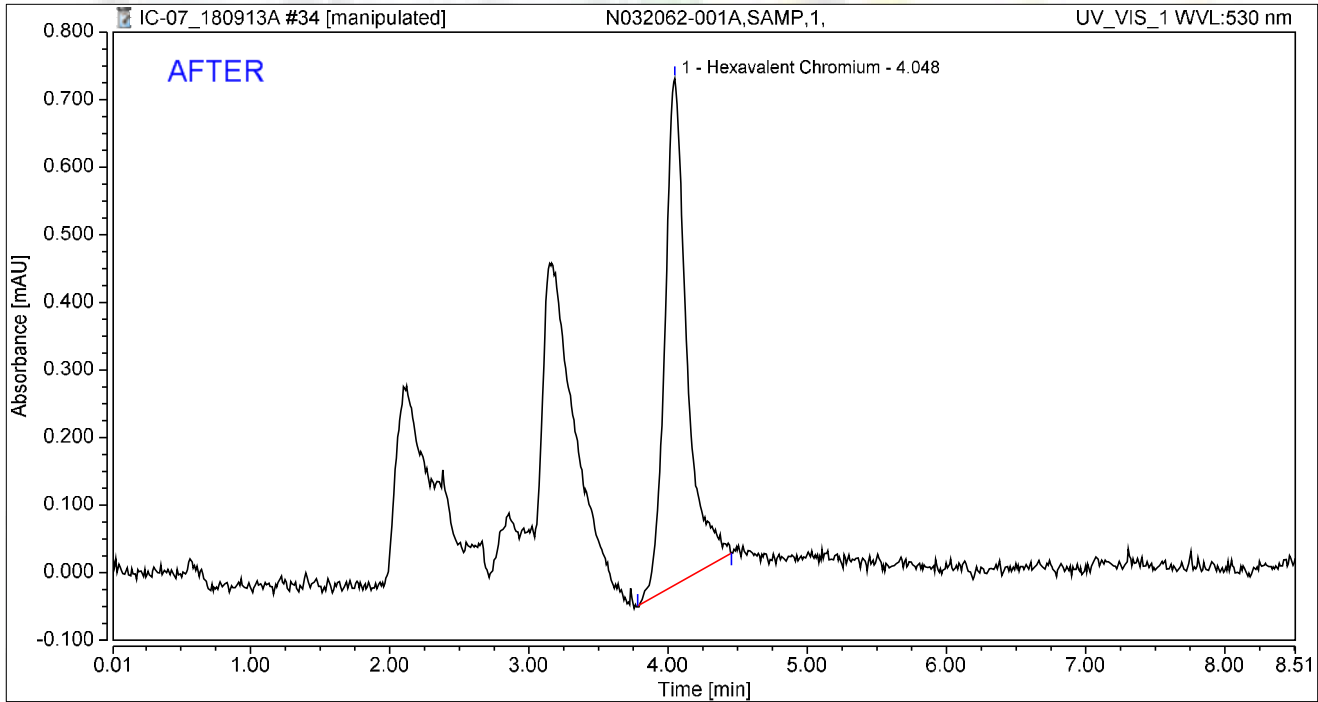
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.272	1.867	100.00	100.00	1.0829
<b>Total:</b>			<b>0.272</b>	<b>1.867</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032062-001A,SAMP,1,	Run Time (min):	8.49
Vial Number:	26	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 13:31	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.048	0.137	0.750	100.00	100.00	0.5443
<b>Total:</b>			<b>0.137</b>	<b>0.750</b>	<b>100.00</b>	<b>100.00</b>	

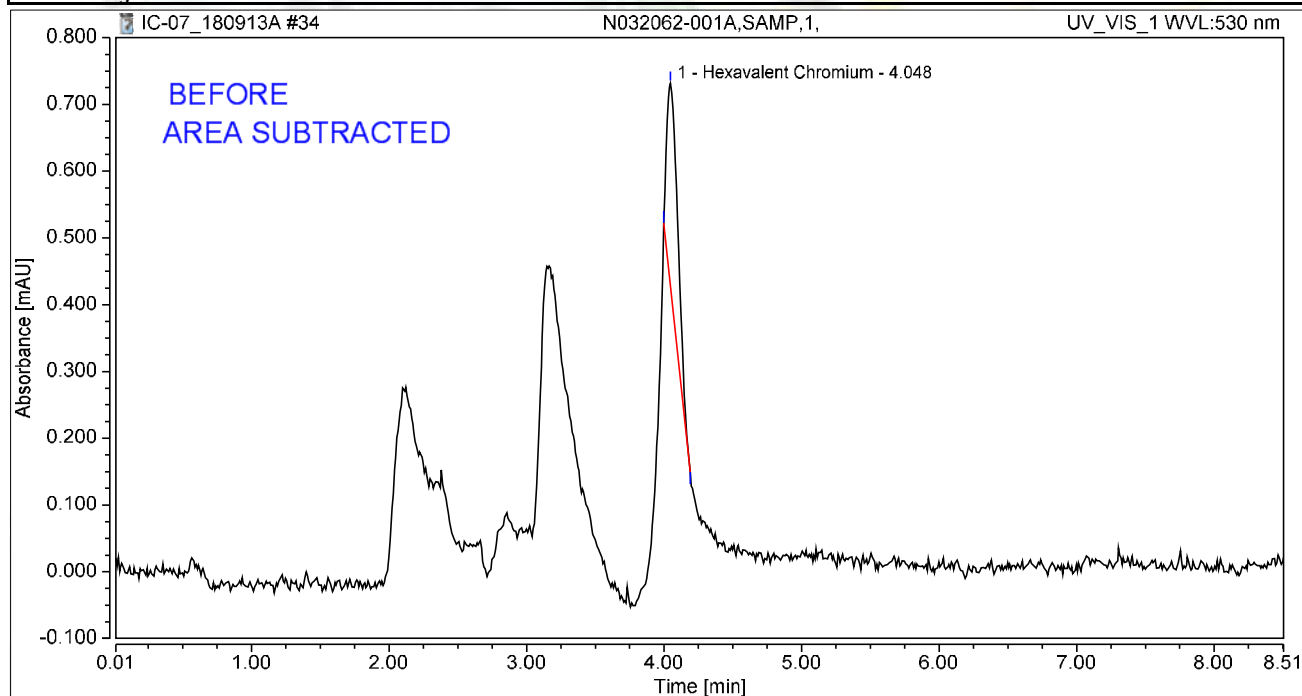
rba 9/19/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032062-001A,SAMP,1,	Run Time (min):	8.49
Vial Number:	26	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 13:31	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.048	0.029	0.306	100.00	100.00	0.1142
<b>Total:</b>			<b>0.029</b>	<b>0.306</b>	<b>100.00</b>	<b>100.00</b>	

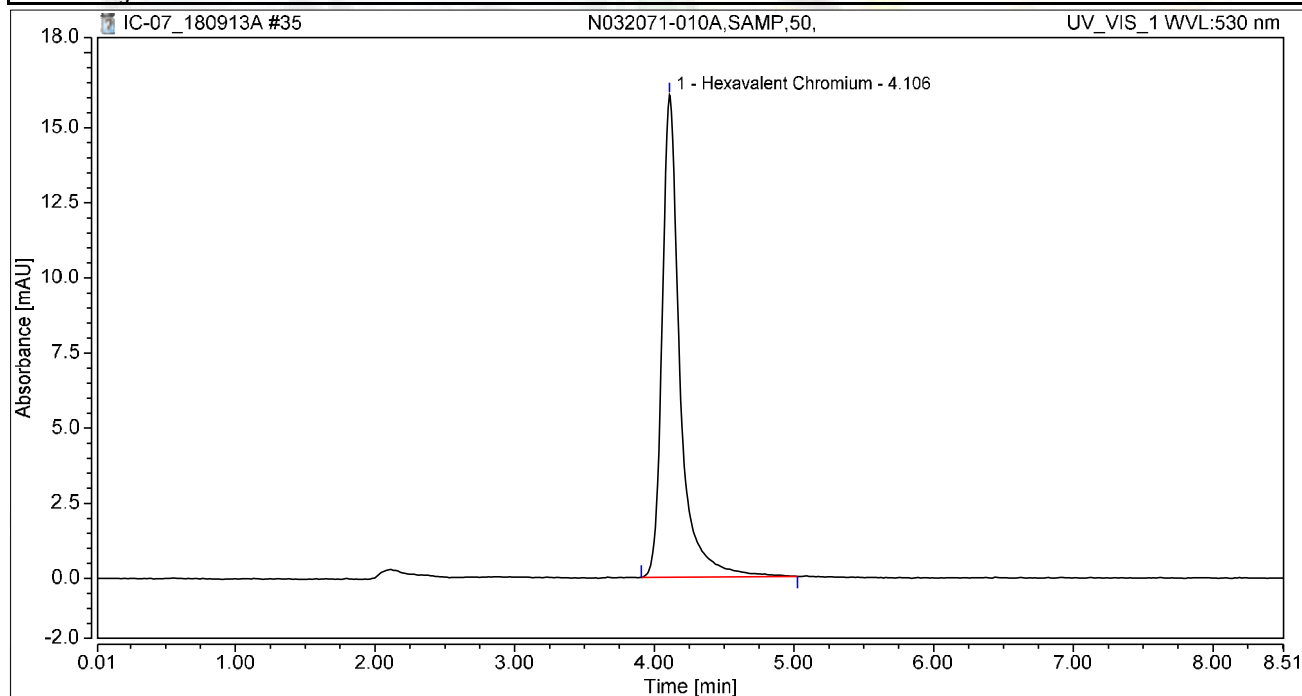
rba 9/19/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-010A,SAMP,50,	Run Time (min):	8.49
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 13:40	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

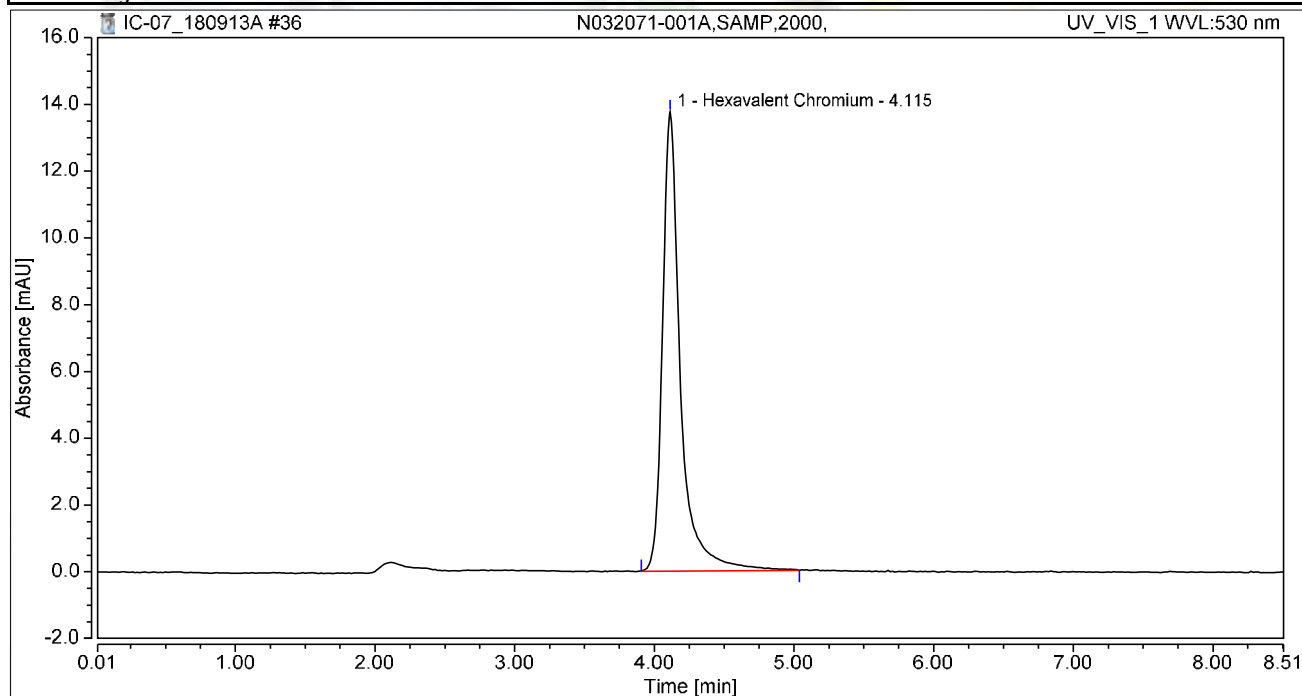
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	2.380	16.060	100.00	100.00	9.4605
<b>Total:</b>			<b>2.380</b>	<b>16.060</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-001A,SAMP,2000,	Run Time (min):	8.49
Vial Number:	28	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 13:50	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

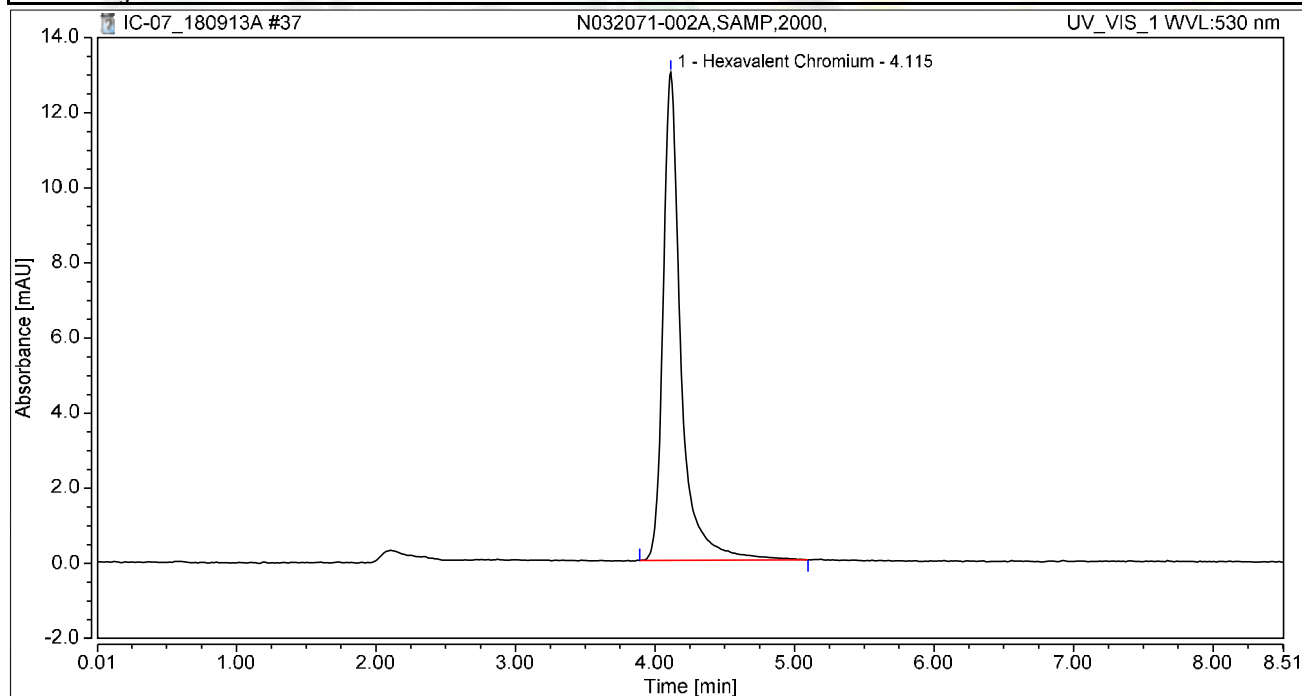
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.050	13.763	100.00	100.00	8.1485
<b>Total:</b>			<b>2.050</b>	<b>13.763</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-002A,SAMP,2000,	Run Time (min):	8.50
Vial Number:	29	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 13:59	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

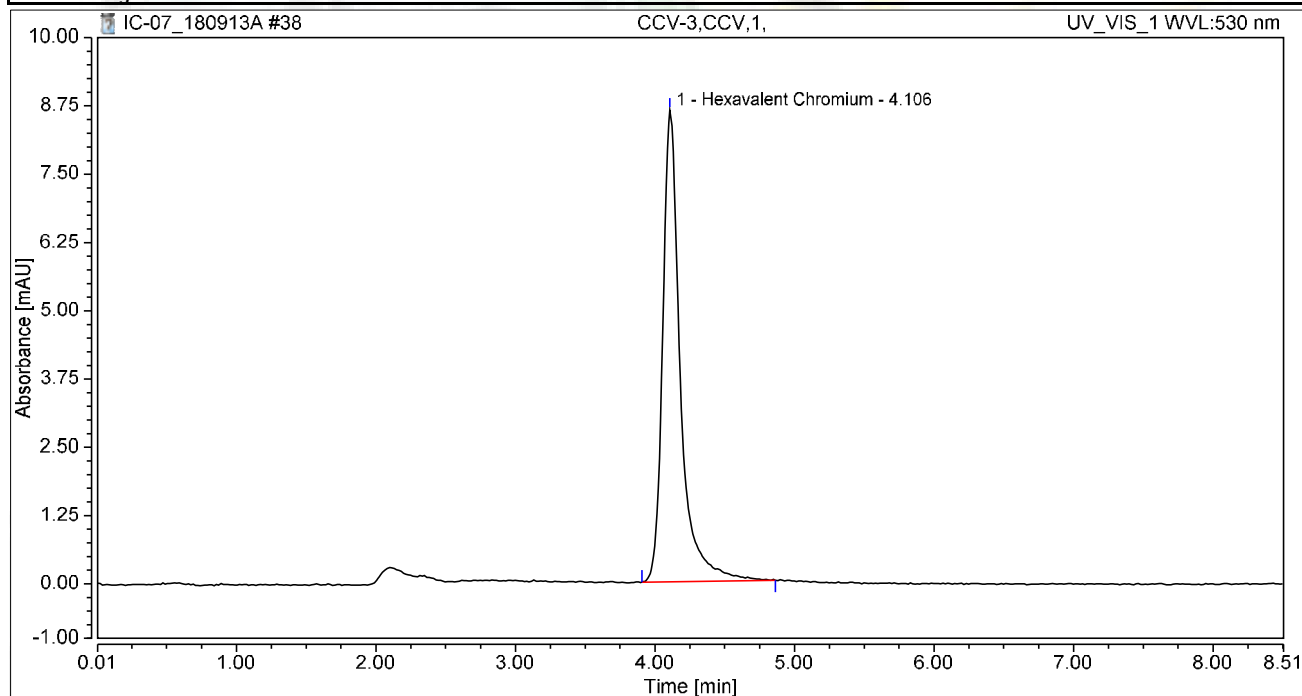
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.931	13.001	100.00	100.00	7.6756
<b>Total:</b>			<b>1.931</b>	<b>13.001</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-3,CCV,1,	Run Time (min):	8.50
Vial Number:	30	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 14:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	1.268	8.631	100.00	100.00	5.0392
<b>Total:</b>			<b>1.268</b>	<b>8.631</b>	<b>100.00</b>	<b>100.00</b>	

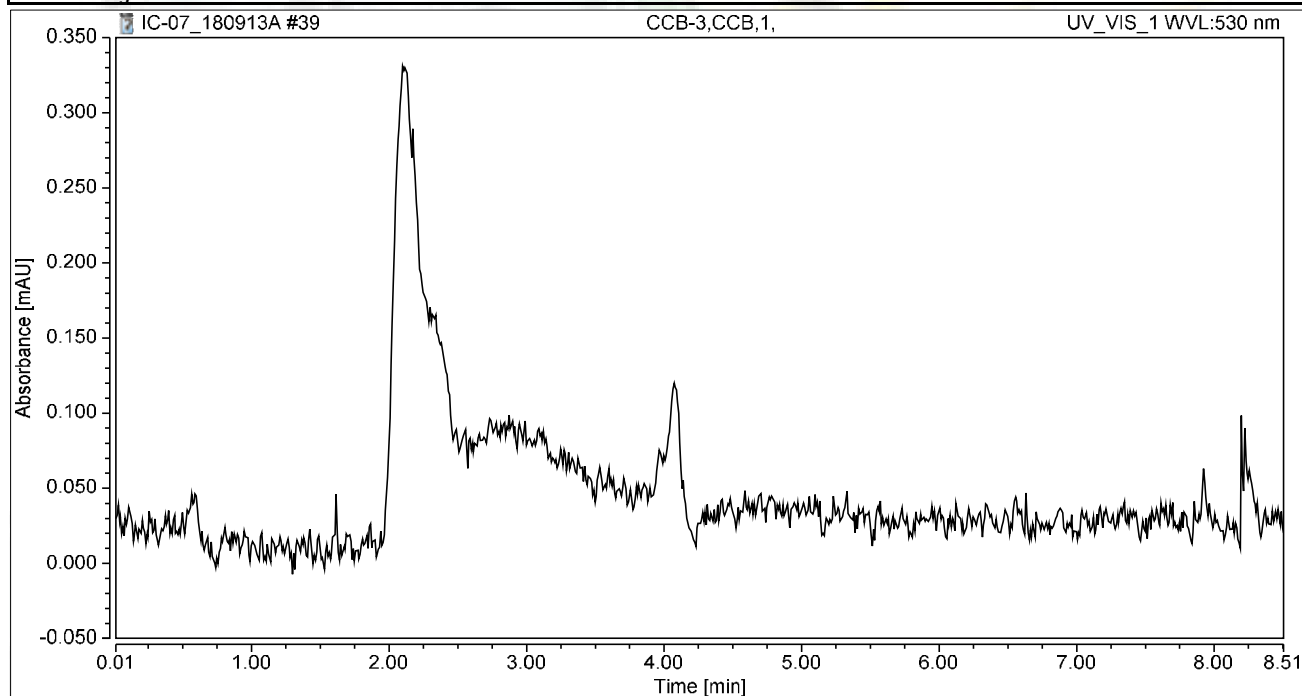


### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-3,CCB,1,	Run Time (min):	8.49
Vial Number:	31	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 14:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

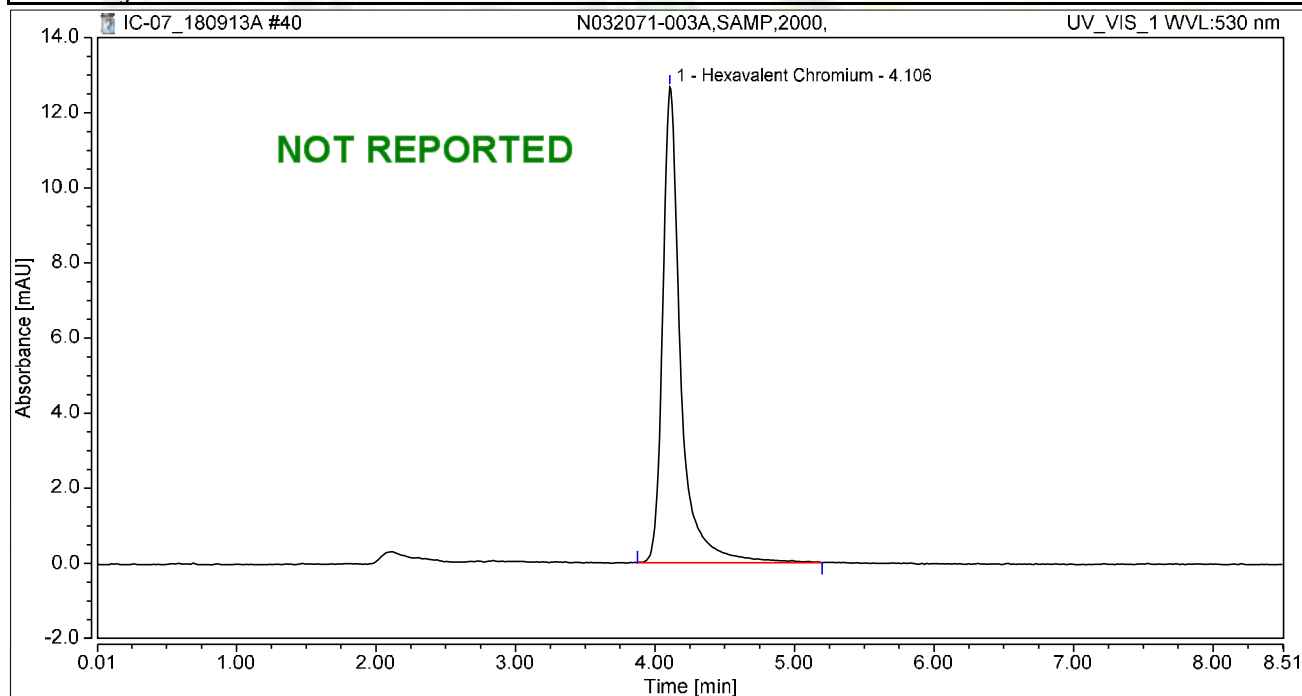
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032071-003A,SAMP,2000,	Run Time (min):	8.50
Vial Number:	32	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 14:28	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

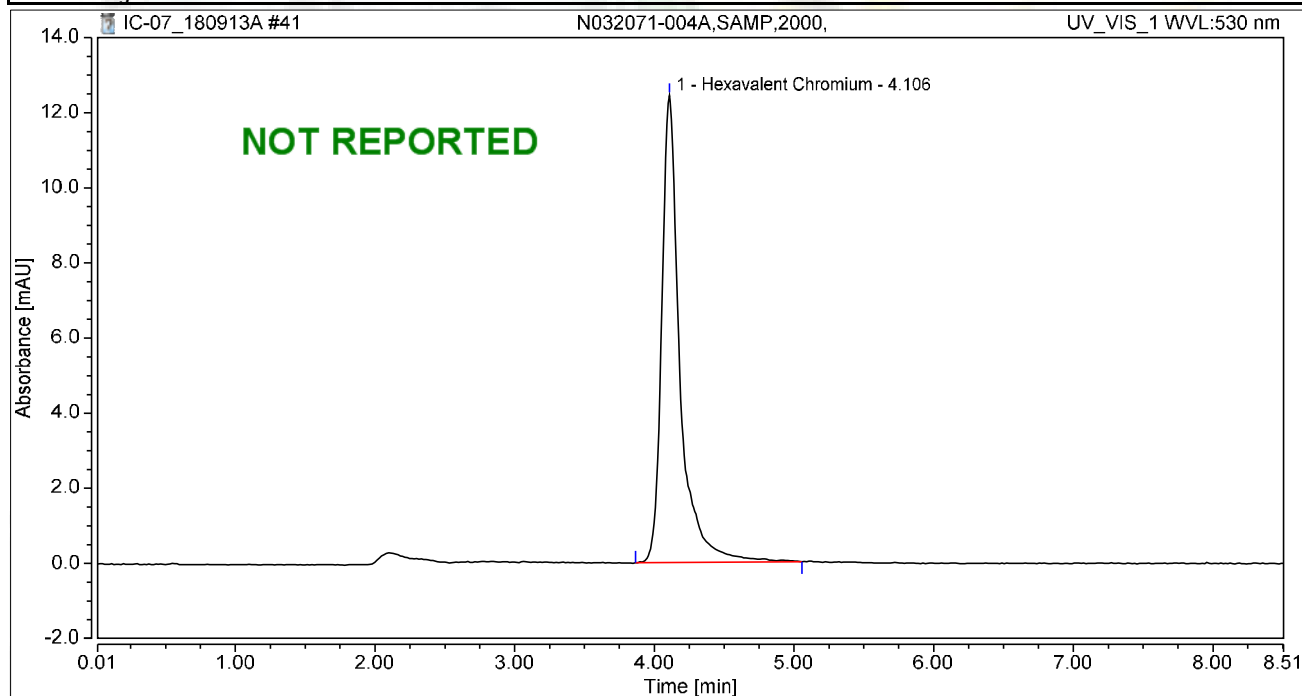
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	1.896	12.666	100.00	100.00	7.5389
<b>Total:</b>			<b>1.896</b>	<b>12.666</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-004A,SAMP,2000,	Run Time (min):	8.49
Vial Number:	33	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 14:37	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

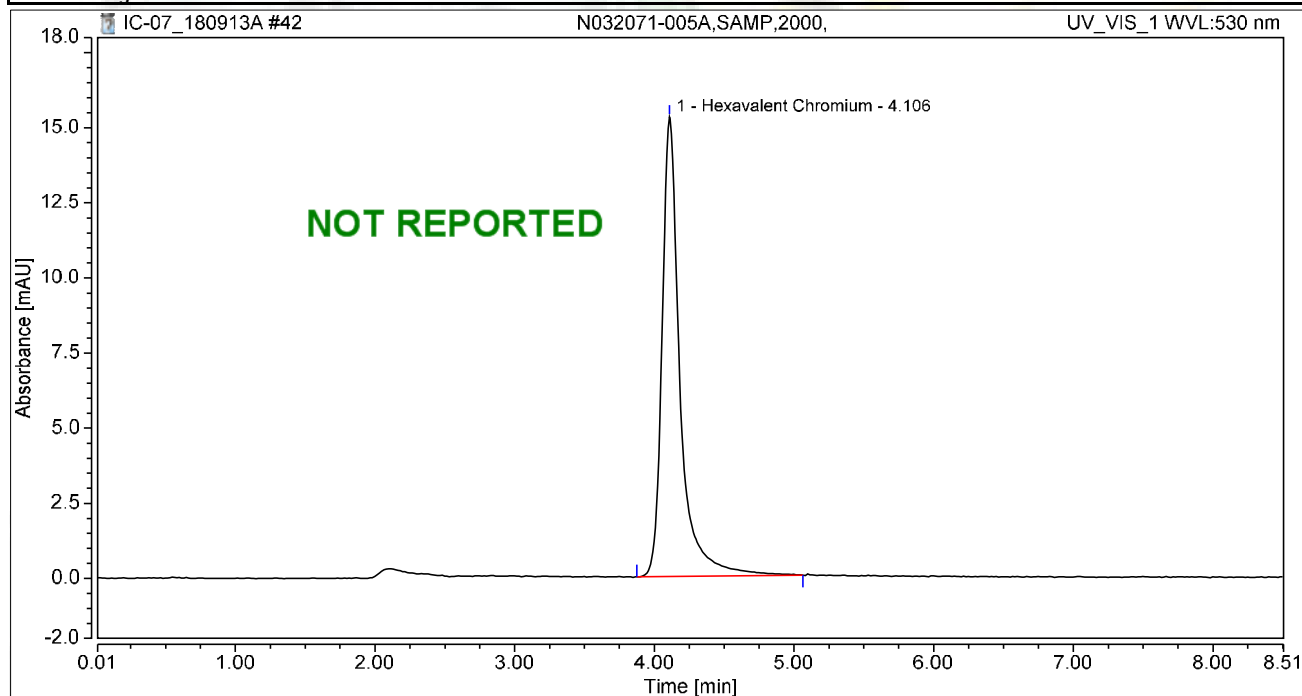
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	1.886	12.441	100.00	100.00	7.4977
<b>Total:</b>			<b>1.886</b>	<b>12.441</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-005A,SAMP,2000,	Run Time (min):	8.49
Vial Number:	34	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 14:47	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

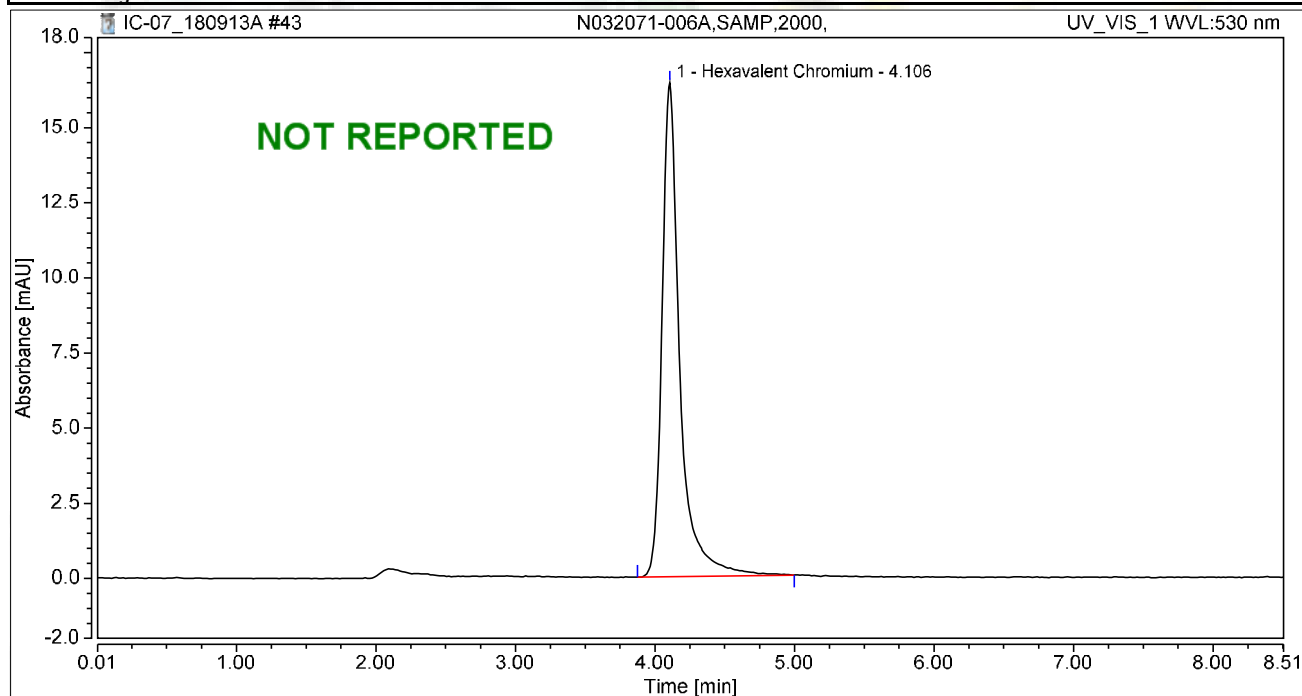
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	2.280	15.293	100.00	100.00	9.0622
<b>Total:</b>			<b>2.280</b>	<b>15.293</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-006A,SAMP,2000,	Run Time (min):	8.50
Vial Number:	35	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 14:56	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

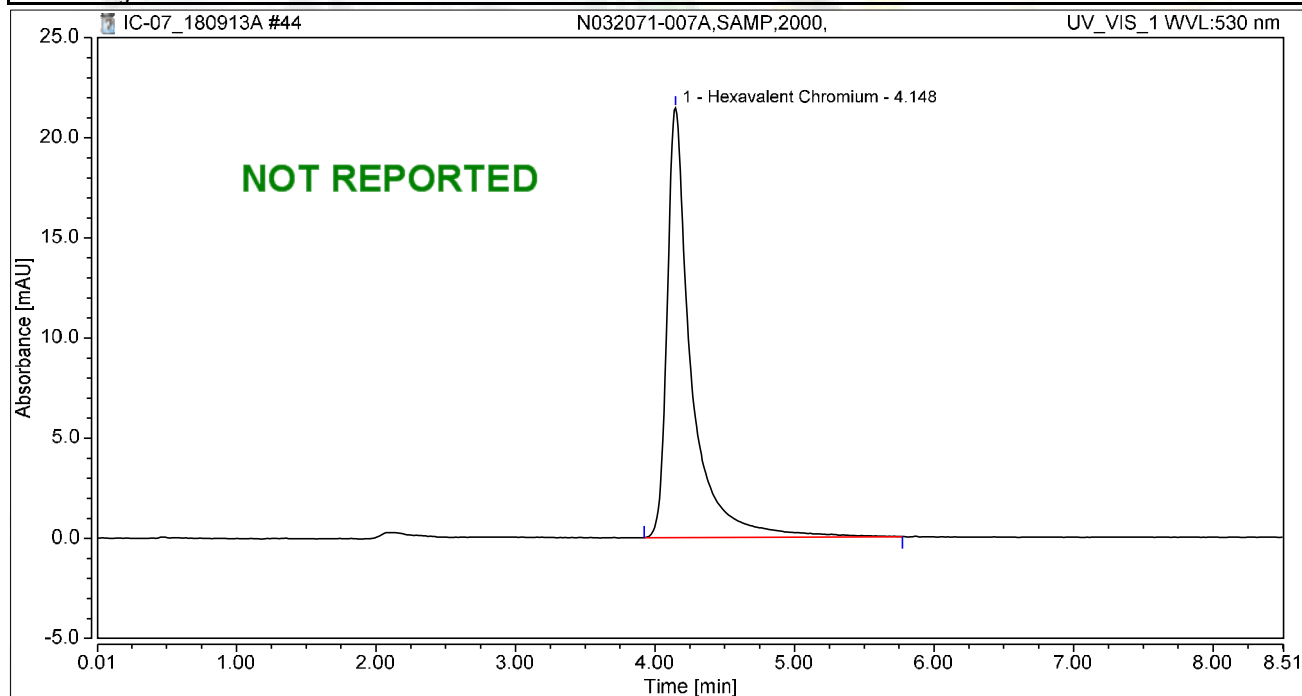
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	2.439	16.444	100.00	100.00	9.6941
<b>Total:</b>			<b>2.439</b>	<b>16.444</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-007A,SAMP,2000,	Run Time (min):	8.50
Vial Number:	36	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

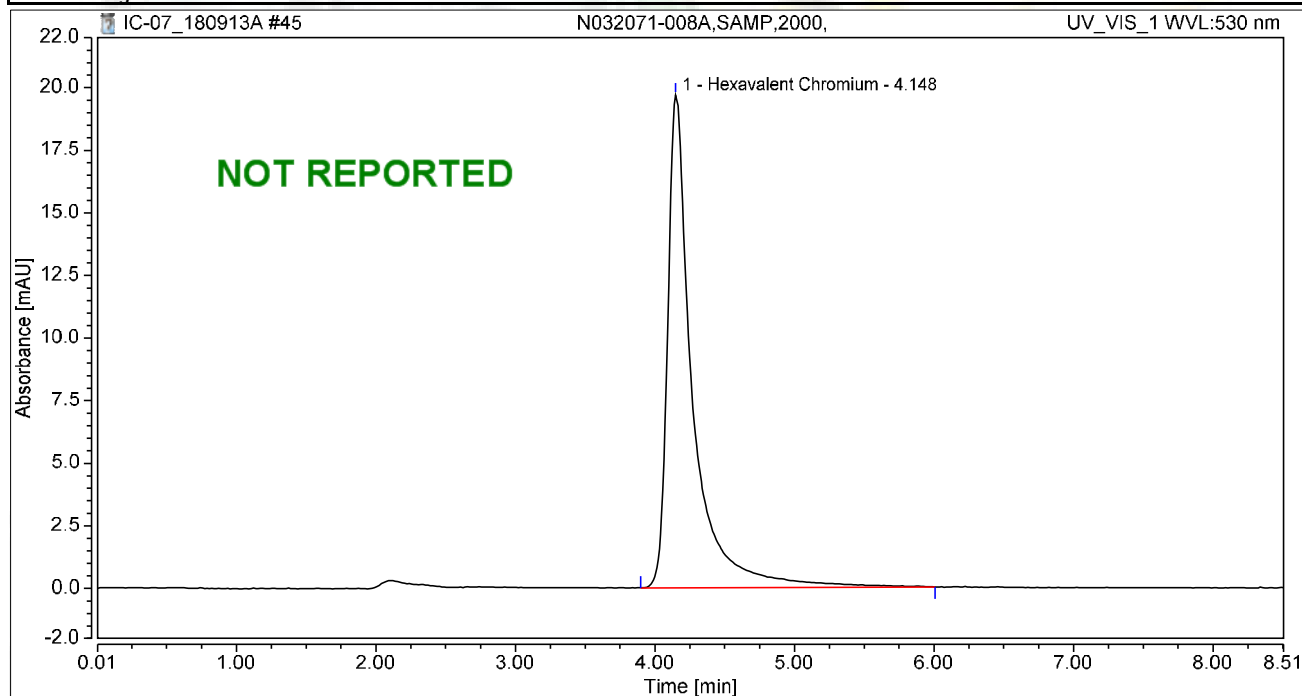
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	4.289	21.466	100.00	100.00	17.0510
<b>Total:</b>			<b>4.289</b>	<b>21.466</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-008A,SAMP,2000,	Run Time (min):	8.50
Vial Number:	37	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 15:15	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

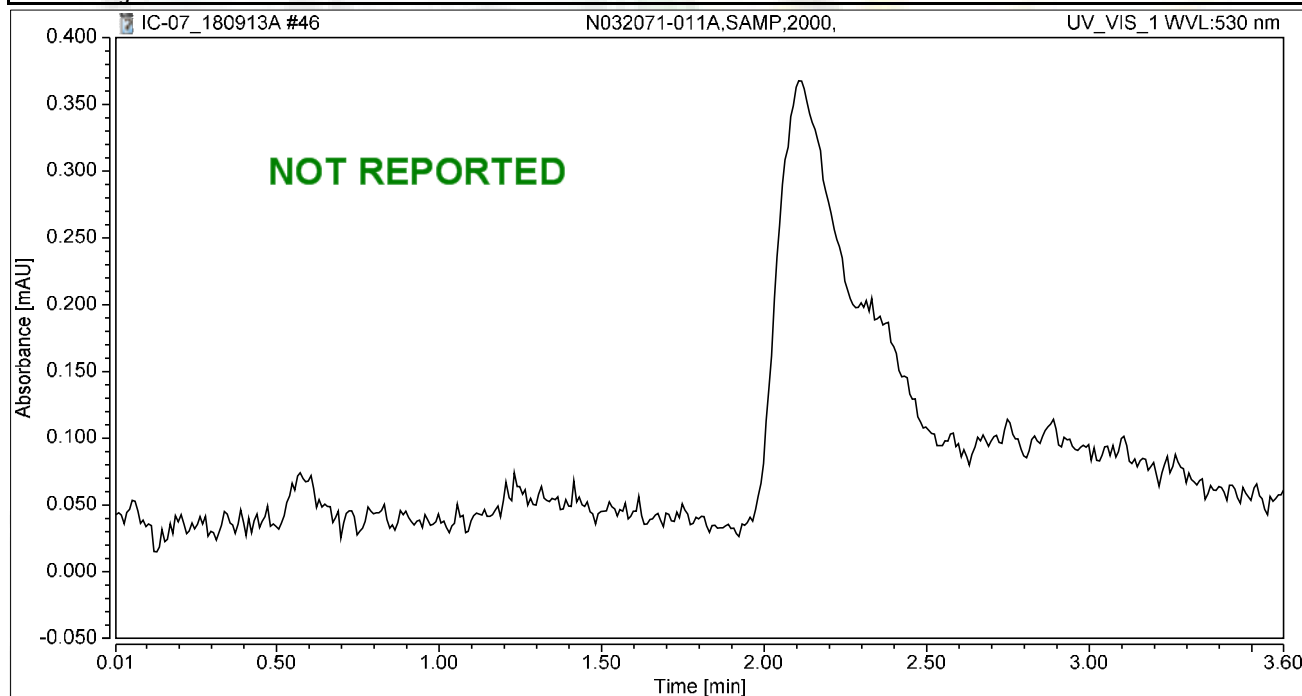
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	4.118	19.680	100.00	100.00	16.3697
<b>Total:</b>			<b>4.118</b>	<b>19.680</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-011A,SAMP,2000,	Run Time (min):	3.59
Vial Number:	38	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 15:24	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

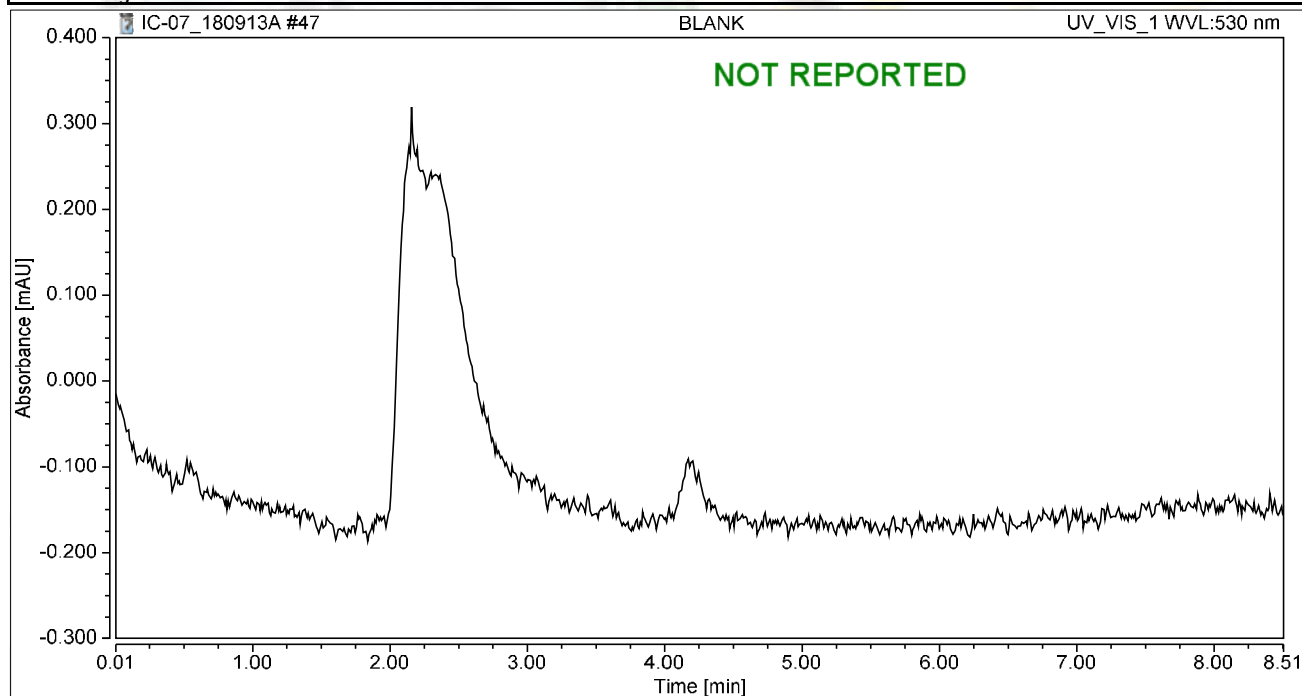


### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	39	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 16:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

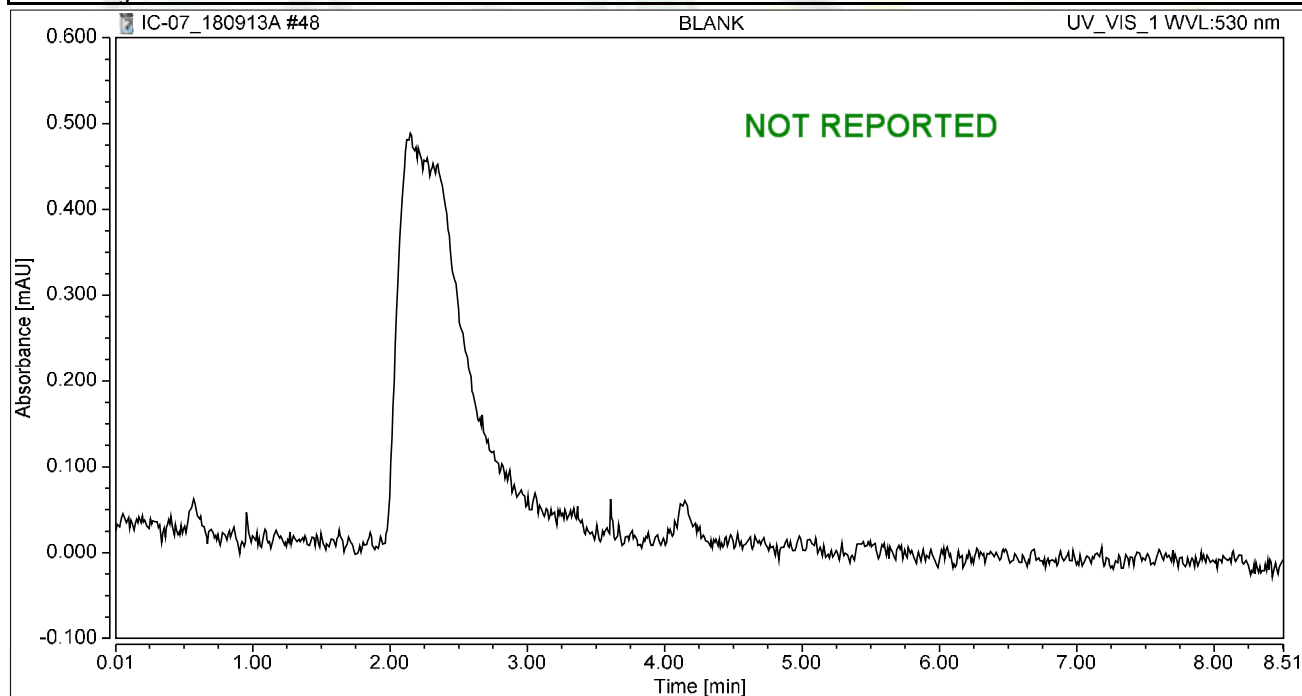
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	40	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 16:29	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

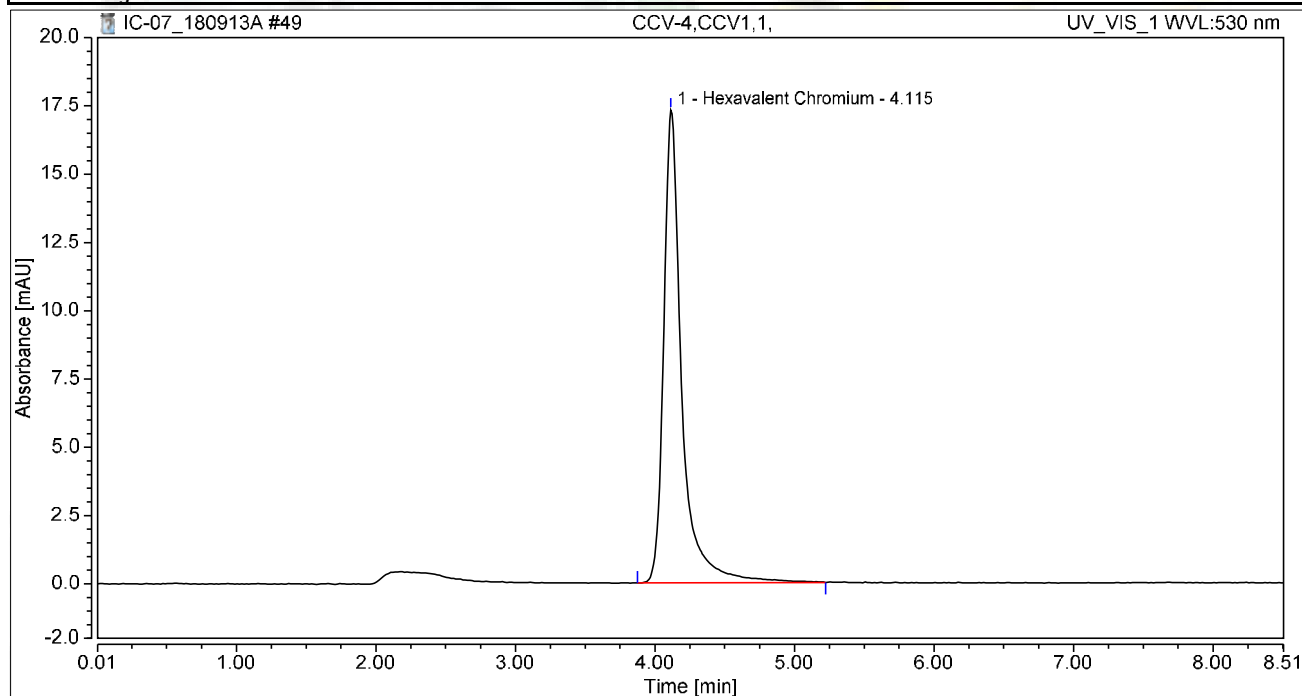
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-4,CCV1,1,	Run Time (min):	8.50
Vial Number:	43	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 16:39	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

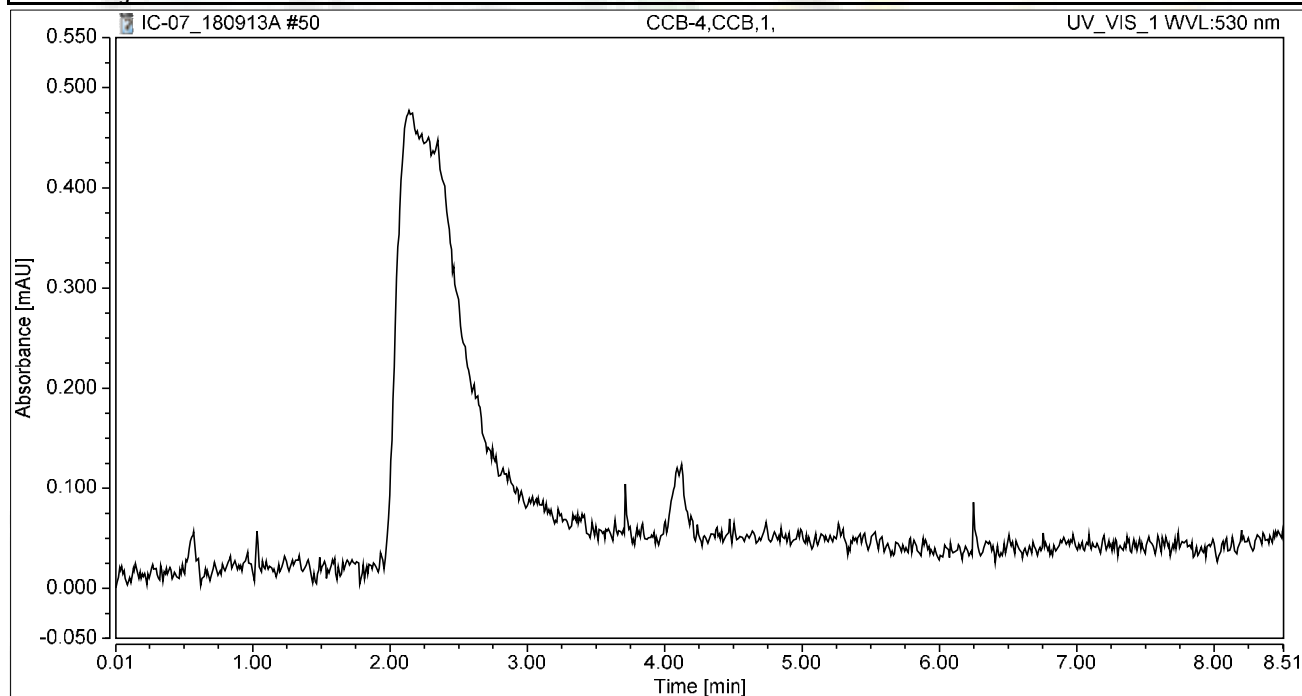
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.599	17.312	100.00	100.00	10.3324
<b>Total:</b>			<b>2.599</b>	<b>17.312</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-4,CCB,1,	Run Time (min):	8.50
Vial Number:	28	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 16:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

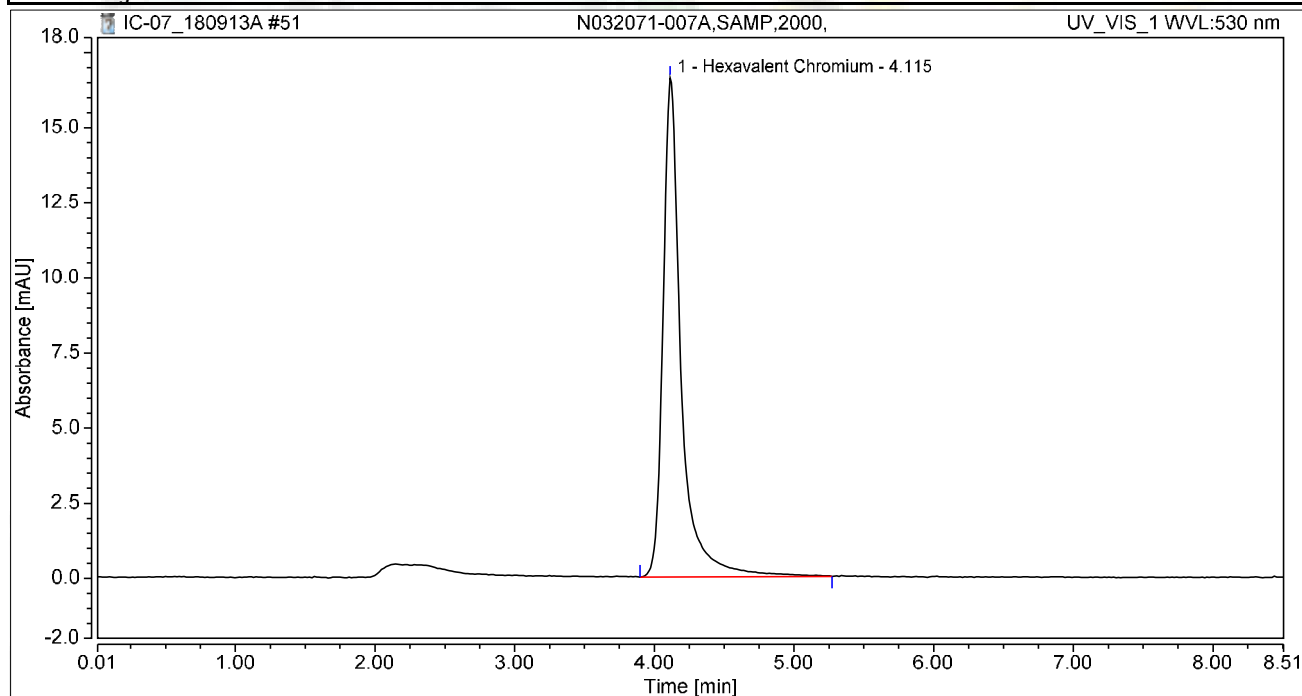
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-007A,SAMP,2000,	Run Time (min):	8.49
Vial Number:	29	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 17:08	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

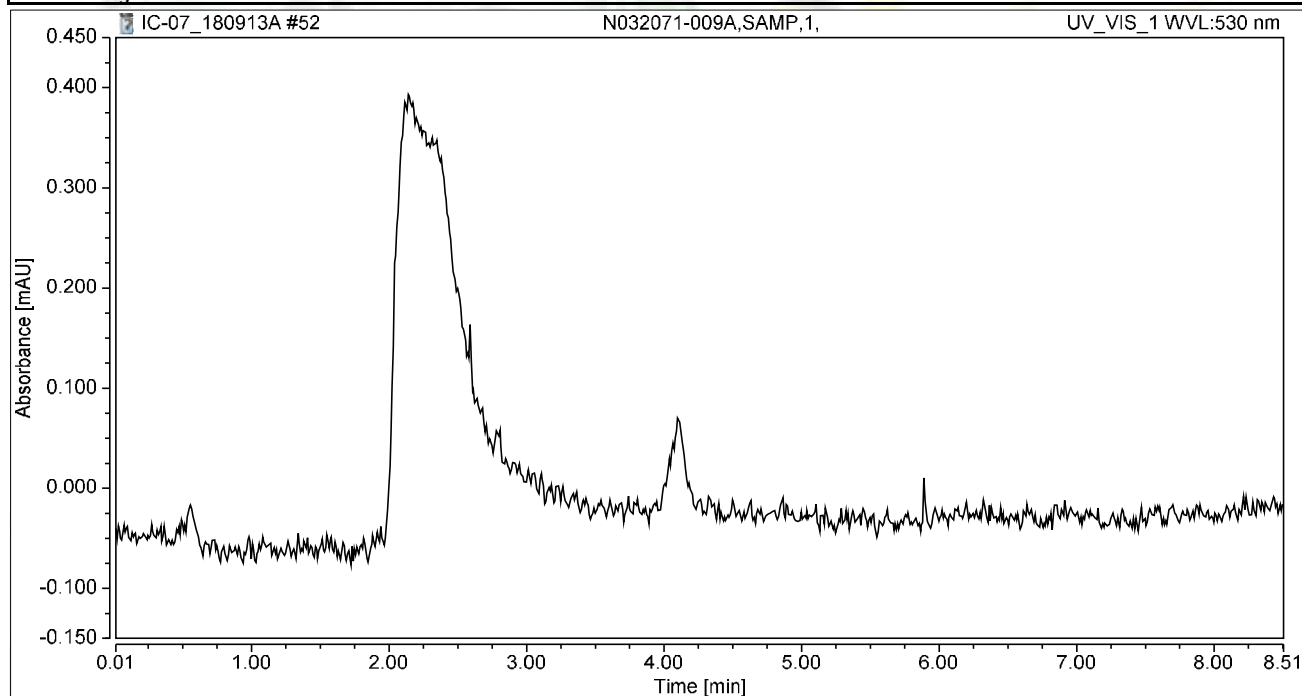
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.504	16.611	100.00	100.00	9.9543
<b>Total:</b>			<b>2.504</b>	<b>16.611</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-009A,SAMP,1,	Run Time (min):	8.49
Vial Number:	30	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 17:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

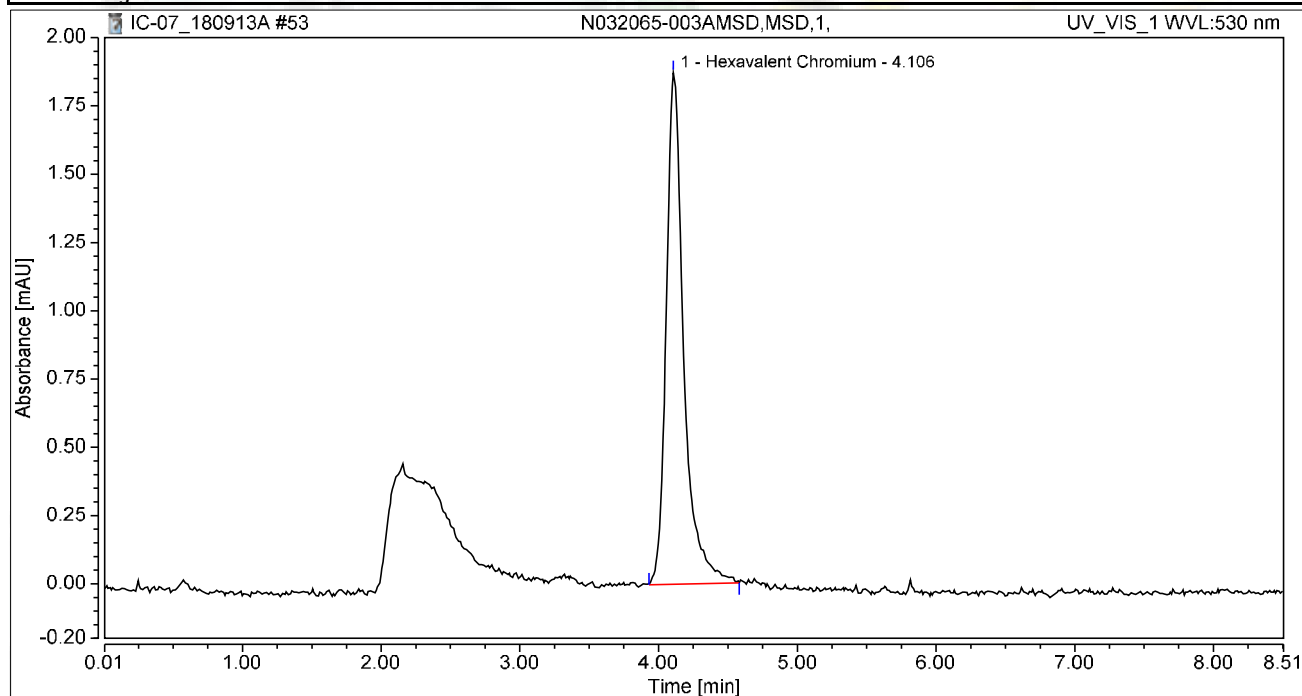
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-003AMSD,MSD,1,	Run Time (min):	8.50
Vial Number:	31	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 17:27	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

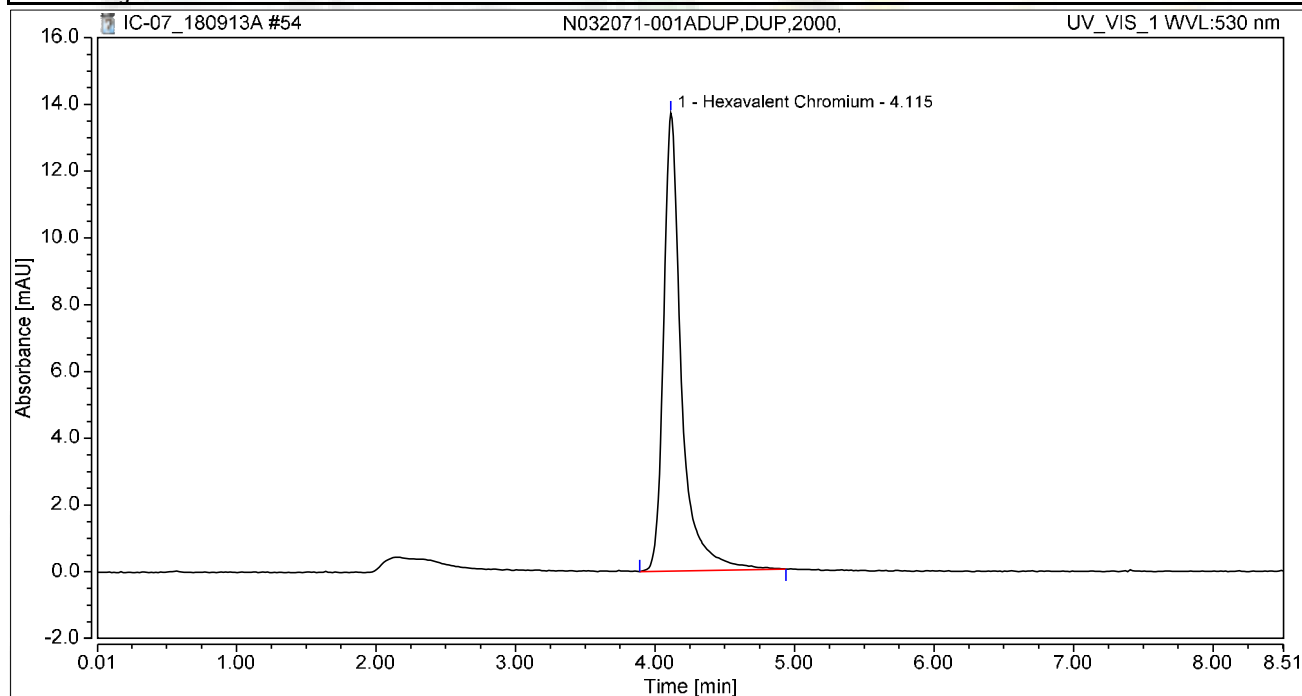
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.274	1.873	100.00	100.00	1.0908
<b>Total:</b>			<b>0.274</b>	<b>1.873</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-001ADUP,DUP,2000,	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 17:40	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.032	13.719	100.00	100.00	8.0768
<b>Total:</b>			<b>2.032</b>	<b>13.719</b>	<b>100.00</b>	<b>100.00</b>	

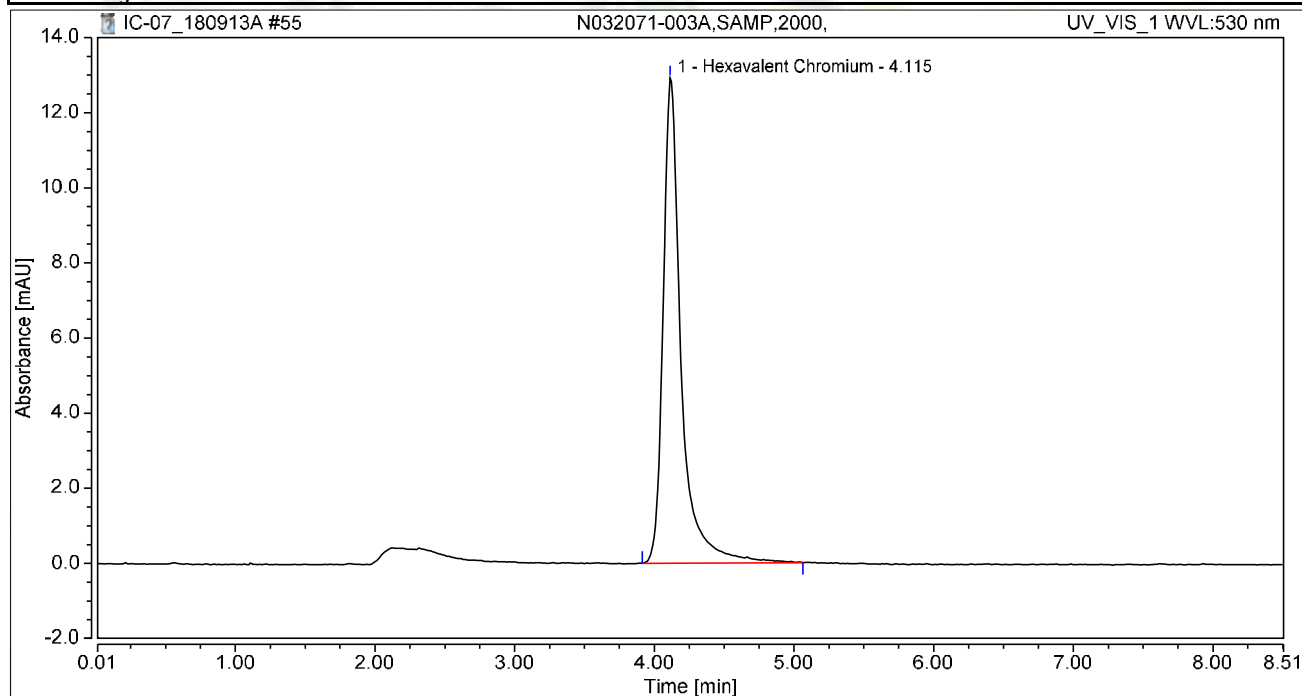


### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-003A,SAMP,2000,	Run Time (min):	8.49
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 17:51	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

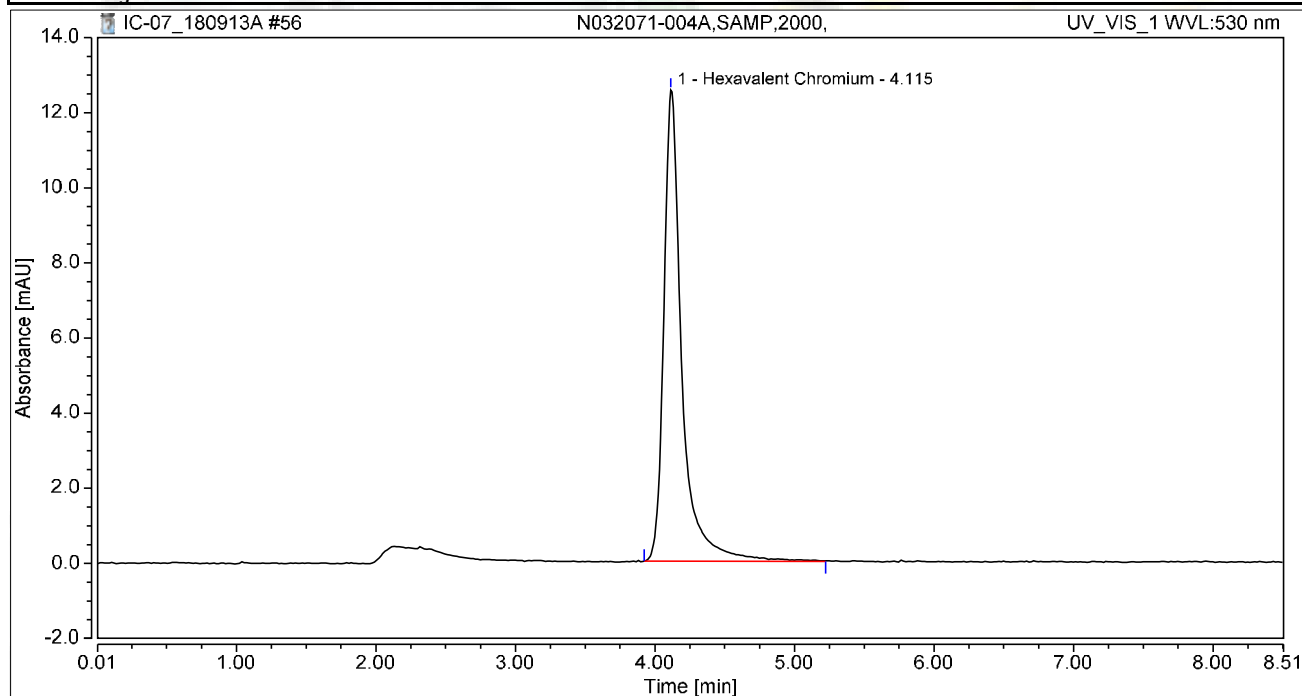
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.926	12.924	100.00	100.00	7.6583
<b>Total:</b>			<b>1.926</b>	<b>12.924</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-004A,SAMP,2000,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 18:00	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

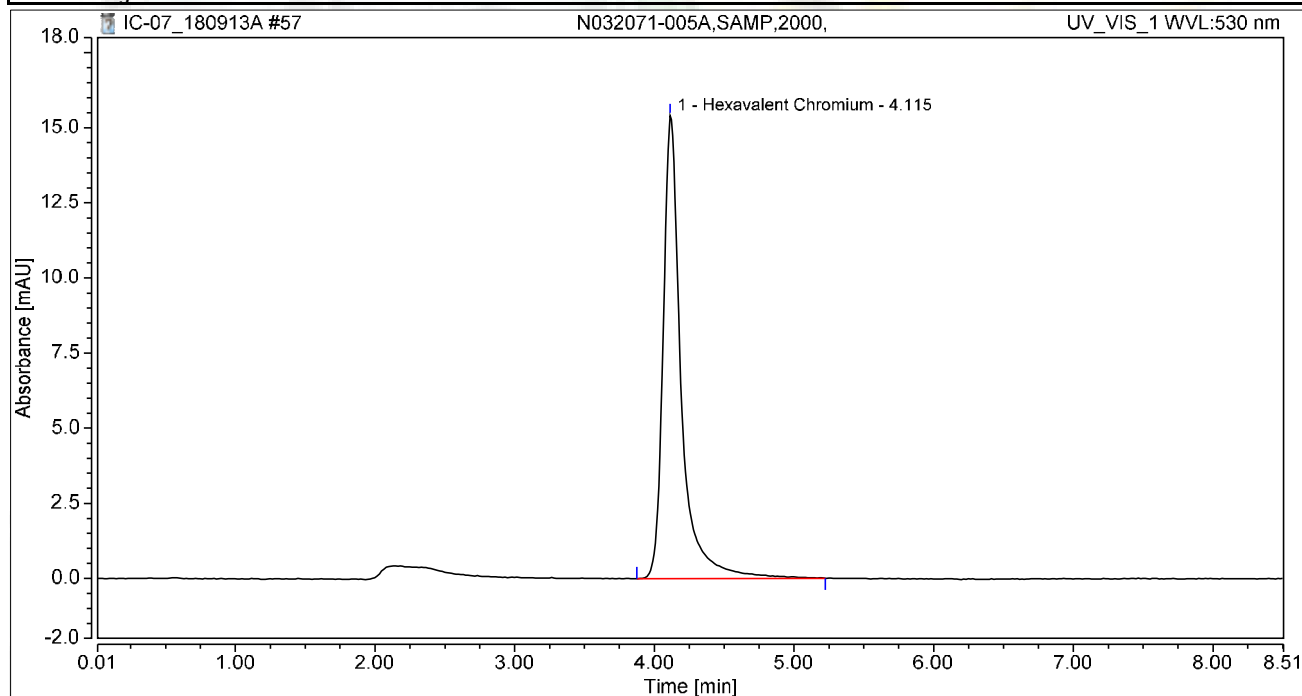
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.885	12.546	100.00	100.00	7.4942
<b>Total:</b>			<b>1.885</b>	<b>12.546</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-005A,SAMP,2000,	Run Time (min):	8.49
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 18:10	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

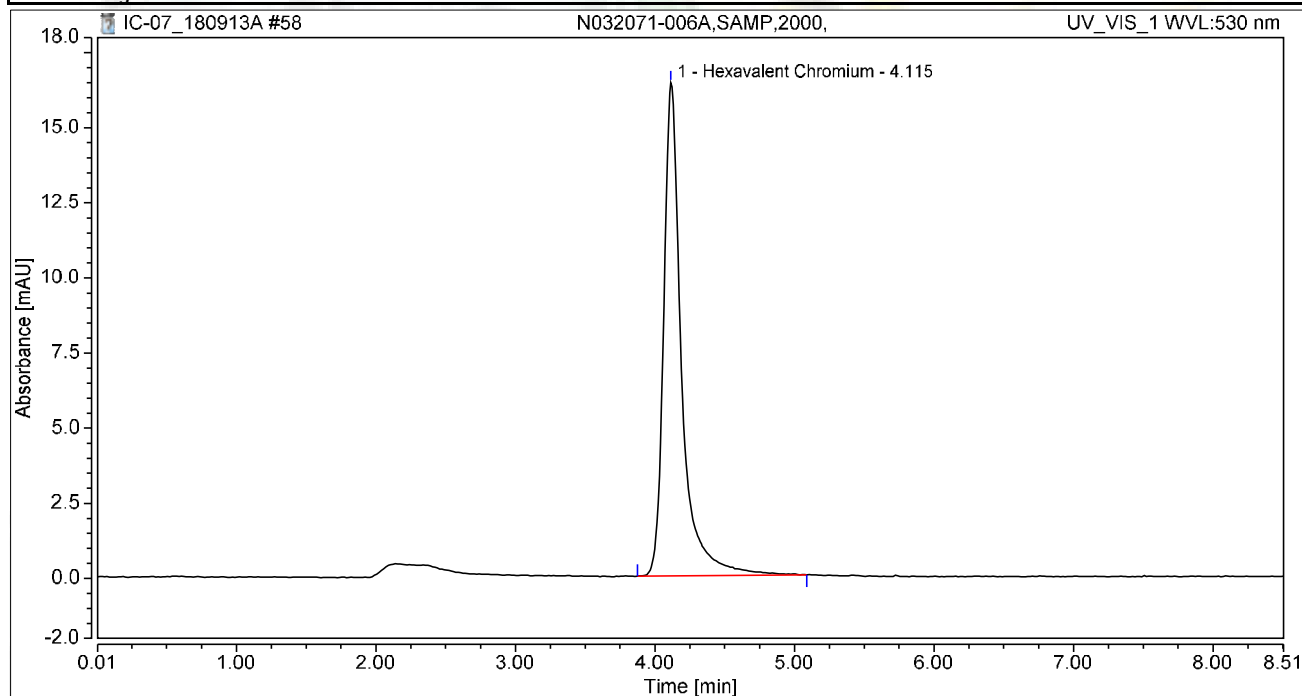
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.314	15.407	100.00	100.00	9.1978
<b>Total:</b>			<b>2.314</b>	<b>15.407</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-006A,SAMP,2000,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 18:19	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

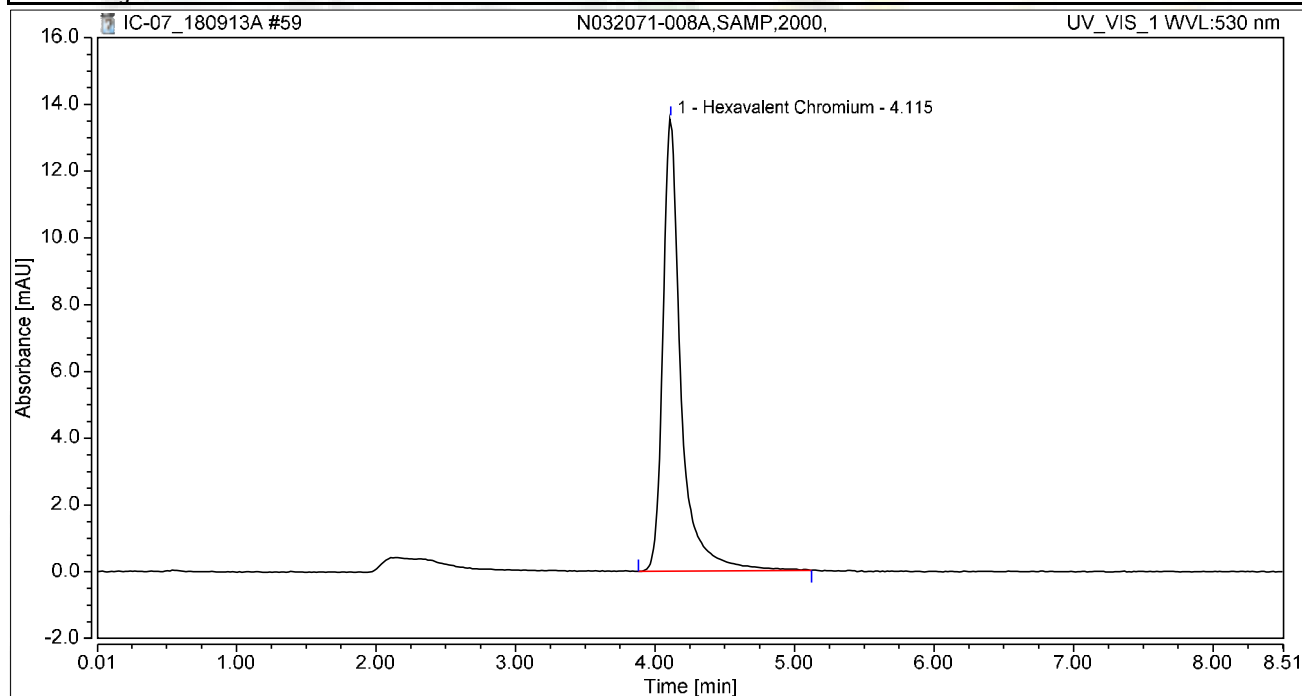
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.451	16.419	100.00	100.00	9.7422
<b>Total:</b>			<b>2.451</b>	<b>16.419</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-008A,SAMP,2000,	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 18:29	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

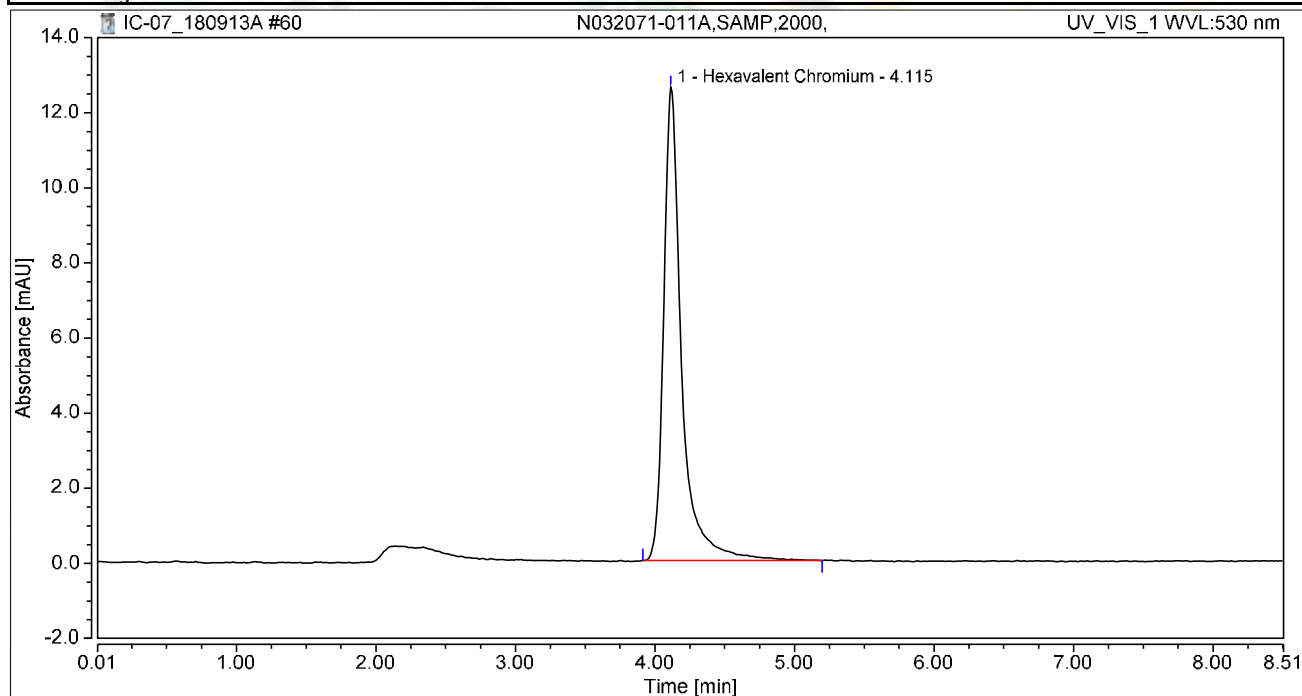
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.043	13.566	100.00	100.00	8.1225
<b>Total:</b>			<b>2.043</b>	<b>13.566</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032071-011A,SAMP,2000,	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 18:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

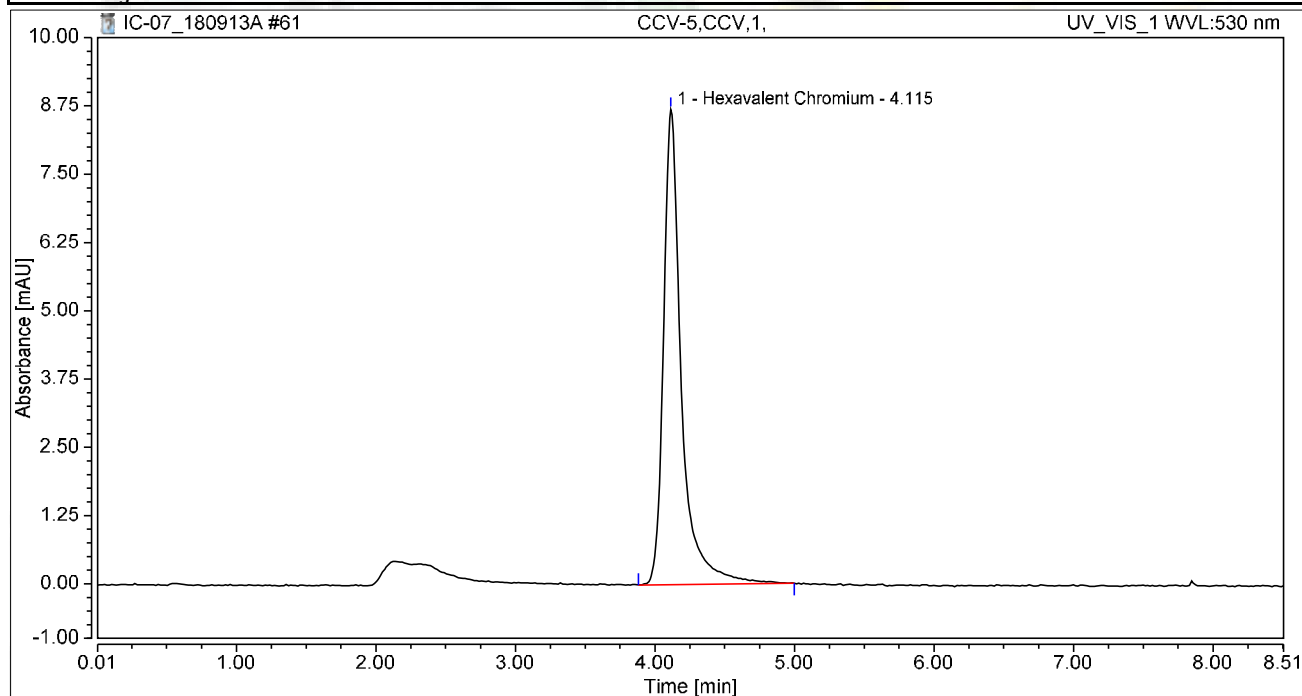
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.880	12.601	100.00	100.00	7.4748
<b>Total:</b>			<b>1.880</b>	<b>12.601</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-5,CCV,1,	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 18:48	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

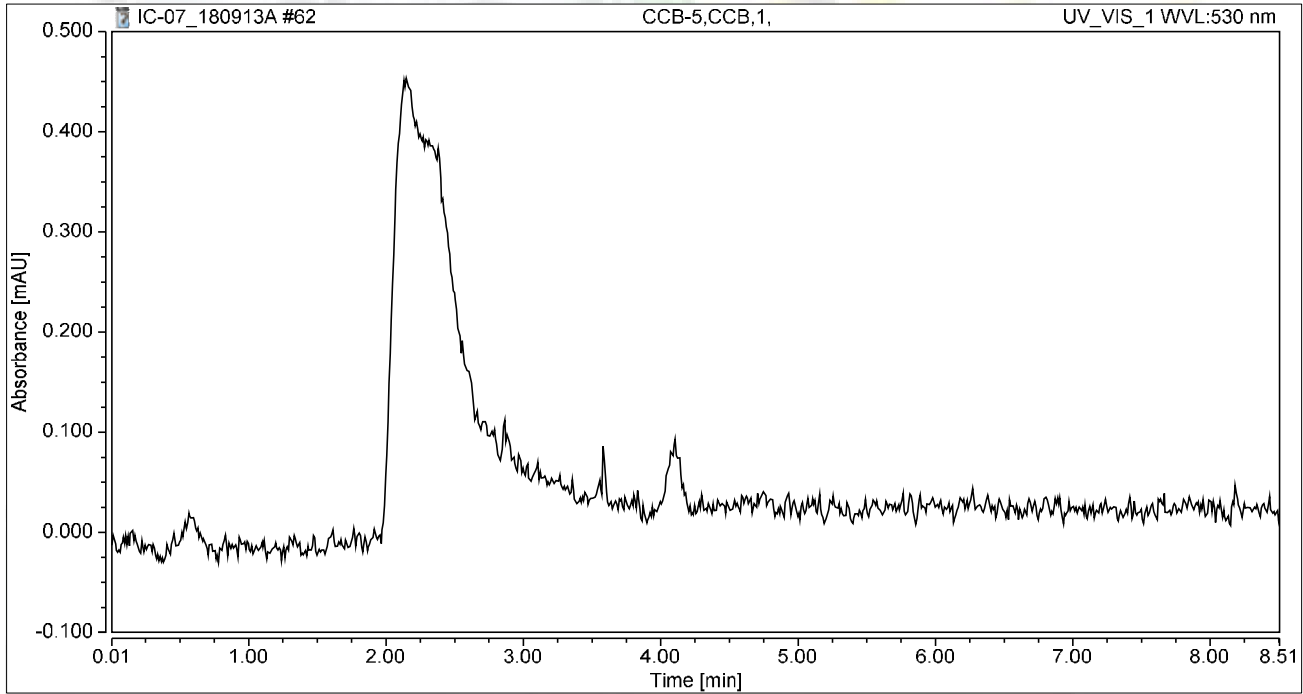
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.292	8.700	100.00	100.00	5.1373
<b>Total:</b>			<b>1.292</b>	<b>8.700</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-5,CCB,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 18:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	



# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436




NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*


## INJECTION LOG: 180913A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:10 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:21 AM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:30 AM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/27/18 11:08 AM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:20 AM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:29 AM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:38 AM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:48 AM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:57 AM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 12:07 PM	Reported
11	BLANK	BLANK	1	Hexavalent Chromium	09/13/18 9:35 AM	Not Reported
12	BLANK	BLANK	1	Hexavalent Chromium	09/13/18 9:46 AM	Not Reported
13	CCV-1	CCV	1	Hexavalent Chromium	09/13/18 9:55 AM	Reported
14	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/13/18 10:05 AM	Reported
15	CCB-1	CCB	1	Hexavalent Chromium	09/13/18 10:14 AM	Reported
16	MB-R127606	MBLK	1	Hexavalent Chromium	09/13/18 10:24 AM	Reported
17	LCS-R127606	LCS	1	Hexavalent Chromium	09/13/18 10:33 AM	Reported
18	N032065-001A	SAMP	1	Hexavalent Chromium	09/13/18 10:53 AM	Not Reported
19	N032065-001AMS	MS	1	Hexavalent Chromium	09/13/18 11:05 AM	Not Reported
20	N032065-002A	SAMP	1	Hexavalent Chromium	09/13/18 11:14 AM	Not Reported
21	N032065-002AMS	MS	1	Hexavalent Chromium	09/13/18 11:24 AM	Not Reported
22	N032065-003A	SAMP	1	Hexavalent Chromium	09/13/18 11:34 AM	Reported
23	N032065-003AMS	MS	1	Hexavalent Chromium	09/13/18 11:43 AM	Reported
24	N032065-004A	SAMP	1	Hexavalent Chromium	09/13/18 11:52 AM	Reported
25	N032065-004AMS	MS	1	Hexavalent Chromium	09/13/18 12:02 PM	Reported
26	CCV-2	CCV1	1	Hexavalent Chromium	09/13/18 12:11 PM	Reported
27	CCB-2	CCB	1	Hexavalent Chromium	09/13/18 12:21 PM	Reported
28	N032065-005A	SAMP	1	Hexavalent Chromium	09/13/18 12:30 PM	Reported
29	N032065-005AMS	MS	1	Hexavalent Chromium	09/13/18 12:40 PM	Reported
30	N032065-006A	SAMP	1	Hexavalent Chromium	09/13/18 12:49 PM	Reported
31	N032065-006AMS	MS	1	Hexavalent Chromium	09/13/18 12:58 PM	Reported
32	N032065-007A	SAMP	1	Hexavalent Chromium	09/13/18 1:10 PM	Reported
33	N032065-007AMS	MS	1	Hexavalent Chromium	09/13/18 1:22 PM	Reported
34	N032062-001A	SAMP	1	Hexavalent Chromium	09/13/18 1:31 PM	Reported
35	N032071-010A	SAMP	50	Hexavalent Chromium	09/13/18 1:40 PM	Reported
36	N032071-001A	SAMP	2000	Hexavalent Chromium	09/13/18 1:50 PM	Reported
37	N032071-002A	SAMP	2000	Hexavalent Chromium	09/13/18 1:59 PM	Reported
38	CCV-3	CCV	1	Hexavalent Chromium	09/13/18 2:09 PM	Reported
39	CCB-3	CCB	1	Hexavalent Chromium	09/13/18 2:18 PM	Reported
40	N032071-003A	SAMP	2000	Hexavalent Chromium	09/13/18 2:28 PM	Not Reported
41	N032071-004A	SAMP	2000	Hexavalent Chromium	09/13/18 2:37 PM	Not Reported
42	N032071-005A	SAMP	2000	Hexavalent Chromium	09/13/18 2:47 PM	Not Reported
43	N032071-006A	SAMP	2000	Hexavalent Chromium	09/13/18 2:56 PM	Not Reported
44	N032071-007A	SAMP	2000	Hexavalent Chromium	09/13/18 3:06 PM	Not Reported
45	N032071-008A	SAMP	2000	Hexavalent Chromium	09/13/18 3:15 PM	Not Reported
46	N032071-011A	SAMP	2000	Hexavalent Chromium	09/13/18 3:24 PM	Not Reported
47	BLANK	BLANK	1	Hexavalent Chromium	09/13/18 4:18 PM	Not Reported
48	BLANK	BLANK	1	Hexavalent Chromium	09/13/18 4:29 PM	Not Reported
49	CCV-4	CCV1	1	Hexavalent Chromium	09/13/18 4:39 PM	Reported

 9/26/2018

RBA / IC-07 9/19/2018 4:58:36 PM

 9/19/2018

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INJECTION LOG: 180913A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
50	CCB-4	CCB	1	Hexavalent Chromium	09/13/18 4:57 PM	Reported
51	N032071-007A	SAMP	2000	Hexavalent Chromium	09/13/18 5:08 PM	Reported
52	N032071-009A	SAMP	1	Hexavalent Chromium	09/13/18 5:18 PM	Reported
53	N032065-003AMSD	MSD	1	Hexavalent Chromium	09/13/18 5:27 PM	Reported
54	N032071-001ADUP	DUP	2000	Hexavalent Chromium	09/13/18 5:40 PM	Reported
55	N032071-003A	SAMP	2000	Hexavalent Chromium	09/13/18 5:51 PM	Reported
56	N032071-004A	SAMP	2000	Hexavalent Chromium	09/13/18 6:00 PM	Reported
57	N032071-005A	SAMP	2000	Hexavalent Chromium	09/13/18 6:10 PM	Reported
58	N032071-006A	SAMP	2000	Hexavalent Chromium	09/13/18 6:19 PM	Reported
59	N032071-008A	SAMP	2000	Hexavalent Chromium	09/13/18 6:29 PM	Reported
60	N032071-011A	SAMP	2000	Hexavalent Chromium	09/13/18 6:38 PM	Reported
61	CCV-5	CCV	1	Hexavalent Chromium	09/13/18 6:48 PM	Reported
62	CCB-5	CCB	1	Hexavalent Chromium	09/13/18 6:57 PM	Reported
63	LCS-R127607	LCS	1	Hexavalent Chromium	09/13/18 7:07 PM	Reported
64	MB-R127607	MBLK	1	Hexavalent Chromium	09/13/18 7:16 PM	Reported
65	N032065-008A	SAMP	1	Hexavalent Chromium	09/13/18 7:26 PM	Reported
66	N032065-008AMS	MS	1	Hexavalent Chromium	09/13/18 7:35 PM	Reported
67	N032065-008AMSD	MSD	1	Hexavalent Chromium	09/13/18 7:44 PM	Reported
68	N032065-011A	SAMP	1	Hexavalent Chromium	09/13/18 7:54 PM	Reported
69	N032065-011AMS	MS	1	Hexavalent Chromium	09/13/18 8:03 PM	Reported
70	N032065-011ADUP	DUP	1	Hexavalent Chromium	09/13/18 8:13 PM	Reported
71	N032065-009A	SAMP	1	Hexavalent Chromium	09/13/18 8:22 PM	Reported
72	N032065-009AMS	MS	1	Hexavalent Chromium	09/13/18 8:32 PM	Reported
73	CCV-6	CCV1	1	Hexavalent Chromium	09/13/18 8:41 PM	Reported
74	CCB-6	CCB	1	Hexavalent Chromium	09/13/18 8:51 PM	Reported
75	N032065-010A	SAMP	1	Hexavalent Chromium	09/13/18 9:00 PM	Reported
76	N032065-010AMS	MS	1	Hexavalent Chromium	09/13/18 9:10 PM	Reported
77	N032065-012A	SAMP	1	Hexavalent Chromium	09/13/18 9:19 PM	Reported
78	N032065-012AMS	MS	1	Hexavalent Chromium	09/13/18 9:29 PM	Reported
79	N032065-013A	SAMP	1	Hexavalent Chromium	09/13/18 9:38 PM	Reported
80	N032065-013AMS	MS	1	Hexavalent Chromium	09/13/18 9:48 PM	Reported
81	N032065-014A	SAMP	1	Hexavalent Chromium	09/13/18 9:57 PM	Reported
82	N032065-014AMS	MS	1	Hexavalent Chromium	09/13/18 10:06 PM	Reported
83	N032065-015A	SAMP	1	Hexavalent Chromium	09/13/18 10:16 PM	Reported
84	N032065-015AMS	MS	1	Hexavalent Chromium	09/13/18 10:25 PM	Reported
85	CCV-7	CCV	1	Hexavalent Chromium	09/13/18 10:35 PM	Reported
86	CCB-7	CCB	1	Hexavalent Chromium	09/13/18 10:44 PM	Reported

### Injection Log Summary

**Sequence Details**

Name:	IC-07_180913A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	13/Sep/18 23:15:02
No. of Injections:	89	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/27/2018 10:10	Finished	BLANK
2	BLANK	2	1000	Unknown		08/27/2018 10:21	Finished	BLANK
3	BLANK	3	1000	Unknown		08/27/2018 10:30	Finished	BLANK
4	iBLANK	5	1000	Unknown		08/27/2018 11:08	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	6	1000	Calibration Standard	01	08/27/2018 11:20	Finished	0.2 ppb, IWST-180622A
6	STD2-1.0 ppb	7	1000	Calibration Standard	02	08/27/2018 11:29	Finished	1.0 ppb, IWST-180622A
7	STD3-5.0 ppb	8	1000	Calibration Standard	03	08/27/2018 11:38	Finished	5.0 ppb, IWST-180622A
8	STD4-10.0 ppb	9	1000	Calibration Standard	04	08/27/2018 11:48	Finished	10 ppb, IWST-180622A
9	STD5-15.0 ppb	10	1000	Calibration Standard	05	08/27/2018 11:57	Finished	15 ppb, IWST-180622A
10	STD6-20.0 ppb	11	1000	Calibration Standard	06	08/27/2018 12:07	Finished	20 ppb, IWST-180622A
11	BLANK	1	1000	Unknown		09/13/2018 09:35	Finished	BLANK
12	BLANK	2	1000	Unknown		09/13/2018 09:46	Finished	BLANK
13	CCV-1.CCV,1,	3	1000	Unknown		09/13/2018 09:55	Finished	CCV @5ppb, IWST-180622A
14	PQL@0.2ppb.CCV2,	4	1000	Unknown		09/13/2018 10:05	Finished	PQL @ 0.2ppb
15	CCB-1.CCB,1,	5	1000	Unknown		09/13/2018 10:14	Finished	CCB R180806A
16	MB-H2O.MBLK,1,	6	1000	Unknown		09/13/2018 10:24	Finished	MBLK R180806A
17	LCS-H2O.LCS,1,	7	1000	Unknown		09/13/2018 10:33	Finished	LCS @5ppb, IWST-180622B
18	N032065-001A,SAMF	9	1000	Unknown		09/13/2018 10:53	Finished	SAMP, 10mL
19	N032065-001AMS,MS	10	1000	Unknown		09/13/2018 11:05	Finished	MS (1ppb), IWST-180622B,10
20	N032065-002A,SAMF	11	1000	Unknown		09/13/2018 11:14	Finished	SAMP, 10mL
21	N032065-002AMS,MS	12	1000	Unknown		09/13/2018 11:24	Finished	MS (1ppb), IWST-180622B,10
22	N032065-003A,SAMF	13	1000	Unknown		09/13/2018 11:34	Finished	SAMP, 10mL
23	N032065-003AMS,MS	14	1000	Unknown		09/13/2018 11:43	Finished	MS (1ppb), IWST-180622B,10
24	N032065-004A,SAMF	15	1000	Unknown		09/13/2018 11:52	Finished	SAMP, 10mL
25	N032065-004AMS,MS	16	1000	Unknown		09/13/2018 12:02	Finished	MS (1ppb), IWST-180622B,10
26	CCV-2.CCV1,1,	17	1000	Unknown		09/13/2018 12:11	Finished	CCV @10ppb, IWST-180622A
27	CCB-2.CCB,1,	18	1000	Unknown		09/13/2018 12:21	Finished	CCB R180806A
28	N032065-005A,SAMF	19	1000	Unknown		09/13/2018 12:30	Finished	SAMP, 10mL
29	N032065-005AMS,MS	20	1000	Unknown		09/13/2018 12:40	Finished	MS (1ppb), IWST-180622B,10
30	N032065-006A,SAMF	21	1000	Unknown		09/13/2018 12:49	Finished	SAMP, 10mL
31	N032065-006AMS,MS	22	1000	Unknown		09/13/2018 12:58	Finished	MS (1ppb), IWST-180622B,10
32	N032065-007A,SAMF	24	1000	Unknown		09/13/2018 13:10	Finished	SAMP, 10mL
33	N032065-007AMS,MS	25	1000	Unknown		09/13/2018 13:22	Finished	MS (1ppb), IWST-180622B,10
34	N032062-001A,SAMF	26	1000	Unknown		09/13/2018 13:31	Finished	SAMP, 10mL
35	N032071-010A,SAMF	27	1000	Unknown		09/13/2018 13:40	Finished	SAMP, 0.2>10mL
36	N032071-001A,SAMF	28	1000	Unknown		09/13/2018 13:50	Finished	SAMP.0.005> 10mL
37	N032071-002A,SAMF	29	1000	Unknown		09/13/2018 13:59	Finished	SAMP.0.005> 10mL
38	CCV-3.CCV,1,	30	1000	Unknown		09/13/2018 14:09	Finished	CCV @5ppb, IWST-180622A
39	CCB-3.CCB,1,	31	1000	Unknown		09/13/2018 14:18	Finished	CCB R180806A
40	N032071-003A,SAMF	32	1000	Unknown		09/13/2018 14:28	Finished	SAMP.0.005> 10mL
41	N032071-004A,SAMF	33	1000	Unknown		09/13/2018 14:37	Finished	SAMP.0.005> 10mL
42	N032071-005A,SAMF	34	1000	Unknown		09/13/2018 14:47	Finished	SAMP.0.005> 10mL
43	N032071-006A,SAMF	35	1000	Unknown		09/13/2018 14:56	Finished	SAMP.0.005> 10mL
44	N032071-007A,SAMF	36	1000	Unknown		09/13/2018 15:06	Finished	SAMP.0.005> 10mL
45	N032071-008A,SAMF	37	1000	Unknown		09/13/2018 15:15	Finished	SAMP.0.005> 10mL
46	N032071-011A,SAMF	38	1000	Unknown		09/13/2018 15:24	Interrupted	SAMP.0.005> 10mL
47	BLANK	39	1000	Unknown		09/13/2018 16:18	Finished	BLANK
48	BLANK	40	1000	Unknown		09/13/2018 16:29	Finished	BLANK
49	CCV-4.CCV1,1,	43	1000	Unknown		09/13/2018 16:39	Finished	CCV @10ppb, IWST-180622A
50	CCB-4.CCB,1,	28	1000	Unknown		09/13/2018 16:57	Finished	CCB R180806A
51	N032071-007A,SAMF	29	1000	Unknown		09/13/2018 17:08	Finished	SAMP.0.005> 10mL
52	N032071-009A,SAMF	30	1000	Unknown		09/13/2018 17:18	Finished	SAMP,10mL
53	N032065-003AMSD,N	31	1000	Unknown		09/13/2018 17:27	Finished	MSD (1ppb), IWST-180622B,10
54	N032071-001ADUP,D	2	1000	Unknown		09/13/2018 17:40	Finished	DUP.0.005> 10mL
55	N032071-003A,SAMF	3	1000	Unknown		09/13/2018 17:51	Finished	SAMP.0.005> 10mL
56	N032071-004A,SAMF	4	1000	Unknown		09/13/2018 18:00	Finished	SAMP.0.005> 10mL
57	N032071-005A,SAMF	5	1000	Unknown		09/13/2018 18:10	Finished	SAMP.0.005> 10mL
58	N032071-006A,SAMF	6	1000	Unknown		09/13/2018 18:19	Finished	SAMP.0.005> 10mL
59	N032071-008A,SAMF	7	1000	Unknown		09/13/2018 18:29	Finished	SAMP.0.005> 10mL
60	N032071-011A,SAMF	8	1000	Unknown		09/13/2018 18:38	Finished	SAMP.0.005> 10mL

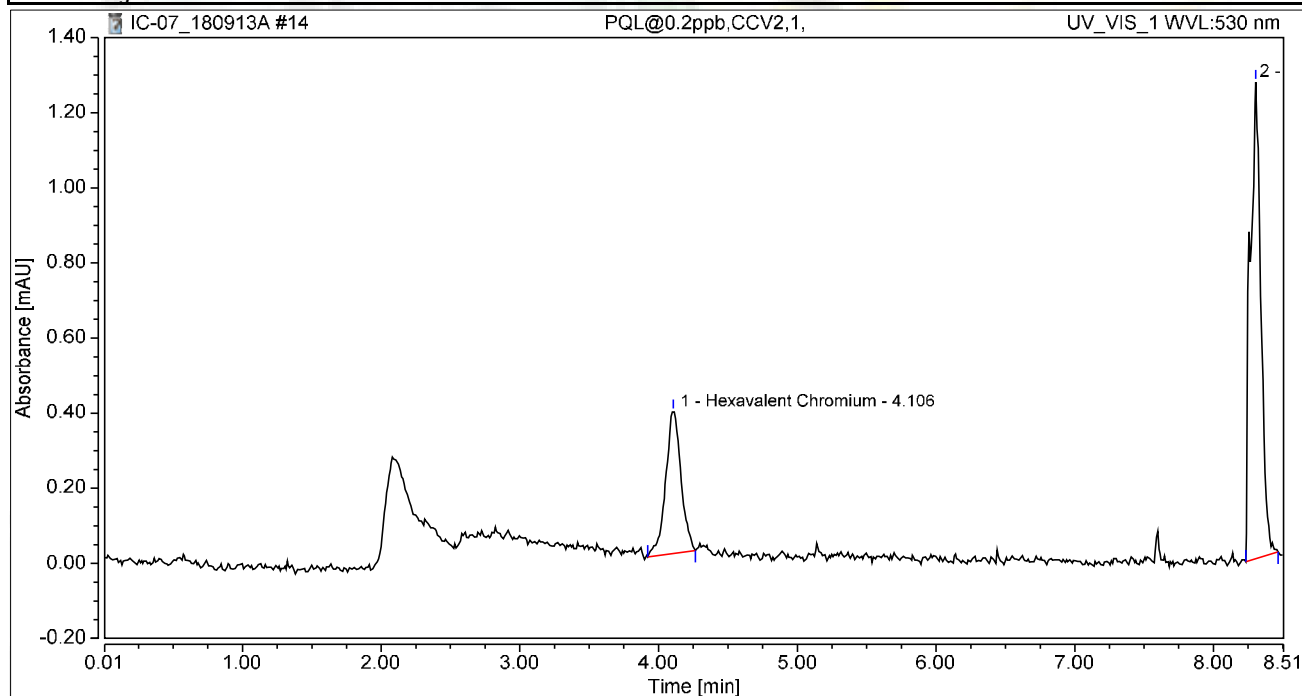
61	CCV-5.CCV,1,	9	1000	Unknown	09/13/2018 18:48	Finished	CCV @5ppb, IWST-180622A
62	CCB-5.CCB,1,	10	1000	Unknown	09/13/2018 18:57	Finished	CCB R180806A
63	LCS-2.LCS,1,	11	1000	Unknown	09/13/2018 19:07	Finished	LCS @5ppb, IWST-180622B
64	MB-2.MBLK,1,	12	1000	Unknown	09/13/2018 19:16	Finished	MBLK R180806A
65	N032065-008A,SAMP	13	1000	Unknown	09/13/2018 19:26	Finished	SAMP,10mL
66	N032065-008AMS,MS	14	1000	Unknown	09/13/2018 19:35	Finished	MS (1ppb), IWST-180622B,10
67	N032065-008AMSD,N	15	1000	Unknown	09/13/2018 19:44	Finished	MSD (1ppb), IWST-180622B,10
68	N032065-011A,SAMP	16	1000	Unknown	09/13/2018 19:54	Finished	SAMP,10mL
69	N032065-011AMS,MS	17	1000	Unknown	09/13/2018 20:03	Finished	MS (1ppb), IWST-180622B,10
70	N032065-011ADUP,D	18	1000	Unknown	09/13/2018 20:13	Finished	DUP,10mL
71	N032065-009A,SAMP	19	1000	Unknown	09/13/2018 20:22	Finished	SAMP,10mL
72	N032065-009AMS,MS	20	1000	Unknown	09/13/2018 20:32	Finished	MS (1ppb), IWST-180622B,10
73	CCV-6.CCV,1,	21	1000	Unknown	09/13/2018 20:41	Finished	CCV @5ppb, IWST-180622A
74	CCB-6.CCB,1,	22	1000	Unknown	09/13/2018 20:51	Finished	CCB R180806A
75	N032065-010A,SAMP	23	1000	Unknown	09/13/2018 21:00	Finished	SAMP,10mL
76	N032065-010AMS,MS	24	1000	Unknown	09/13/2018 21:10	Finished	MS (1ppb), IWST-180622B,10
77	N032065-012A,SAMP	25	1000	Unknown	09/13/2018 21:19	Finished	SAMP,10mL
78	N032065-012AMS,MS	26	1000	Unknown	09/13/2018 21:29	Finished	MS (1ppb), IWST-180622B,10
79	N032065-013A,SAMP	27	1000	Unknown	09/13/2018 21:38	Finished	SAMP,10mL
80	N032065-013AMS,MS	28	1000	Unknown	09/13/2018 21:48	Finished	MS (1ppb), IWST-180622B,10
81	N032065-014A,SAMP	29	1000	Unknown	09/13/2018 21:57	Finished	SAMP,10mL
82	N032065-014AMS,MS	30	1000	Unknown	09/13/2018 22:06	Finished	MS (1ppb), IWST-180622B,10
83	N032065-015A,SAMP	31	1000	Unknown	09/13/2018 22:16	Finished	SAMP,10mL
84	N032065-015AMS,MS	32	1000	Unknown	09/13/2018 22:25	Finished	MS (1ppb), IWST-180622B,10
85	CCV-7.CCV,1,	33	1000	Unknown	09/13/2018 22:35	Finished	CCV @10ppb, IWST-180622A
86	CCB-7.CCB,1,	34	1000	Unknown	09/13/2018 22:44	Finished	CCB R180806A
87	SHUTDOWN	35	1000	Unknown	09/13/2018 22:54	Finished	
88	Eluent: R180912B	36	1000	Unknown	n.a.	Finished	Eluent
89	PCR: R180912C	37	1000	Unknown	n.a.	Finished	Post-Column Reagent

### Chromatogram and Results

#### Injection Details

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 10:05	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

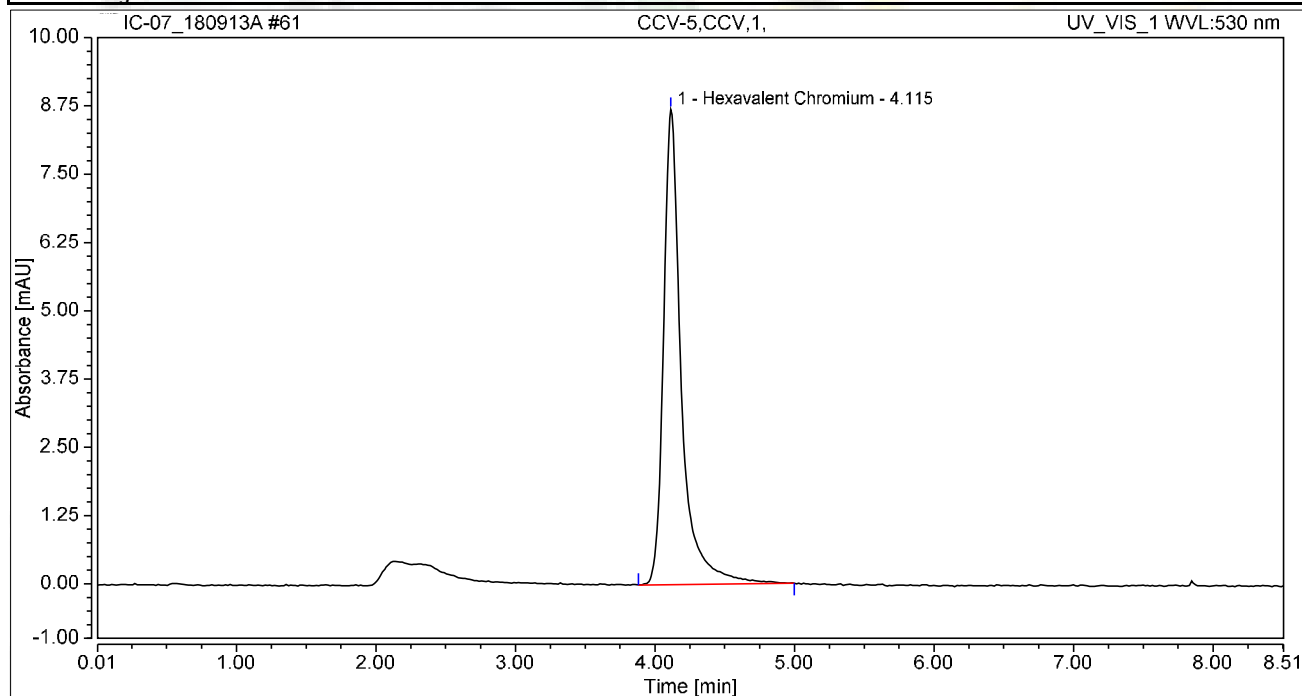
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.049	0.377	30.32	22.92	0.1942
2		8.306	0.112	1.269	69.68	77.08	n.a.
<b>Total:</b>			<b>0.161</b>	<b>1.647</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-5,CCV,1,	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 18:48	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

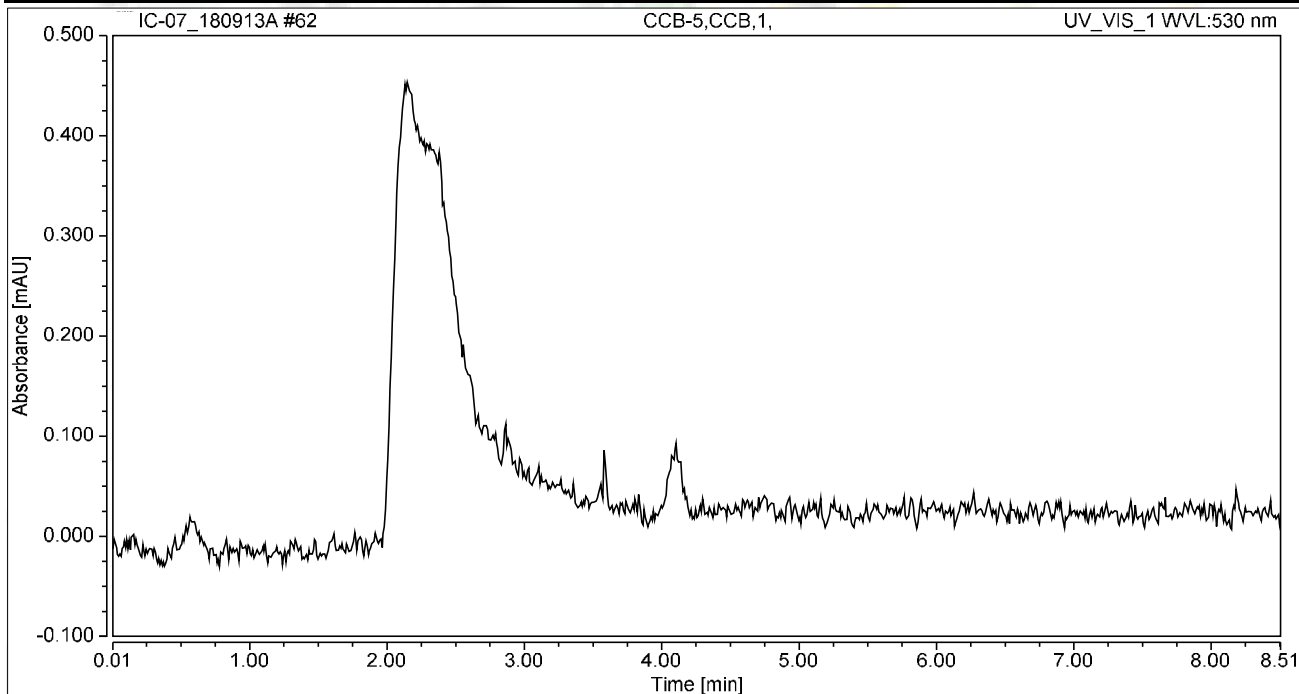
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.292	8.700	100.00	100.00	5.1373
<b>Total:</b>			<b>1.292</b>	<b>8.700</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-5,CCB,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 18:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

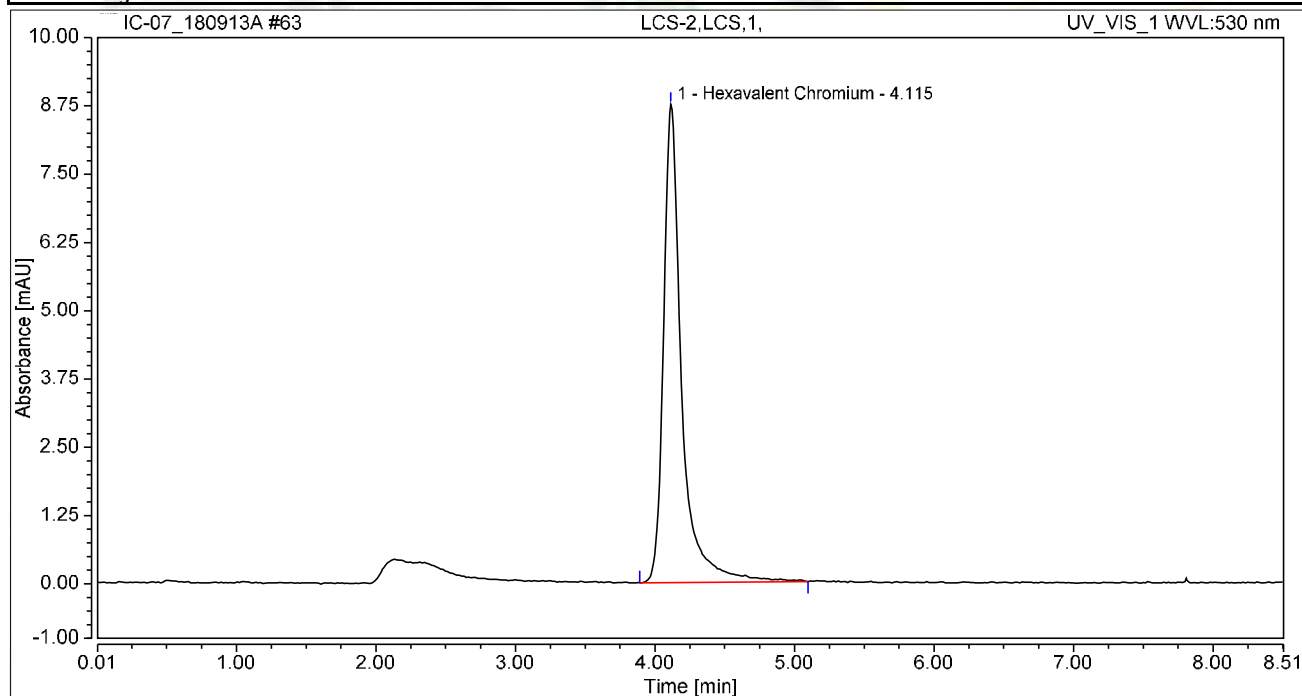


### Chromatogram and Results

**Injection Details**

Injection Name:	LCS-2,LCS,1,	Run Time (min):	8.50
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 19:07	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

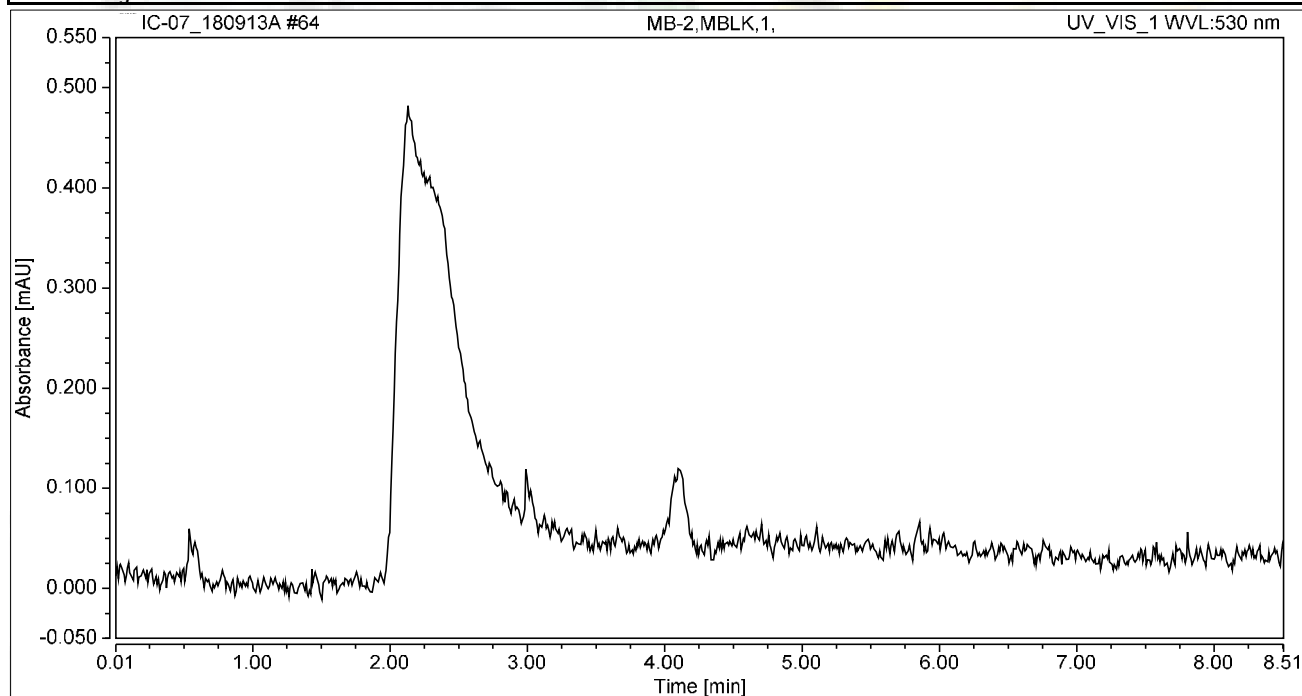
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.316	8.757	100.00	100.00	5.2332
<b>Total:</b>			<b>1.316</b>	<b>8.757</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	MB-2,MBLK,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 19:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

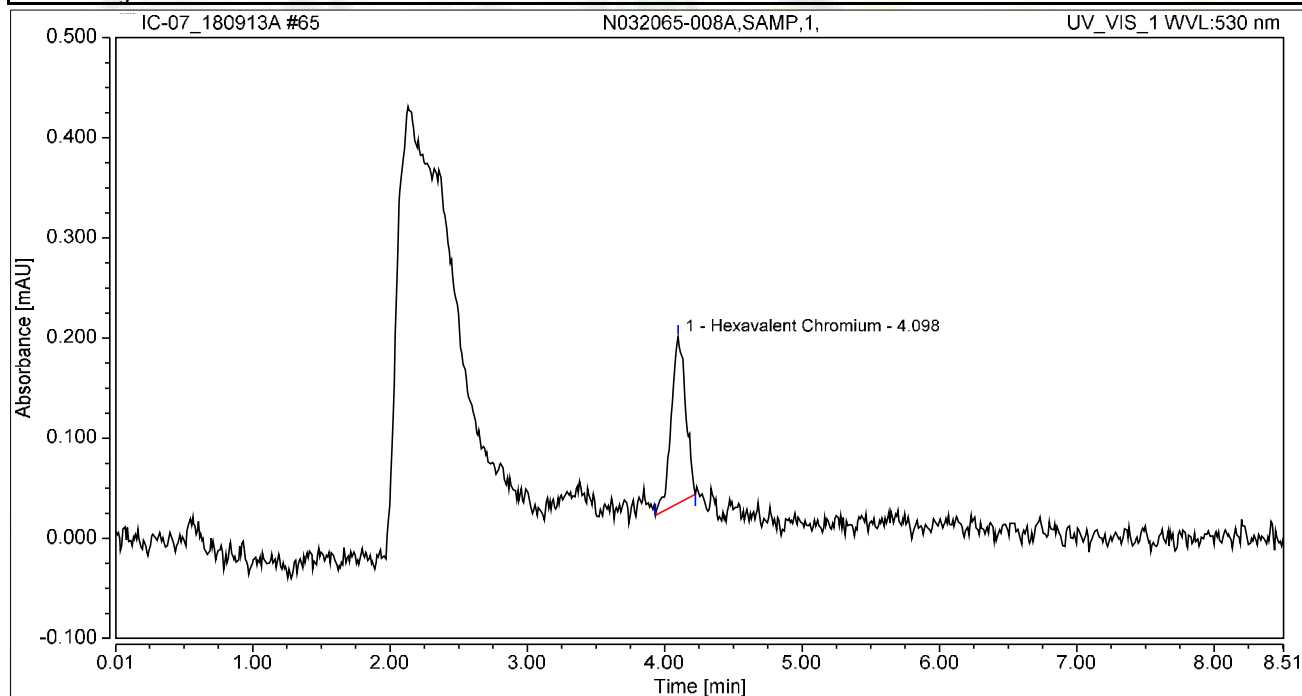
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032065-008A,SAMP,1,	Run Time (min):	8.50
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 19:26	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

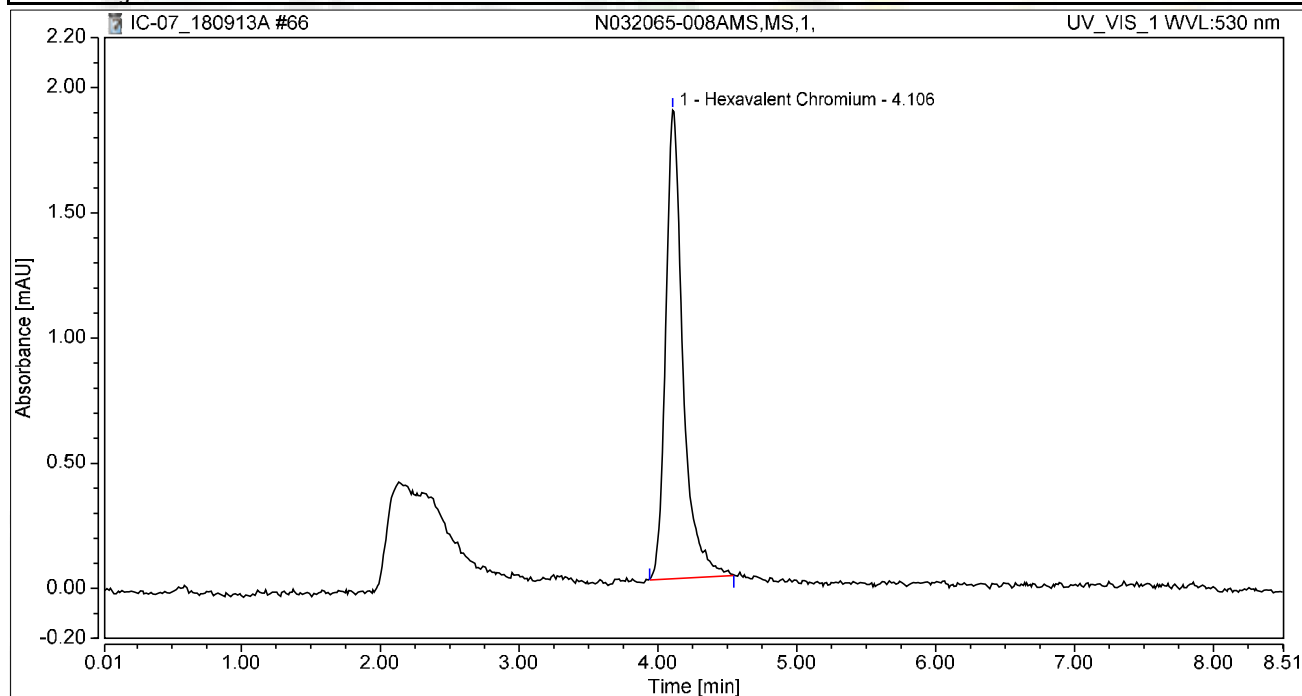
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.020	0.166	100.00	100.00	0.0803
<b>Total:</b>			<b>0.020</b>	<b>0.166</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032065-008AMS,MS,1,	Run Time (min):	8.49
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 19:35	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

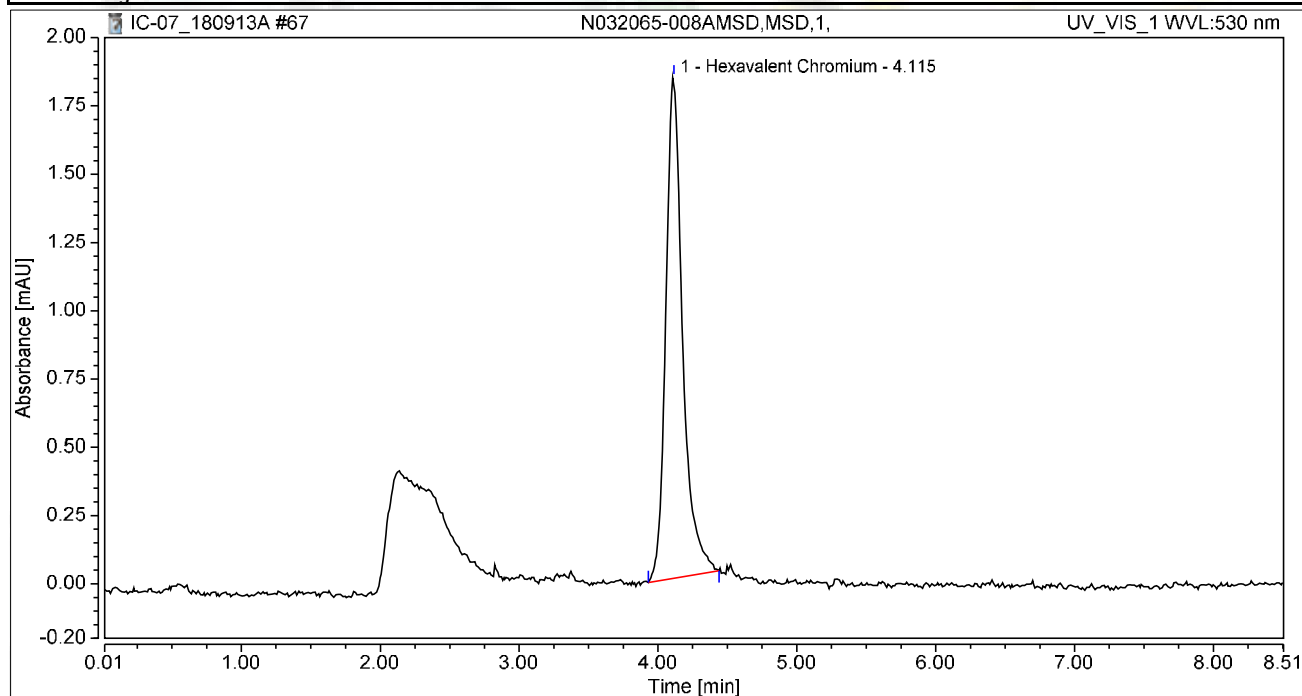
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.269	1.873	100.00	100.00	1.0704
<b>Total:</b>			<b>0.269</b>	<b>1.873</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032065-008AMSD,MSD,1,	Run Time (min):	8.49
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 19:44	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

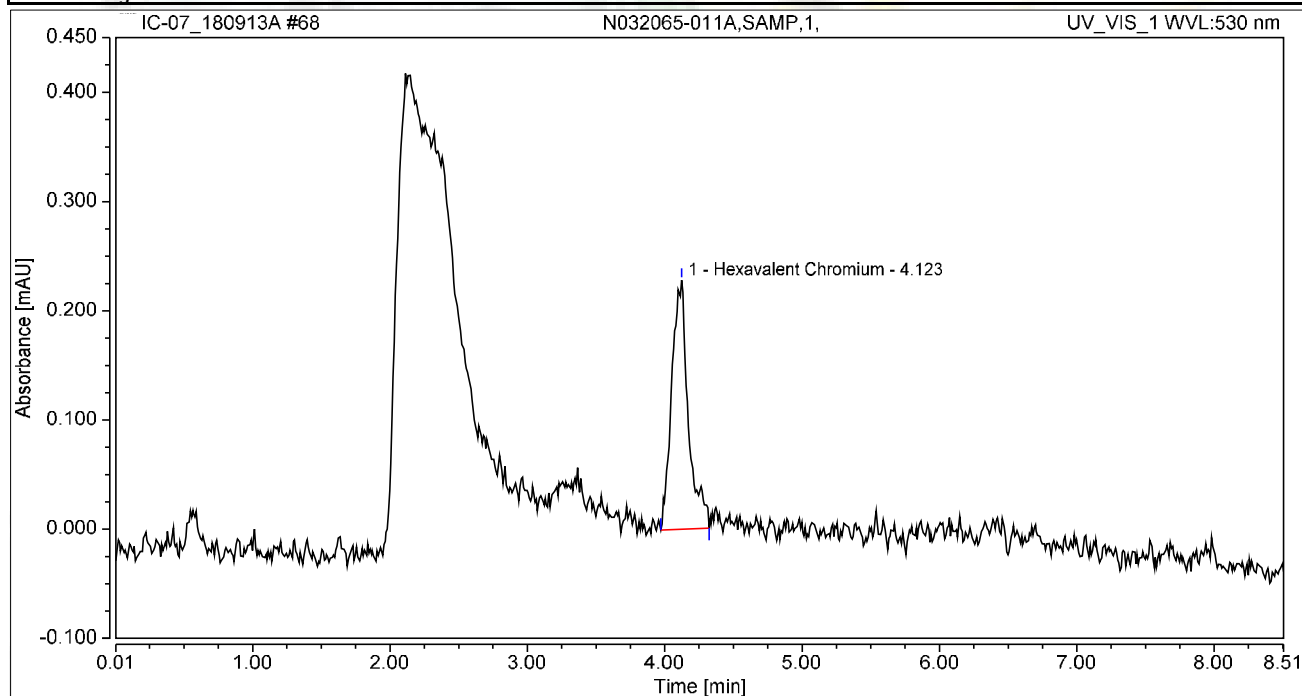
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.257	1.835	100.00	100.00	1.0235
<b>Total:</b>			<b>0.257</b>	<b>1.835</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-011A,SAMP,1,	Run Time (min):	8.50
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 19:54	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

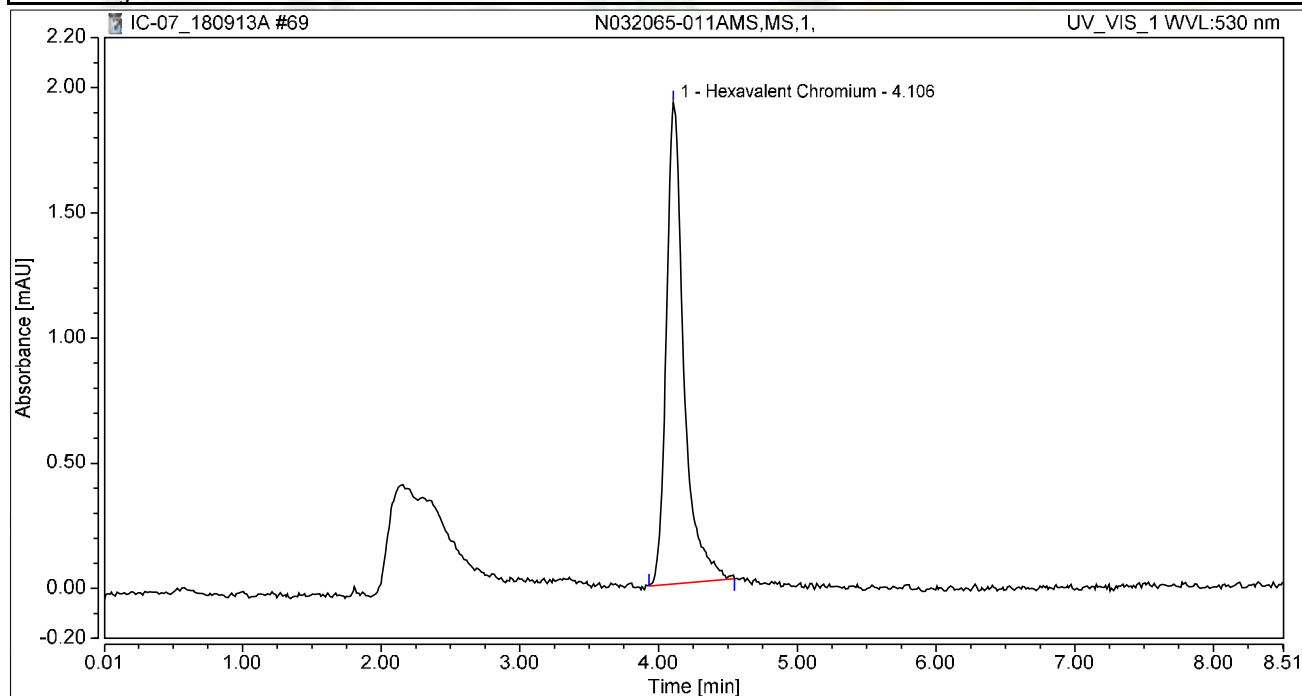
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.032	0.228	100.00	100.00	0.1270
<b>Total:</b>			<b>0.032</b>	<b>0.228</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032065-011AMS,MS,1,	Run Time (min):	8.50
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 20:03	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.282	1.923	100.00	100.00	1.1206
<b>Total:</b>			<b>0.282</b>	<b>1.923</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032065-011ADUP,DUP,1,	Run Time (min):	8.50
Vial Number:	18	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 20:13	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

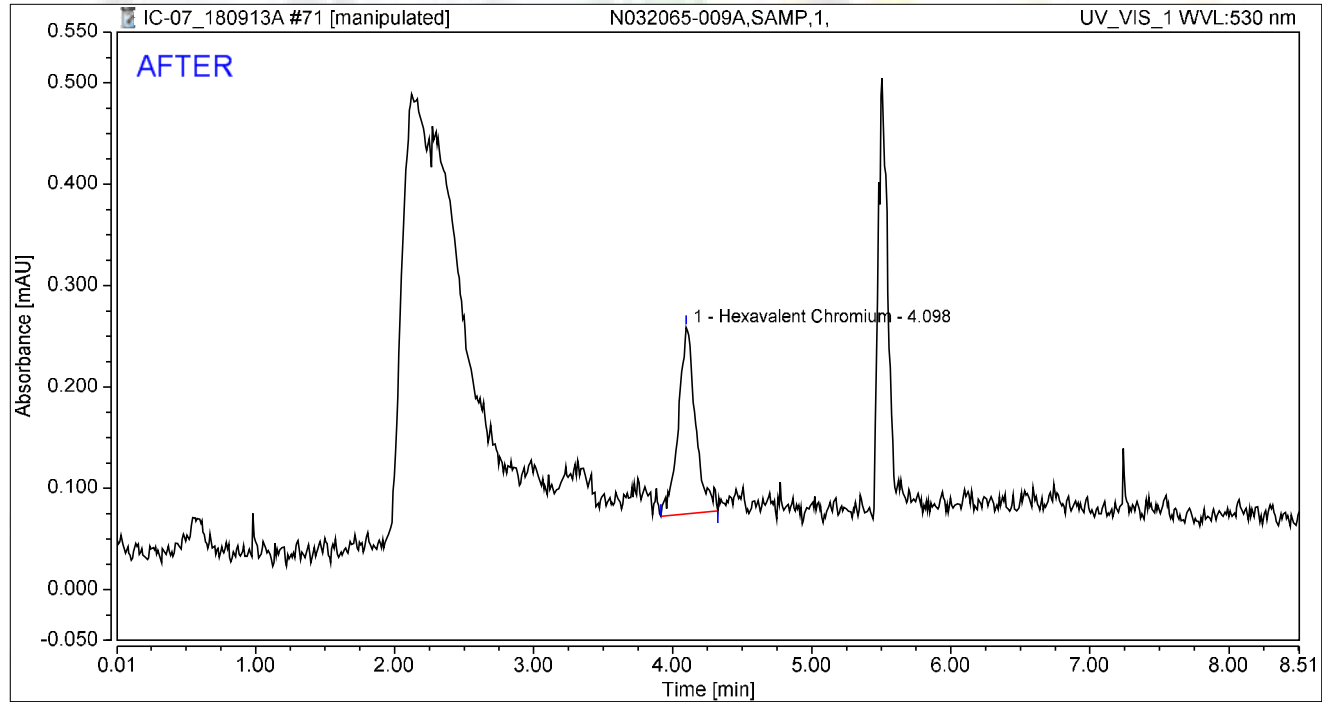
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.032	0.213	100.00	100.00	0.1289
<b>Total:</b>			<b>0.032</b>	<b>0.213</b>	<b>100.00</b>	<b>100.00</b>	



### Chromatogram and Results

Injection Details		
Injection Name:	N032065-009A,SAMP,1,	Run Time (min): 8.50
Vial Number:	19	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	13/Sep/18 20:22	Sample Weight: 1.0000

### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.027	0.184	100.00	100.00	0.1056
<b>Total:</b>			<b>0.027</b>	<b>0.184</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/19/2018

Reviewed by:  
*Donny* 9/26/2018

My first report/Integration

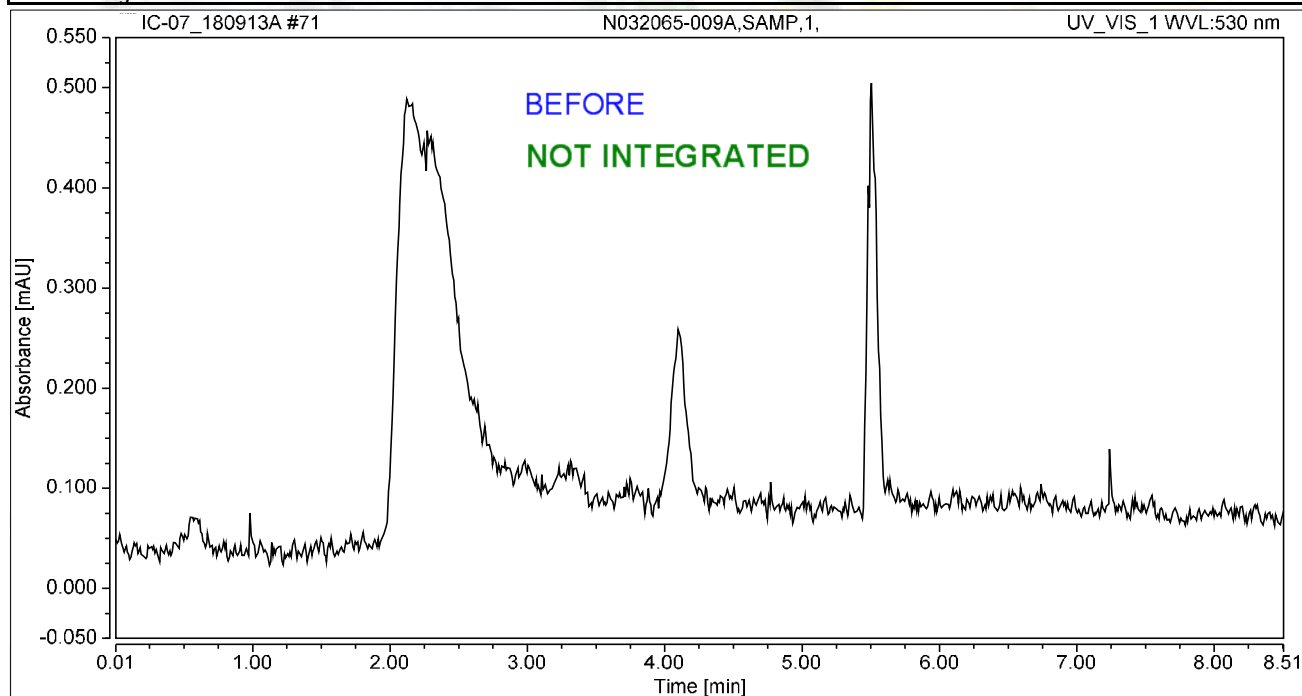
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-009A,SAMP,1,	Run Time (min):	8.50
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 20:22	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

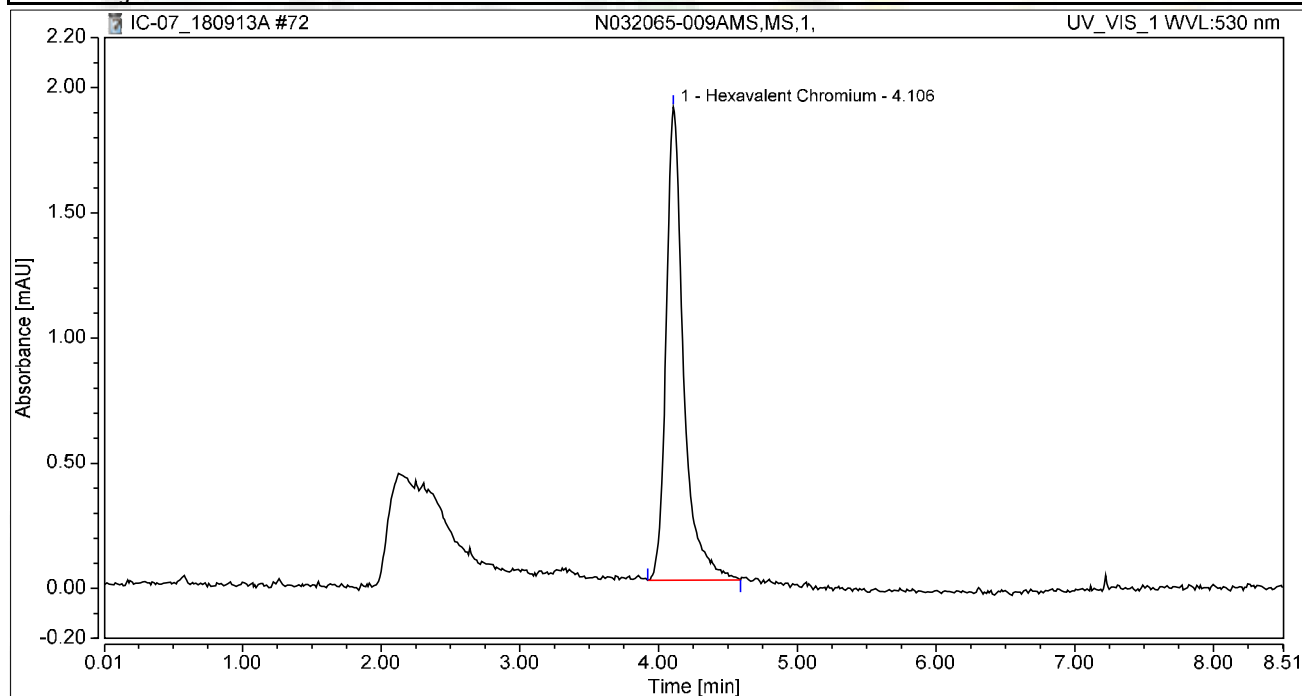
nba 9/19/2018

### Chromatogram and Results

#### Injection Details

Injection Name:	N032065-009AMS,MS,1,	Run Time (min):	8.50
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 20:32	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

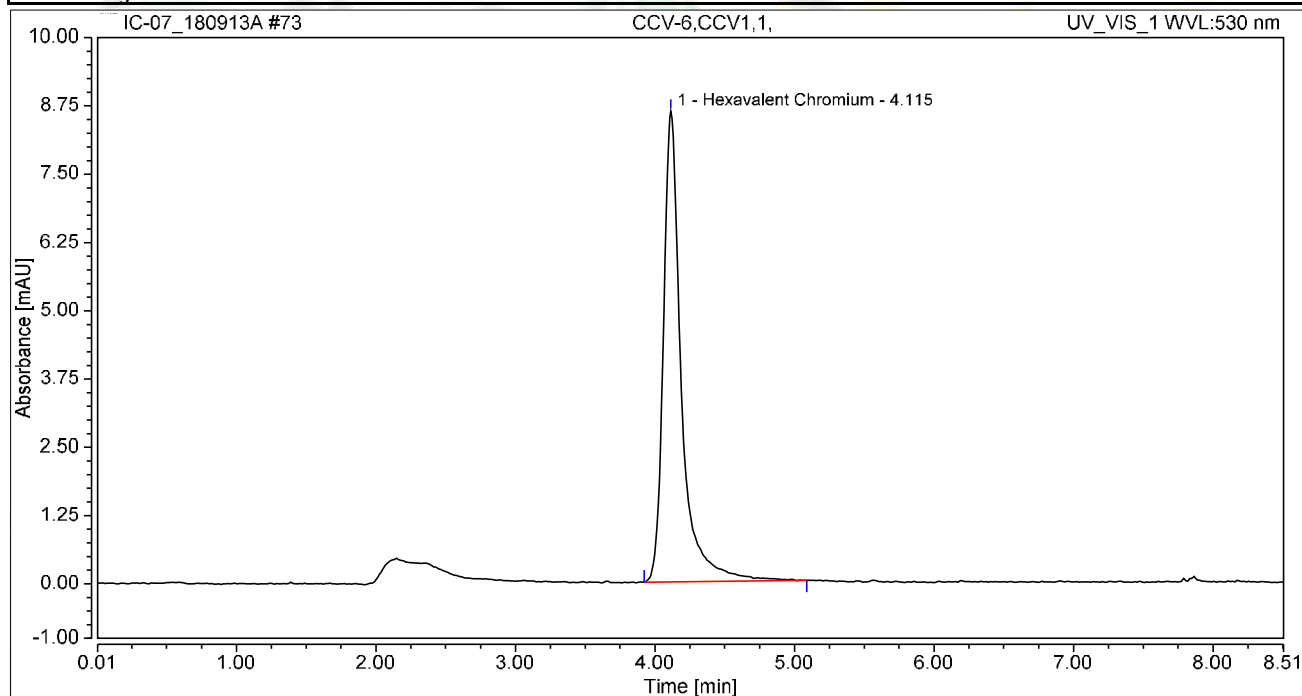
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.275	1.890	100.00	100.00	1.0941
<b>Total:</b>			<b>0.275</b>	<b>1.890</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-6,CCV1,1,	Run Time (min):	8.50
Vial Number:	21	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 20:41	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

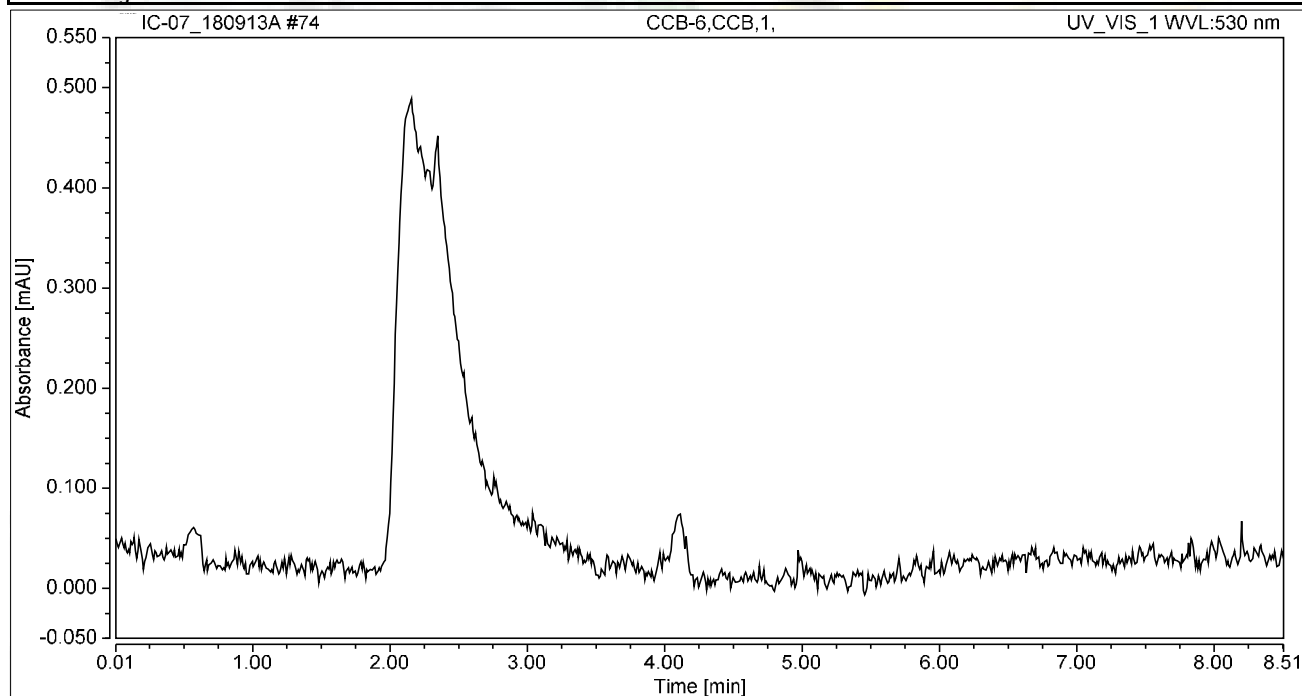
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.286	8.615	100.00	100.00	5.1120
<b>Total:</b>			<b>1.286</b>	<b>8.615</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-6,CCB,1,	Run Time (min):	8.50
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 20:51	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

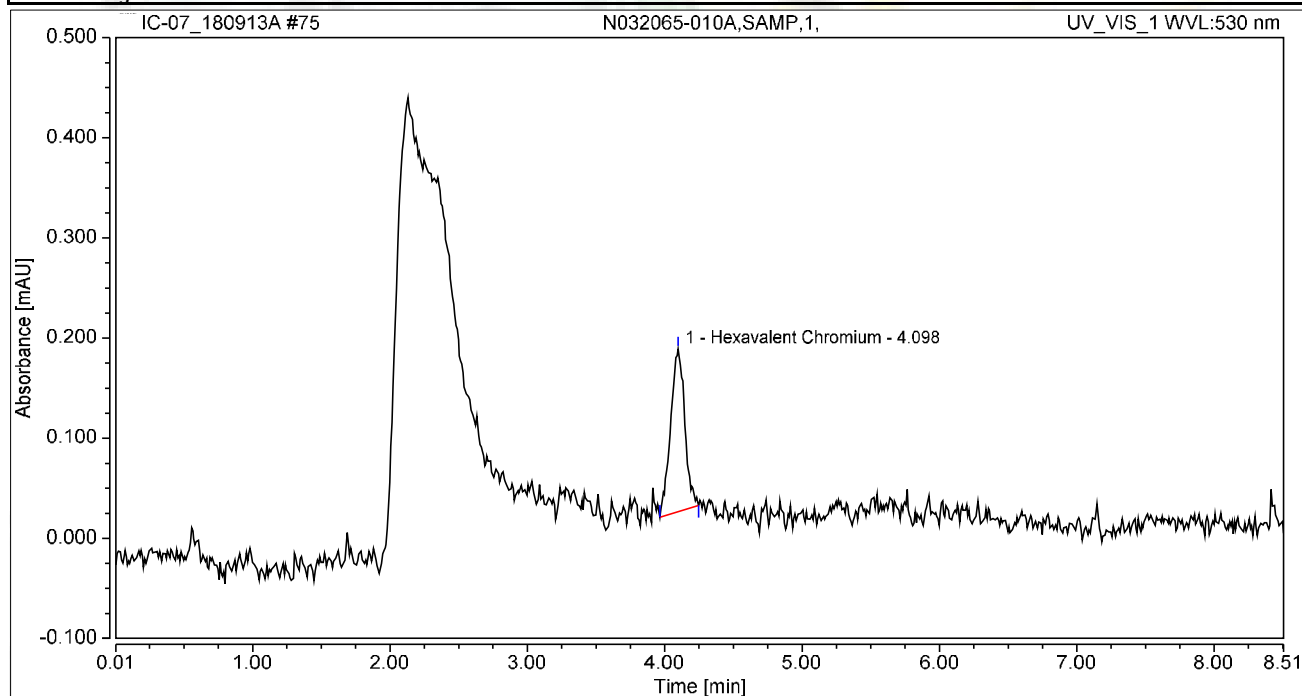
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-010A,SAMP,1,	Run Time (min):	8.50
Vial Number:	23	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 21:00	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

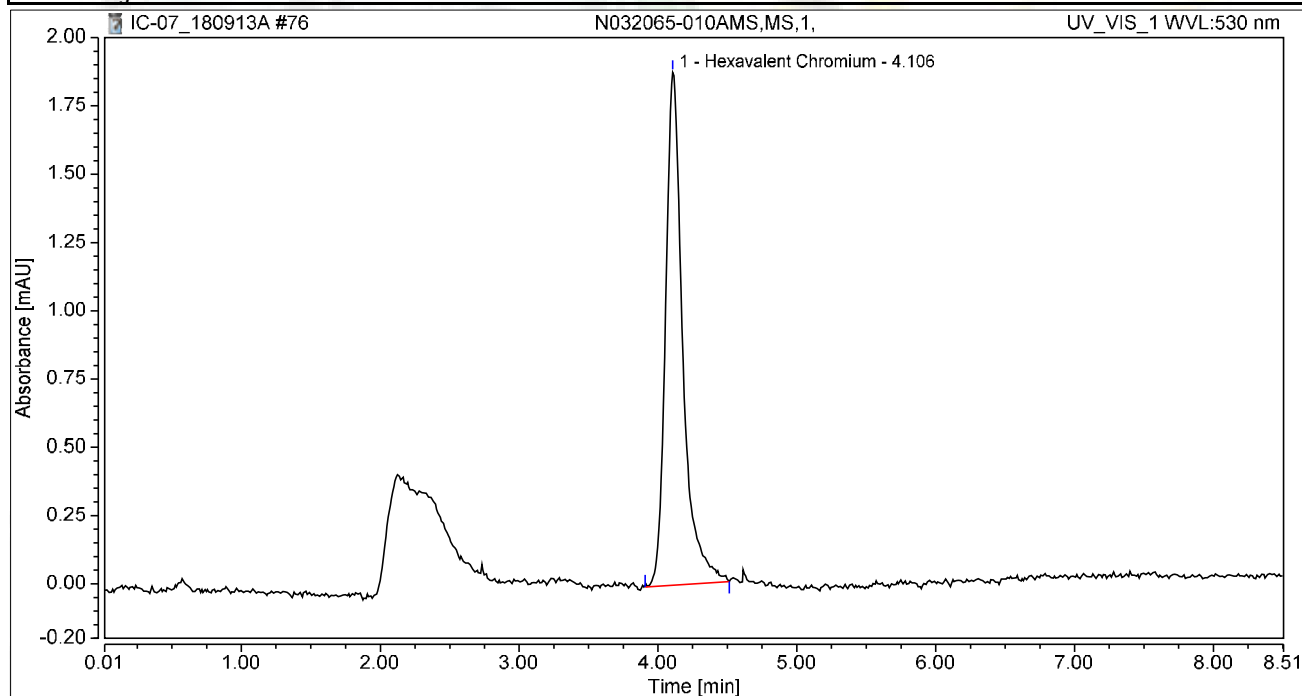
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.019	0.163	100.00	100.00	0.0774
<b>Total:</b>			<b>0.019</b>	<b>0.163</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032065-010AMS,MS,1,	Run Time (min):	8.49
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 21:10	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

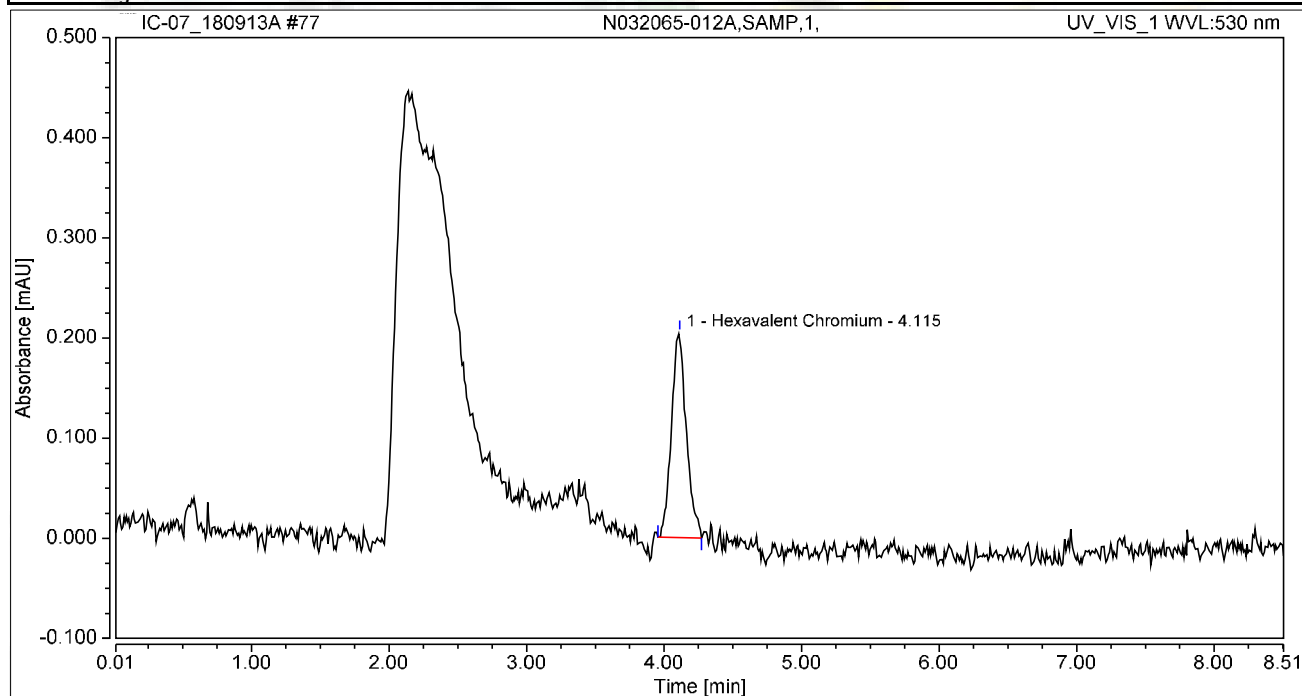
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.269	1.877	100.00	100.00	1.0708
<b>Total:</b>			<b>0.269</b>	<b>1.877</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-012A,SAMP,1,	Run Time (min):	8.49
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 21:19	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.026	0.205	100.00	100.00	0.1018
<b>Total:</b>			<b>0.026</b>	<b>0.205</b>	<b>100.00</b>	<b>100.00</b>	

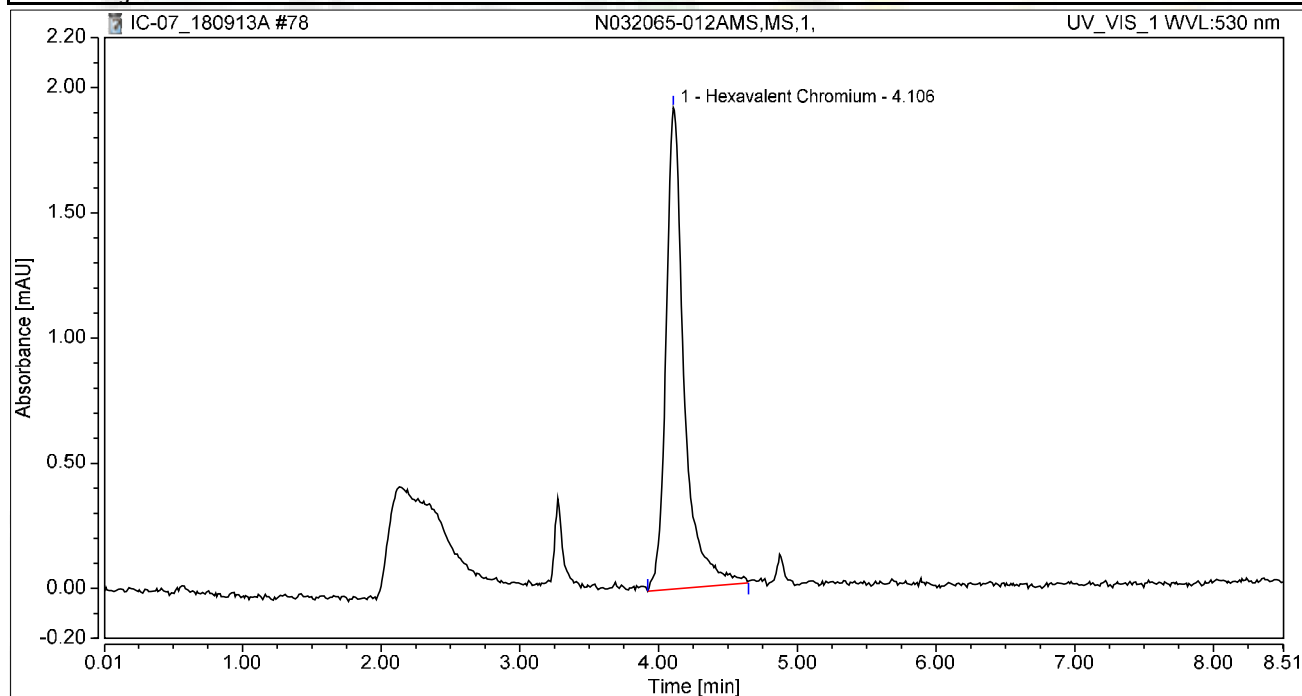


### Chromatogram and Results

#### Injection Details

Injection Name:	N032065-012AMS,MS,1,	Run Time (min):	8.50
Vial Number:	26	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 21:29	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

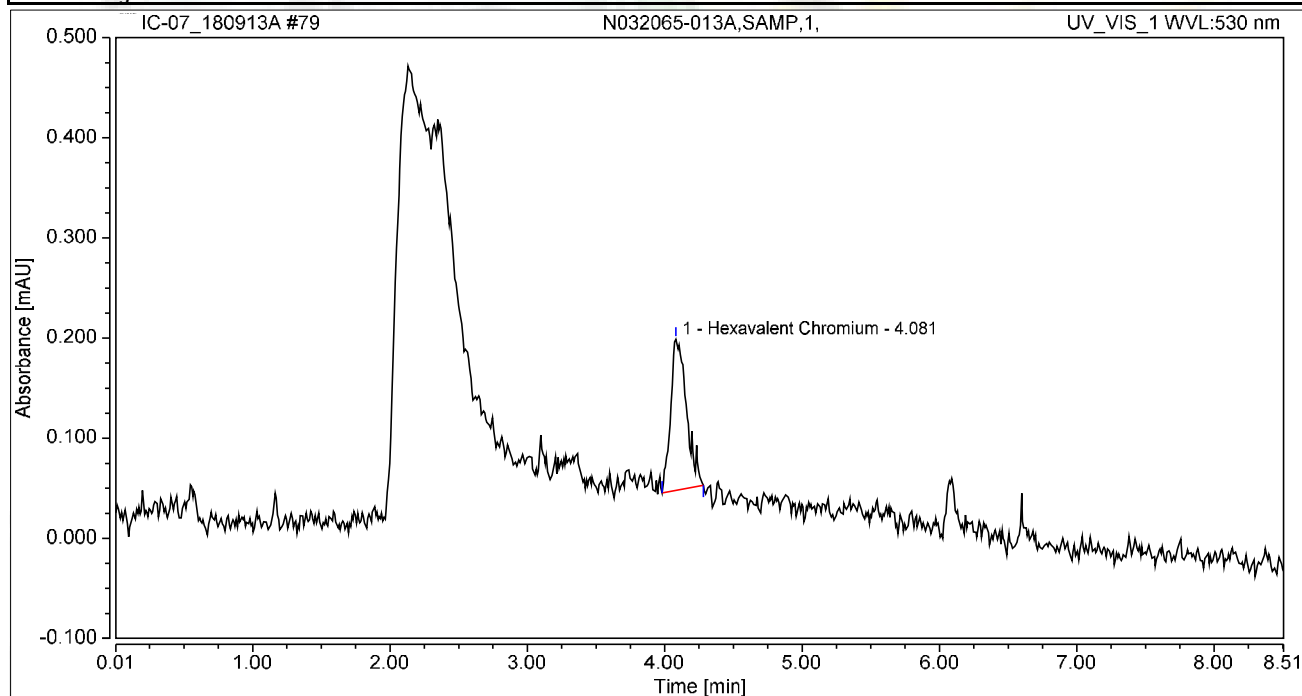
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.291	1.923	100.00	100.00	1.1571
<b>Total:</b>			<b>0.291</b>	<b>1.923</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032065-013A,SAMP,1,	Run Time (min):	8.50
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 21:38	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

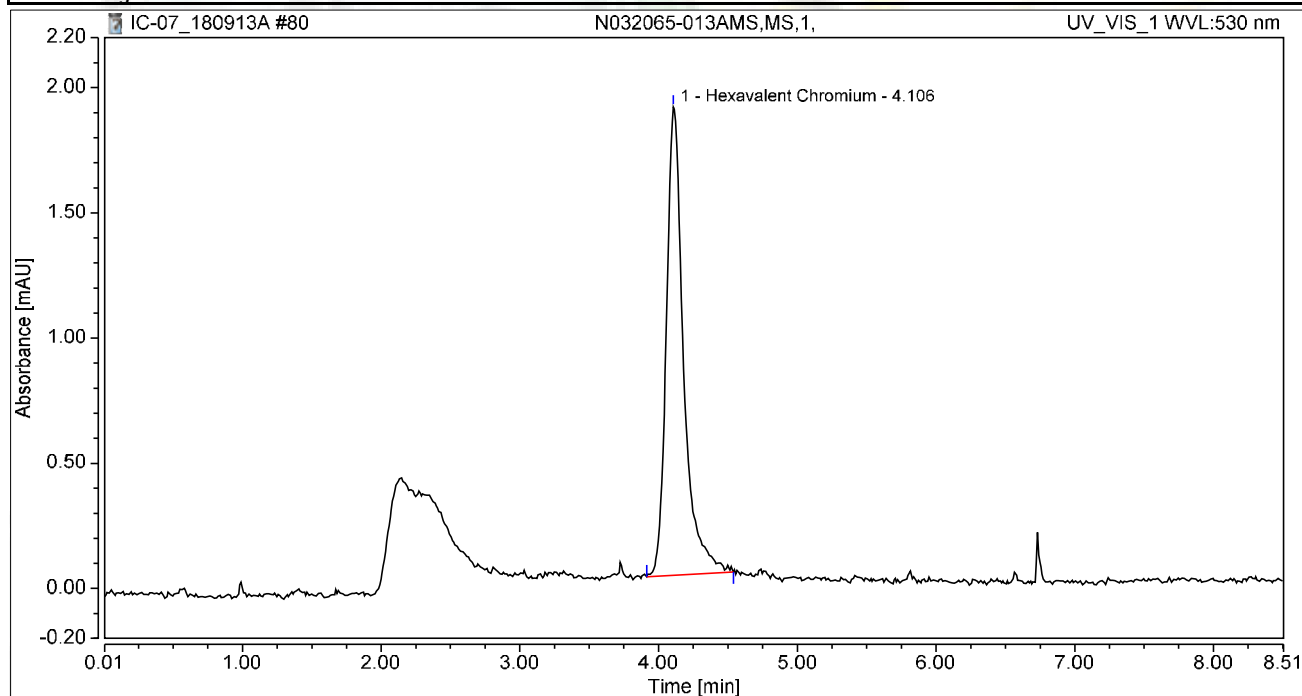
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.020	0.151	100.00	100.00	0.0805
<b>Total:</b>			<b>0.020</b>	<b>0.151</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032065-013AMS,MS,1,	Run Time (min):	8.50
Vial Number:	28	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 21:48	Sample Weight:	1.0000

#### Chromatogram



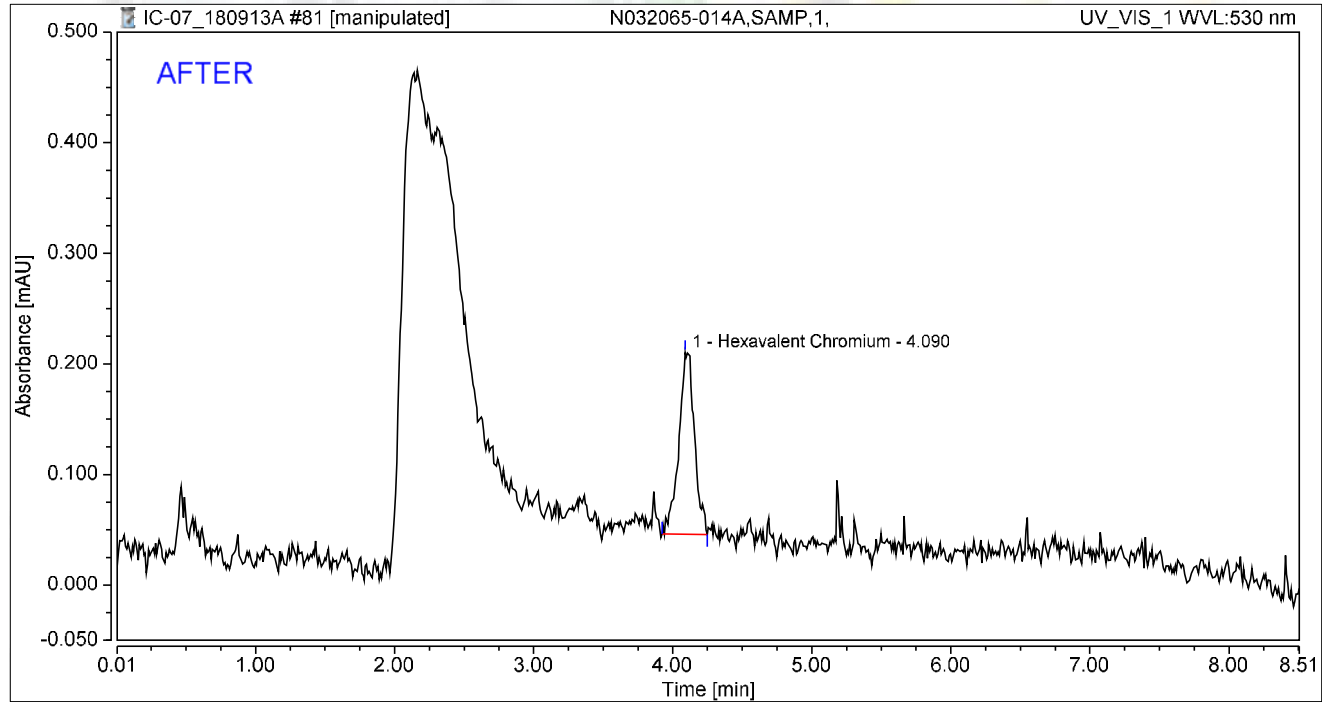
#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.270	1.870	100.00	100.00	1.0741
<b>Total:</b>			<b>0.270</b>	<b>1.870</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

Injection Details		
Injection Name:	N032065-014A,SAMP,1,	Run Time (min): 8.50
Vial Number:	29	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	13/Sep/18 21:57	Sample Weight: 1.0000

### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	0.022	0.164	100.00	100.00	0.0855
<b>Total:</b>			<b>0.022</b>	<b>0.164</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/19/2018

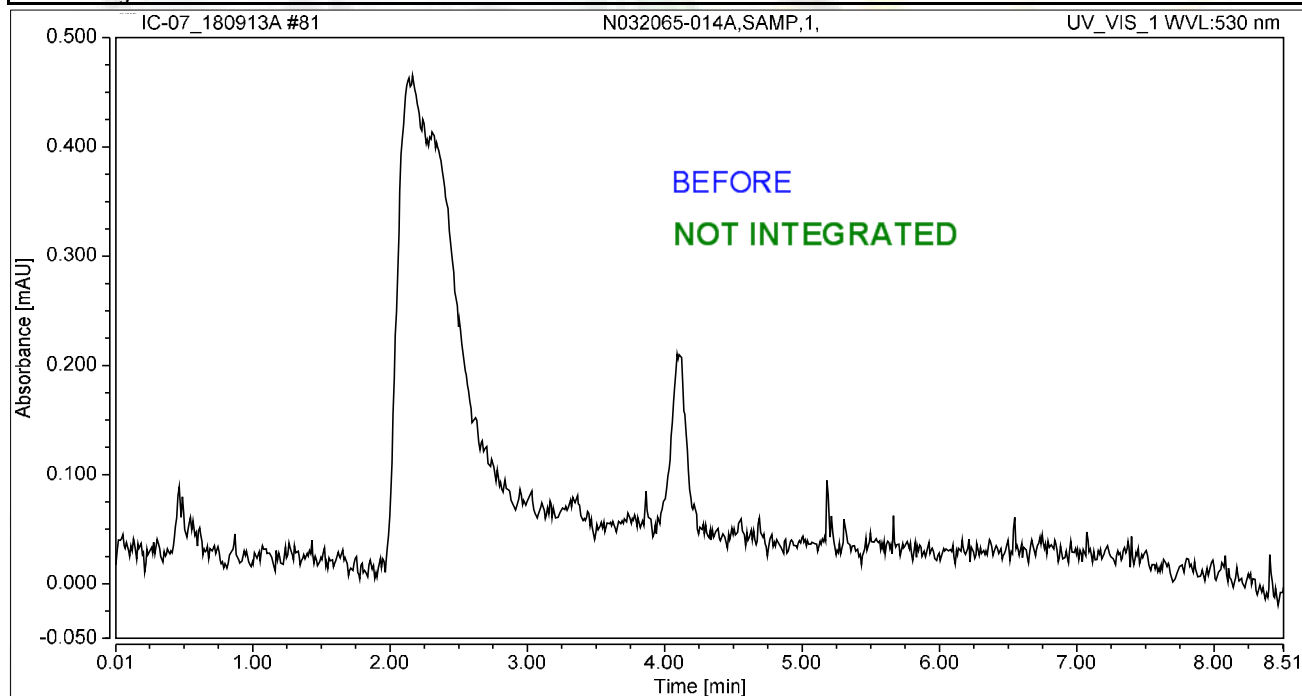
My first report/Integration  
 Reviewed by:  
*Monica* 9/26/2018

### Chromatogram and Results

#### Injection Details

Injection Name:	N032065-014A,SAMP,1,	Run Time (min):	8.50
Vial Number:	29	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 21:57	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

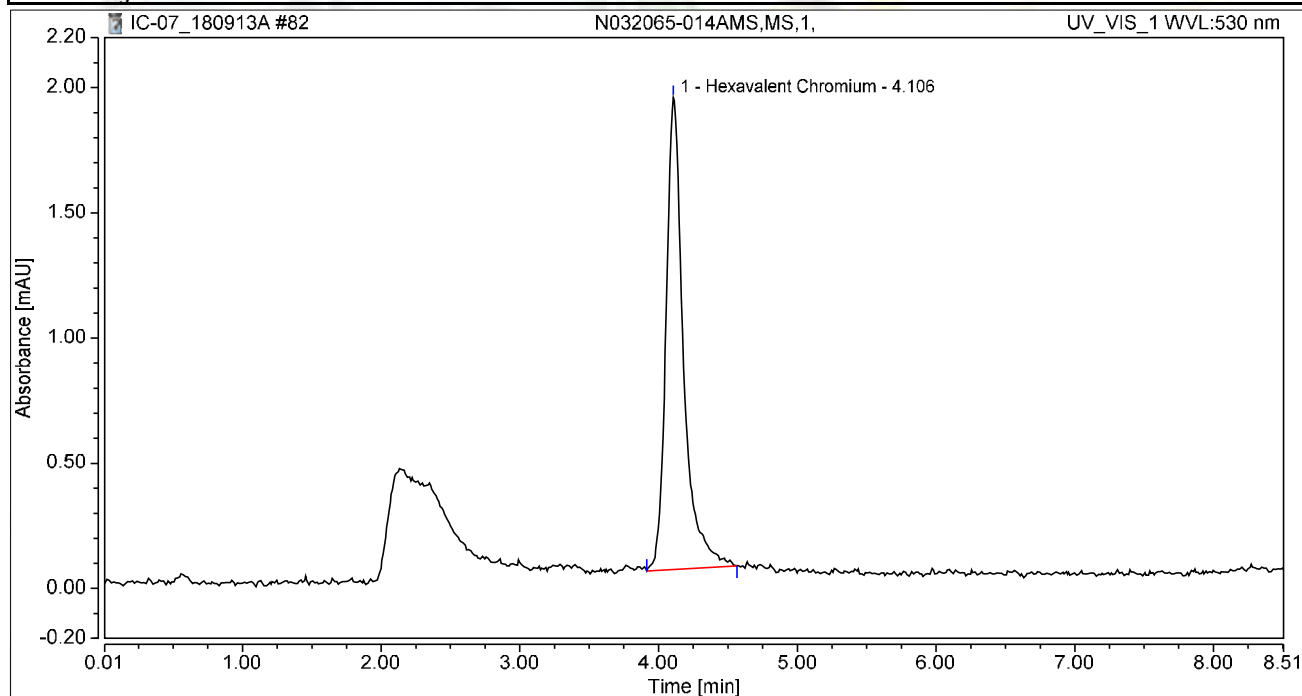
*rba* 9/19/2018

### Chromatogram and Results

#### Injection Details

Injection Name:	N032065-014AMS,MS,1,	Run Time (min):	8.50
Vial Number:	30	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 22:06	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

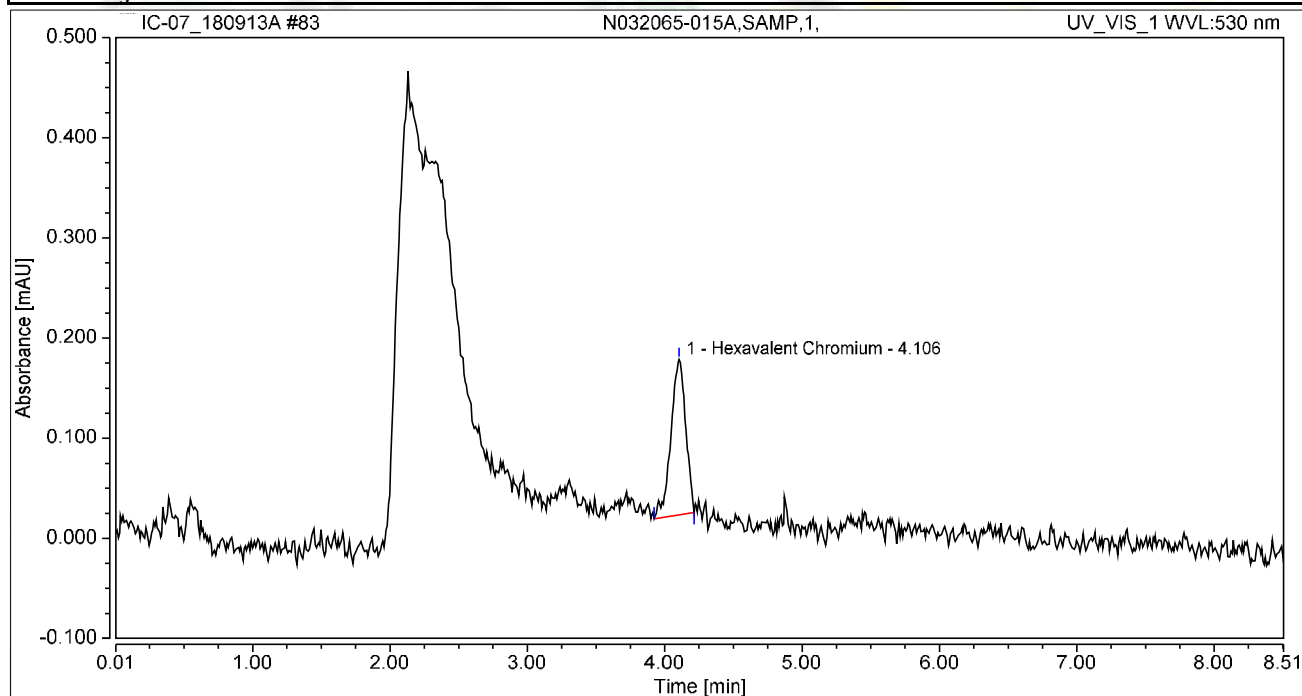
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.276	1.885	100.00	100.00	1.0952
<b>Total:</b>			<b>0.276</b>	<b>1.885</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032065-015A,SAMP,1,	Run Time (min):	8.50
Vial Number:	31	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 22:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

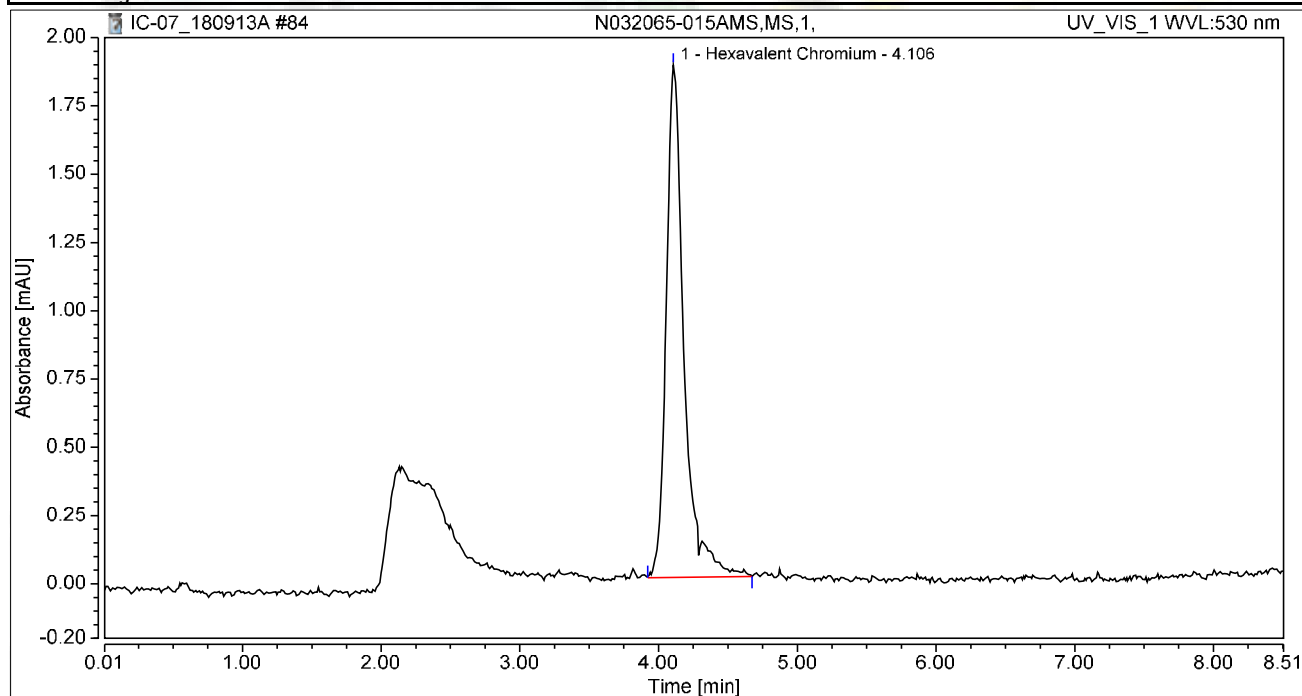
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.019	0.155	100.00	100.00	0.0768
<b>Total:</b>			<b>0.019</b>	<b>0.155</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032065-015AMS,MS,1,	Run Time (min):	8.50
Vial Number:	32	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 22:25	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.278	1.876	100.00	100.00	1.1066
<b>Total:</b>			<b>0.278</b>	<b>1.876</b>	<b>100.00</b>	<b>100.00</b>	

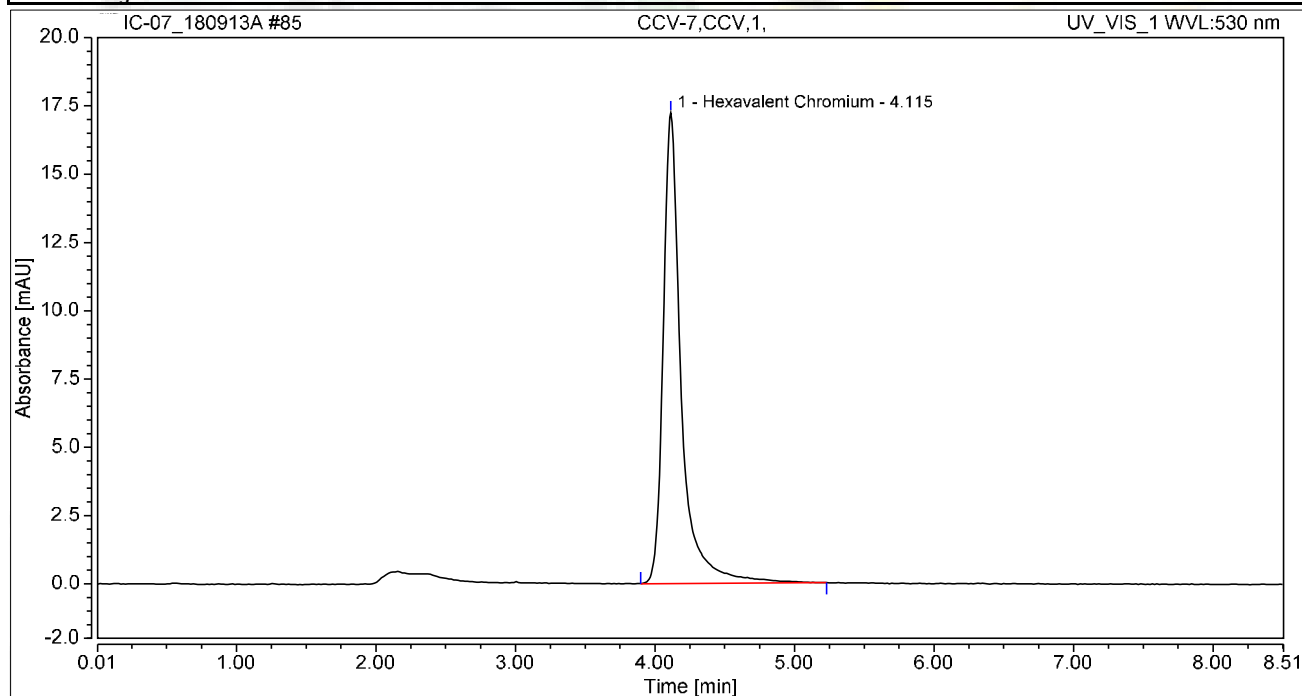


### Chromatogram and Results

#### Injection Details

Injection Name:	CCV-7,CCV,1,	Run Time (min):	8.50
Vial Number:	33	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 22:35	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

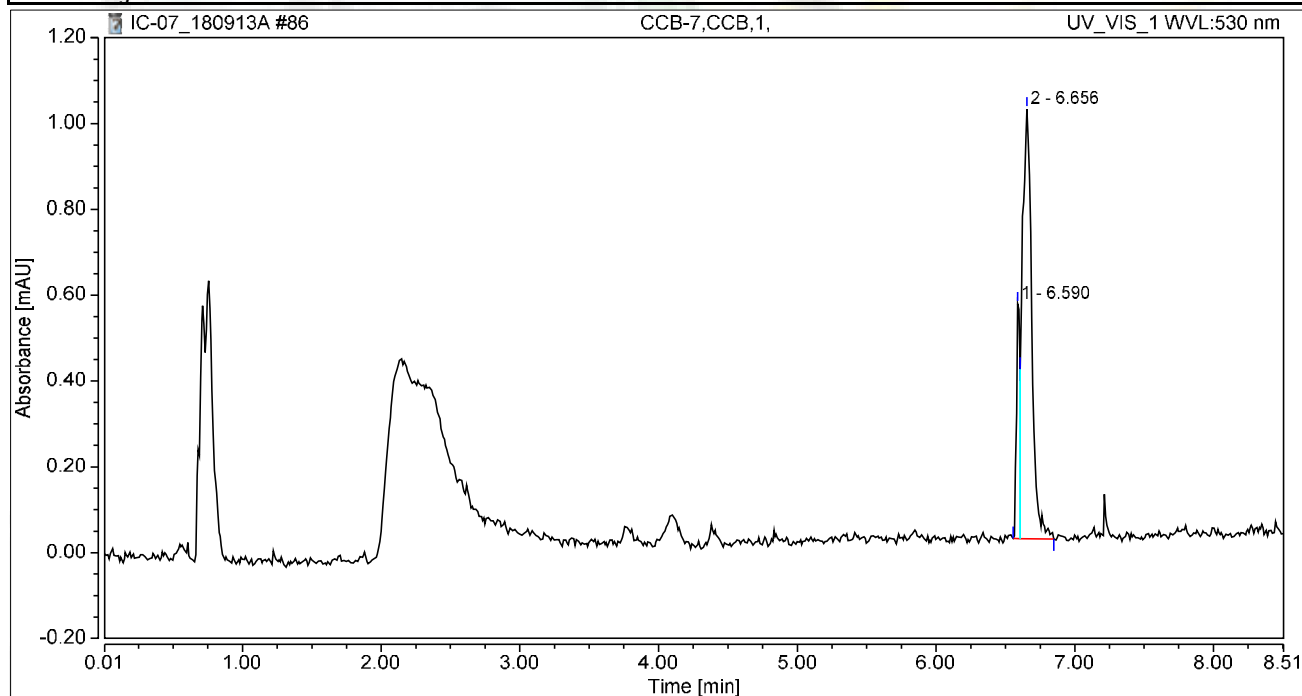
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.590	17.237	100.00	100.00	10.2954
<b>Total:</b>			<b>2.590</b>	<b>17.237</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-7,CCB,1,	Run Time (min):	8.50
Vial Number:	34	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	13/Sep/18 22:44	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		6.590	0.015	0.547	15.63	35.35	n.a.
2		6.656	0.078	1.001	84.37	64.65	n.a.
<b>Total:</b>			<b>0.093</b>	<b>1.548</b>	<b>100.00</b>	<b>100.00</b>	

# SM 4500-NO3F



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
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P: 702.307.2659 F: 702.307.2691

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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number:                     R127648                                                          Analyst:                     QBM                      
ASSET #:                     N032065                                                          Date Analyzed:                     9/17/2018                    

Method:           4500\_N03          

Initial Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis or every 24 hrs.	X					
2. Does correlation coefficient,r, meet criteria ?( r = 0.995)	X					
3. ICV within ± 15% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.	X					
5. CCV within ± 15% of expected value.	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)	X					
<b>Sample Information</b>						
8. All samples are within linear range.	X					
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer                     QBM                    

Date:           9/26/18          

2nd Level Reviewer                     *Nancy* 9/26/2018                    

Date:                     \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 4500N03F  
**TEST NAME:** Nitrate/Nitrite-N by Automated Cadmium Reduction  
**MATRIX:** Groundwater

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

$$\text{Nitrate/Nitrite-N, mg/L} = A * DF$$

where:

A = mg/L, instrument calculated concentration

DF = dilution factor

For: **N032065-003E**

The concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{Nitrate/Nitrite-N} &= 0.3479 * 1 \\ &= 0.3479 \text{ mg/L} \end{aligned}$$

Reporting result in two significant figures,

$$\text{Nitrate/Nitrite-N} = 0.35 \text{ mg/L}$$

# INITIAL CALIBRATION DATA SUMMARY



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P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## EPA 353.2 NO3 as N (NO3CD) - Endpoint

## General setup

Measuring unit	ppm
Number of decimals	4
Stabilization time (sec)	26
Measurement time (sec)	3
Sample volume (µl)	450
Filter	546
Reagent prime	No
CD Reduction	Yes

## Limits and dilution

Low level	-0.2
High level	4
Max linearity	4
Blank min	0
Blank max	0.049
Postdilution factor %	10
Factor Calculations	No

## Washes

Number of final washes	6
Wash every	R1, R2

## O.D. Corrections

Carry Over	No
Carry Over value	0.0000
Blank	No
Gain	No

## Reagents

N.	Volume (µl)	Incubation time (sec)
1	200	102
2	300	663
3	0	0

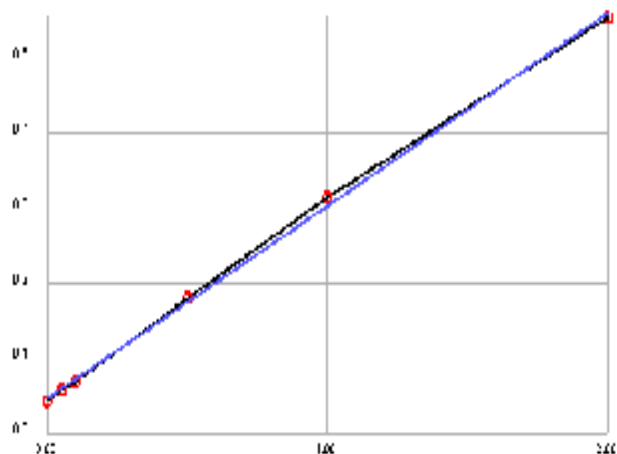
## QC

N.	Value	Tolerance
1	1	0.1

## Calibration

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	$y = 0.2565x + 0.0468$
Correlation	.999436



Calibrant	Energy	Set	Conc
1	0.0429	0.0000	-0.0150
2	0.0581	0.0500	0.0442
3	0.0678	0.1000	0.0820
4	0.1809	0.5000	0.5230
5	0.3138	1.0000	1.0411
6	0.5533	2.0000	1.9748

Notes:



# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141094</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.516	0.050	0.5000	0	103	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141117</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.500	0.050	0.5000	0	99.9	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141127</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.507	0.050	0.5000	0	101	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# INITIAL CALIBRATION AND CONTINUING CALIBRATION BLANK SUMMARY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>
Client ID: <b>ICB</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141095</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141118</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127648</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127648</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141128</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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P: 562.219.7435 F: 562.219.7436

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## Advanced Technology Laboratories, Inc.

3151 W. Post Rd.  
Las Vegas, NV. 89118  
702-307-2659  
702-307-2691  
[www.atl-labs.com](http://www.atl-labs.com)

Time start: 09-17-2018 16:26

Time end: 09-17-2018 18:39

		EPA 353.2 NO3 as N		
		ppm	Flags	OD
1	<BLANK>	18:09:59	-0.0115	0.0438
2	<BLANK>	18:10:54	-0.0197	0.0417
3	<CAL1>	18:11:48	-0.0150 [0]	0.0429
4	<CAL2>	18:12:49	0.0442 [0.05]	0.0581
5	<CAL3>	18:13:45	0.0820 [0.1]	0.0678
6	<CAL4>	18:14:46	0.5230 [0.5]	0.1809
7	<CAL5>	18:15:40	1.0411 [1]	0.3138
8	<CAL6>	18:16:36	1.9748 [2]	0.5533
9	,BLANK,BLANK,1, <b>NOT REPORTED</b>	18:17:31	0.0824	0.0679
10	,ICV,ICV,1,	18:18:31	0.5159	0.1791
11	,ICB,ICB,1,	18:19:26	0.0080	0.0488
12	,MB-H2O,MBLK,1,	18:20:28	-0.0119	0.0437
13	,LCS-H2O,LCS,1,	18:21:23	0.5654	0.1918
14	,N031976-001C,SAMP,1,	18:22:17	0.0239	0.0529
15	,N032065-003E,SAMP,1,	18:23:19	0.3479	0.1360
16	,N032065-005E,SAMP,1,	18:24:02	0.4465	0.1613
17	,N032065-005EDUP,DUP,1,	18:24:50	0.5042	0.1761
18	,N032065-004E,SAMP,1,	18:25:34	0.4076	0.1513
19	,N032065-004EMS,MS,1,	18:26:22	0.9339	0.2863
20	,N032065-004EMSD,MSD,1,	18:27:05	0.9662	0.2946
21	,BLANK, <b>NOT REPORTED</b>	18:27:53	0.0177	0.0513
22	,CCV-1,CCV,1,	18:28:37	0.4996	0.1749
23	,CCB-1,CCB,1,	18:29:20	0.0029	0.0475
24	,N032065-006E,SAMP,1,	18:30:08	0.4387	0.1593
25	,N032065-007E,SAMP,1,	18:30:51	0.3963	0.1484
26	,N032065-008E,SAMP,1,	18:31:33	0.3697	0.1416

			EPA 353.2 NO3 as N	
			ppm	Flags
				OD
27	,N032065-009E,SAMP,1,	18:32:23	0.3573	0.1384
28	,N032065-010E,SAMP,1,	18:33:05	0.3791	0.1440
29	,N032065-013E,SAMP,1,	18:33:48	0.3713	0.1420
30	,N032065-014E,SAMP,1,	18:34:38	0.4107	0.1521
31	,N032065-015E,SAMP,1,	18:35:20	0.3830	0.1450
32	,BLANK,	18:36:03	-0.0037	0.0458
	<b>NOT REPORTED</b>			
33	,CCV-2,CCV,1,	18:36:51	0.5074	0.1769
34	,CCB-2,CCB,1,	18:37:34	-0.0057	0.0453

Nitrate/Nitrite as N by Cadmium Reduction Preparation and Runlog

<b>Matrix:</b>	
Method: <u>SM 4500-NO3-F/ EPA 353.2</u>	Reagent ID #
Insturment: <u>Easy Chem Analyzer</u>	Ammonium Chloride reagent/Buffer: <u>R180904B</u>
	Color reagent: <u>R180904C</u>
	2% Copper Sulfate: <u>R180904A</u>
Date Analyzed: 9/17/2018	Ammonium Hydroxide: <u>CINV-180703A</u>
Time Analyzed: 4:26 PM	
Analyzed By: QBM	

Sample ID.	Sample Wt./Vol.	Sample pH	Std Code	Spike Amt Added (mL)	Spike Conc.(PPM)	Final Volume (mL)	Dilution (F/I)	Reading & Calculations (mg/L)	Comments
N031976-001C		7.35							
N032065-003E		7.1							
N032065-004E		8.07							
N032065-005E		7.78							
N032065-006E		6.06							
N032065-007E		6.72							
N032065-008E		7.24							
N032065-009E		8.18							
N032065-010E		6.67							
N032065-013E		7.29							
N032065-014E		6.67							
N032065-015E		7.71							



# MDL STUDY



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ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Nitrate/Nitrite by Cadmium Reduction**  
 Method Number: SM4500NO3F  
 Analysis Date(s): 10/25,2017, 10/26/2017, 10/27/2017  
 Analyst/Technician: Quennie B. Manimtim

Matrix: **Water**  
 Unit: mg/L  
 Spike Conc: 0.05 mg/L

Analyte	#1	#2	#3	#4	#5	#6	#7	Ave	SD	t <sub>(n-1)</sub> value	MDL	PQL
Nitrate/Nitrite as N	0.0573	0.0562	0.0500	0.0730	0.0698	0.0637	0.0564	0.0609	0.0082	3.143	0.0259	0.05
<b>Method Blank</b>												
Nitrate/Nitrite as N	0.0160	0.0067	0.0064	0.0204	0.0173	0.0036	0.0083	0.0112	0.0065	3.143	0.0317	0.05
<b>MDL:</b>	<b>0.0317</b>	<b>mg/L</b>										



# EPA 6010B Dissolved



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

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**311**



**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70629  
 ASSET #: N032065

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  EPA 6010B / 200.7 DISS  EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8  Other \_\_\_\_\_

Date Analyzed: 9/25/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)			X			X
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			<del>X</del>	X	
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits		X		X	<del>X</del>	
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X			<del>X</del>	X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

%Rec of Fe in N032065-003BPS, low bias. However, LCS passed criteria.

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer [Signature] 9/26/2018

Date: 9/26/18  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

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3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## SAMPLE CALCULATION

**METHOD:** EPA 6010B  
**TEST NAME:** Heavy Metals by ICP  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Iron concentration, in ug/L , in the original sample as follows:

$$\text{Iron, ug/L} = A * DF * PF * CF$$

where:

A = mg/L, calculated concentration

DF = Dilution Factor

PF = Final Volume of Digestate, mL / Amount of Sample, mL

CF= Conversion Factor from mg/L to ug/L, 1000

For Sample **N032065-003B** , the concentration in ug/L is calculated as follows:

$$\text{Iron, ug/L} = 0.02272 * 1 * (25/25) * 1000$$

$$\text{Iron, ug/L} = 22.72$$

Reporting results in two significant figures,

$$\text{Iron, ug/L} = 23$$

# % RSD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**RSD SUMMARY: 180925A**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Fe	0	4.19	15	PASS
Standard1	ICAL	1	Fe	0.02	2.94	15	PASS
Standard2	ICAL	1	Fe	0.05	1.024	15	PASS
Standard3	ICAL	1	Fe	2	0.68	15	PASS
Standard4	ICAL	1	Fe	5	0.38	15	PASS
Standard5	ICAL	1	Fe	7.5	0.8	15	PASS
Standard6	ICAL	1	Fe	10	0.17	15	PASS
Standard7	ICAL	1	Fe	20	0.18	15	PASS
ICV	ICV	1	Fe	10.08	0.083	15	PASS
ICB	ICB	1	Fe	0.0012	40.8	15	<PQL
LLICV1	CCV1	1	Fe	0.02	2.77	20	PASS
ICSA1	ICSA	1	Fe	181.31	0.53	15	PASS
ICSAB1	ICSAB	1	Fe	178.27	0.34	15	PASS
MB-70629	MBLK	1	Fe	0.0066	13.29	15	PASS
LCS-70629	LCS	1	Fe	0.1	0.69	15	PASS
N032065-003B	SAMP	1	Fe	0.023	1.49	15	PASS
N032065-003B	SAMP	5	Fe	0.0048	4.54	15	PASS
N032065-003B-PS	PS	1	Fe	0.1	0.88	15	PASS
N032065-003B-MS	MS	1	Fe	0.1	0.16	15	PASS
N032065-003B-MSD	MSD	1	Fe	0.1	0.27	15	PASS
N032065-004B	SAMP	1	Fe	0.0043	12.25	15	PASS
N032065-005B	SAMP	1	Fe	0.0044	16.069	15	<PQL
N032065-006B	SAMP	1	Fe	0.052	0.53	15	PASS
CCV1	CCV	1	Fe	10.077	0.05	15	PASS
CCB1	CCB	1	Fe	0.0012	90.19	15	<PQL
N032065-007B	SAMP	1	Fe	0.039	0.46	15	PASS
N032065-008B	SAMP	1	Fe	0.015	4.55	15	PASS
N032065-009B	SAMP	1	Fe	0.014	4.83	15	PASS
N032065-010B	SAMP	1	Fe	0.0088	5.0078	15	PASS
N032065-013B	SAMP	1	Fe	0.0065	9.22	15	PASS
N032065-014B	SAMP	1	Fe	0.0093	5.77	15	PASS
N032065-015B	SAMP	1	Fe	0.0048	11.22	15	PASS
CCV2	CCV	1	Fe	10.14	0.16	15	PASS
CCB2	CCB	1	Fe	0.00039	88.086	15	<PQL
CCV3	CCV	1	Fe	10.11	0.044	15	PASS
CCB3	CCB	1	Fe	0.0014	23.79	15	<PQL
CCV4	CCV	1	Fe	10.015	0.17	15	PASS
CCB4	CCB	1	Fe	0.0019	20	15	<PQL
ICSA2	ICSA	1	Fe	181.11	0.27	15	PASS
ICSAB2	ICSAB	1	Fe	176.87	0.23	15	PASS



# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INJECTION LOG: 180925A**

**Instrument ID: ICP-02**

<b>STANDARD CODE</b>	
Standard1	MWST-180420A,0.5<50mL
Standard2	MWST-180601F
Standard3	MWST-180601J,5<50mL
Standard4	MWST-180601J,12.5<50mL
Standard5	MWST-180601J,15<40mL
Standard6	MWST-180601J,25<50mL
Standard7	MWST-180601J
ICV	MWST-180430E
CCV	MWST-180601J,25<50mL
ICSA/ICSAB	MWST-180420F/ -180730A
Int. Std. (Y)	MSST-180420B/A
PS Spike	MWST-180517E/ -180430F/ -180601B

<b>A/S Loc</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq Date</b>	<b>Acq Time</b>
1	CalBlk	IBLK	1	09/25/2018	07:44:30 AM
2	Standard1	ICAL	1	09/25/2018	07:49:50 AM
3	Standard2	ICAL	1	09/25/2018	07:55:09 AM
11	Standard3	ICAL	1	09/25/2018	08:00:28 AM
12	Standard4	ICAL	1	09/25/2018	08:05:49 AM
6	Standard5	ICAL	1	09/25/2018	08:11:12 AM
7	Standard6	ICAL	1	09/25/2018	08:16:31 AM
8	Standard7	ICAL	1	09/25/2018	08:21:24 AM
9	ICV	ICV	1	09/25/2018	08:24:51 AM
1	ICB	ICB	1	09/25/2018	08:31:45 AM
2	LLICV1	CCV1	1	09/25/2018	08:37:04 AM
4	ICSA1	ICSA	1	09/25/2018	08:42:22 AM
5	ICSAB1	ICSAB	1	09/25/2018	08:49:53 AM
38	MB-70629	MBLK	1	09/25/2018	08:56:57 AM
39	LCS-70629	LCS	1	09/25/2018	09:02:17 AM
40	N032065-003B	SAMP	1	09/25/2018	09:07:37 AM
41	N032065-003B	SAMP	5	09/25/2018	09:12:57 AM
42	N032065-003B-PS	PS	1	09/25/2018	09:18:18 AM
43	N032065-003B-MS	MS	1	09/25/2018	09:23:39 AM
44	N032065-003B-MSD	MSD	1	09/25/2018	09:28:59 AM
45	N032065-004B	SAMP	1	09/25/2018	09:34:20 AM
46	N032065-005B	SAMP	1	09/25/2018	09:39:42 AM
47	N032065-006B	SAMP	1	09/25/2018	09:45:02 AM
7	CCV1	CCV	1	09/25/2018	09:50:24 AM
1	CCB1	CCB	1	09/25/2018	09:57:18 AM
48	N032065-007B	SAMP	1	09/25/2018	10:02:51 AM
49	N032065-008B	SAMP	1	09/25/2018	10:08:12 AM
50	N032065-009B	SAMP	1	09/25/2018	10:13:35 AM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
51	N032065-010B	SAMP	1	09/25/2018	10:18:56 AM
52	N032065-013B	SAMP	1	09/25/2018	10:24:17 AM
53	N032065-014B	SAMP	1	09/25/2018	10:29:37 AM
54	N032065-015B	SAMP	1	09/25/2018	10:34:58 AM
55	MB-70628	MBLK	1	09/25/2018	10:40:19 AM
56	LCS-70628	LCS	1	09/25/2018	10:45:39 AM
57	N032065-003C	SAMP	1	09/25/2018	10:50:59 AM
7	CCV2	CCV	1	09/25/2018	10:56:20 AM
1	CCB2	CCB	1	09/25/2018	11:03:14 AM
58	N032065-003C	SAMP	5	09/25/2018	11:08:32 AM
59	N032065-003C-PS	PS	1	09/25/2018	11:13:53 AM
60	N032065-003C-MS	MS	1	09/25/2018	11:19:15 AM
61	N032065-003C-MSD	MSD	1	09/25/2018	11:24:38 AM
62	N032065-004C	SAMP	1	09/25/2018	11:30:01 AM
63	N032065-005C	SAMP	1	09/25/2018	11:35:37 AM
64	N032065-006C	SAMP	1	09/25/2018	11:40:58 AM
65	N032065-007C	SAMP	1	09/25/2018	11:46:20 AM
66	N032065-008C	SAMP	1	09/25/2018	11:51:42 AM
67	N032065-009C	SAMP	1	09/25/2018	11:57:04 AM
7	CCV3	CCV	1	09/25/2018	12:02:26 PM
1	CCB3	CCB	1	09/25/2018	12:09:19 PM
68	N032065-010C	SAMP	1	09/25/2018	12:14:38 PM
69	N032065-013C	SAMP	1	09/25/2018	12:20:02 PM
70	N032065-014C	SAMP	1	09/25/2018	12:25:23 PM
71	N032065-015C	SAMP	1	09/25/2018	12:30:48 PM
72	MB-70687	MBLK	1	09/25/2018	12:36:10 PM
73	LCS-70687	LCS	1	09/25/2018	12:41:31 PM
74	N032084-001B	SAMP	1	09/25/2018	12:46:52 PM
75	N032084-001B	SAMP	5	09/25/2018	12:52:14 PM
76	N032084-001B-PS	PS	1	09/25/2018	12:57:35 PM
77	N032084-001B-MS	MS	1	09/25/2018	01:02:57 PM
7	CCV4	CCV	1	09/25/2018	01:08:19 PM
1	CCB4	CCB	1	09/25/2018	01:15:13 PM
4	ICSA2	ICSA	1	09/25/2018	01:20:02 PM
5	ICSAB2	ICSAB	1	09/25/2018	01:27:33 PM
78	N032084-001B-MSD	MSD	1	09/25/2018	01:34:37 PM
79	N032084-002B	SAMP	1	09/25/2018	01:39:59 PM
80	N032084-003B	SAMP	1	09/25/2018	01:45:20 PM
81	N032084-004B	SAMP	1	09/25/2018	01:50:41 PM
82	N032084-005B	SAMP	1	09/25/2018	01:56:03 PM
83	N032084-006B	SAMP	1	09/25/2018	02:01:25 PM
84	N032084-007B	SAMP	1	09/25/2018	02:06:47 PM
85	N032084-008B	SAMP	1	09/25/2018	02:12:10 PM
86	N032084-009B	SAMP	1	09/25/2018	02:17:31 PM
87	N032084-010B	SAMP	1	09/25/2018	02:22:53 PM
7	CCV5	CCV	1	09/25/2018	02:28:16 PM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CCB5	CCB	1	09/25/2018	02:33:09 PM
88	N032084-011B	SAMP	1	09/25/2018	02:38:27 PM
89	N032084-012B	SAMP	1	09/25/2018	02:43:48 PM
90	N032084-013B	SAMP	1	09/25/2018	02:49:09 PM
91	N032084-014B	SAMP	1	09/25/2018	02:54:31 PM
92	N032084-015B	SAMP	1	09/25/2018	02:59:52 PM
93	MB-70686	MBLK	1	09/25/2018	03:05:14 PM
94	LCS-70686	LCS	1	09/25/2018	03:10:35 PM
95	N032084-001C	SAMP	1	09/25/2018	03:15:56 PM
96	N032084-001C	SAMP	5	09/25/2018	03:21:18 PM
97	N032084-001C-PS	PS	1	09/25/2018	03:26:38 PM
7	CCV6	CCV	1	09/25/2018	03:32:00 PM
1	CCB6	CCB	1	09/25/2018	03:38:53 PM
98	N032084-001C-MS	MS	1	09/25/2018	03:44:11 PM
99	N032084-001C-MSD	MSD	1	09/25/2018	03:49:34 PM
100	N032084-002C	SAMP	1	09/25/2018	03:54:56 PM
101	N032084-003C	SAMP	1	09/25/2018	04:00:18 PM
102	N032084-004C	SAMP	1	09/25/2018	04:05:41 PM
103	N032084-005C	SAMP	1	09/25/2018	04:11:03 PM
104	N032084-006C	SAMP	1	09/25/2018	04:16:26 PM
105	N032084-007C	SAMP	1	09/25/2018	04:21:48 PM
106	N032084-008C	SAMP	1	09/25/2018	04:27:11 PM
107	N032084-009C	SAMP	1	09/25/2018	04:32:37 PM
7	CCV7	CCV	1	09/25/2018	04:37:59 PM
1	CCB7	CCB	1	09/25/2018	04:44:53 PM
108	N032084-010C	SAMP	1	09/25/2018	04:50:12 PM
109	N032084-011C	SAMP	1	09/25/2018	04:55:34 PM
110	N032084-012C	SAMP	1	09/25/2018	05:00:57 PM
111	N032084-013C	SAMP	1	09/25/2018	05:06:19 PM
112	N032084-014C	SAMP	1	09/25/2018	05:11:42 PM
113	N032084-015C	SAMP	1	09/25/2018	05:17:05 PM
7	CCV8	CCV	1	09/25/2018	05:22:29 PM
1	CCB8	CCB	1	09/25/2018	05:29:23 PM
4	ICSA3	ICSA	1	09/25/2018	05:34:42 PM
5	ICSAB3	ICSAB	1	09/25/2018	05:42:14 PM

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**PREP BATCH REPORT**

Prep Start Date: **9/13/2018 3:00:00 P**

Reviewed/ Date: *Handwritten: 9/26/2018*

Page: 1 of 2

Prep End Date: **9/13/2018 7:30:00 P**

Initials/ Date: *Handwritten: 9/26/2018*

Prep Batch **70629** Prep Code: **3010\_W DISS**

Technician: **Claire Ignacio**

Prep Factor Units  
mL / mL

Temp. (°C):  
**94.5**

Location:  
**01-35**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70629	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70629	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N032065-003B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-003B-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-003B-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-004B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-005B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-006B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-007B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-008B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-009B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-010B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-013B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-014B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
10132	NITRIC ACID
10136	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-180430F	ICP Solution B	LCS,MS,MSD	0.5
MWST-180517E	ICP Solution A	LCS,MS,MSD	0.5
MWST-180601B	ICP Solution C	LCS,MS,MSD	0.5

**ASSET Laboratories**

**PREP BATCH REPORT**

Prep Start Date: **9/13/2018 3:00:00 P**

Reviewed/ Date: *MM* 9/26/2018

Page: 2 of 2

Prep End Date: **9/13/2018 7:30:00 P**

Initials/ Date: *CI* 9/26/2018

Prep Batch **70629** Prep Code: **3010\_W\_DISS**

Technician: **Claire Ignacio**

Prep Factor Units  
mL / mL

Temp. (°C):  
**94.5**

Location:  
**01-35**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N032065-015B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
10132	NITRIC ACID
10136	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-180430F	ICP Solution B	LCS,MS,MSD	0.5
MWST-180517E	ICP Solution A	LCS,MS,MSD	0.5
MWST-180601B	ICP Solution C	LCS,MS,MSD	0.5

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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INITIAL CALIBRATION SUMMARY: 180925A

Instrument ID: ICP-02

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
<b>Iron</b>								
CalBlk	09/25/2018	07:44:30 AM	Fe	273.953	-423	0.00	mg/L	
Standard1	09/25/2018	07:49:50 AM	Fe	273.953	543	0.0200	mg/L	
Standard2	09/25/2018	07:55:09 AM	Fe	273.953	1934	0.050	mg/L	
Standard3	09/25/2018	08:00:28 AM	Fe	273.953	54835	2.000	mg/L	
Standard4	09/25/2018	08:05:49 AM	Fe	273.953	137778	5.000	mg/L	
Standard5	09/25/2018	08:11:12 AM	Fe	273.953	208671	7.500	mg/L	
Standard6	09/25/2018	08:16:31 AM	Fe	273.953	272555	10.000	mg/L	
Standard7	09/25/2018	08:21:24 AM	Fe	273.953	530345	20.000	mg/L	0.9998

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WDPGEPBB**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151464</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10080.191	20	10000	0	101	90	110				

Sample ID <b>LLICV1</b>	SampType: <b>CCV1</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151466</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	20.100	20	20.00	0	101	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151479</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10077.270	20	10000	0	101	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151709</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10145.312	20	10000	0	101	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151721</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10104.978	20	10000	0	101	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010\_WDPGEPBB**

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151733</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10014.542	20	10000	0	100	90	110				

Sample ID <b>CCV5</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152016</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10000.936	20	10000	0	100	90	110				

Sample ID <b>CCV6</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152028</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10069.320	20	10000	0	101	90	110				

Sample ID <b>CCV7</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152040</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10105.492	20	10000	0	101	90	110				

Sample ID <b>CCV8</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152048</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10039.987	20	10000	0	100	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL • TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WDPGEPBB**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151465</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.226 20

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151480</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.167 20

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151710</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 0.393 20

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151722</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.353 20

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151734</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.938 20

**Qualifiers:**

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  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010\_WDPGEPBB**

Sample ID <b>CCB5</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152017</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron	2.540	20
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Sample ID <b>CCB6</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152029</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron	2.395	20
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Sample ID <b>CCB7</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152041</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron	1.924	20
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Sample ID <b>CCB8</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152049</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron	2.194	20
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WDPGEPBB**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151467</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	512534.632	50	500000	0	103	80	120				
Calcium	512266.139	500	500000	0	102	80	120				
Iron	181310.298	20	200000	0	90.7	80	120				
Magnesium	471619.155	100	500000	0	94.3	80	120				

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151468</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	546091.686	50	500000	0	109	80	120				
Calcium	537615.077	500	500000	0	108	80	120				
Iron	178272.494	20	200000	0	89.1	80	120				
Magnesium	491439.486	100	500000	0	98.3	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151735</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	511071.415	50	500000	0	102	80	120				
Calcium	489537.232	500	500000	0	97.9	80	120				
Iron	181113.701	20	200000	0	90.6	80	120				
Magnesium	415621.434	100	500000	0	83.1	80	120				

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151736</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	547107.889	50	500000	0	109	80	120				
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**Qualifiers:**

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010\_WDPGEPBB**

Sample ID <b>ICSAB2</b>	SampType: <b>ICSAB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151736</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	513720.470	500	500000	0	103	80	120				
Iron	176866.353	20	200000	0	88.4	80	120				
Magnesium	463516.592	100	500000	0	92.7	80	120				

Sample ID <b>ICSA3</b>	SampType: <b>ICSA</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152050</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	514857.745	50	500000	0	103	80	120				
Calcium	494133.116	500	500000	0	98.8	80	120				
Iron	182013.944	20	200000	0	91.0	80	120				
Magnesium	468342.465	100	500000	0	93.7	80	120				

Sample ID <b>ICSAB3</b>	SampType: <b>ICSAB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152051</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	550755.999	50	500000	0	110	80	120				
Calcium	518943.166	500	500000	0	104	80	120				
Iron	177724.055	20	200000	0	88.9	80	120				
Magnesium	483705.740	100	500000	0	96.7	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## INTERNAL STANDARD: 180925A

Instrument ID: ICP-02

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
CalBlk	IBLK	1	1	100	65-125	PASS
Standard1	ICAL	1	1.0047	100.47	65-125	PASS
Standard2	ICAL	1	1.033	103.34	65-125	PASS
Standard3	ICAL	1	1.012	101.2	65-125	PASS
Standard4	ICAL	1	1.0004	100.04	65-125	PASS
Standard5	ICAL	1	1.027	102.7	65-125	PASS
Standard6	ICAL	1	1.012	101.22	65-125	PASS
Standard7	ICAL	1	0.99	98.66	65-125	PASS
ICV	ICV	1	1.019	101.91	65-125	PASS
ICB	ICB	1	1.043	104.26	65-125	PASS
LLICV1	CCV1	1	1.029	102.92	65-125	PASS
ICSA1	ICSA	1	1.03	103	65-125	PASS
ICSAB1	ICSAB	1	0.89	89.053	65-125	PASS
MB-70629	MBLK	1	1.12	111.95	65-125	PASS
LCS-70629	LCS	1	1.087	108.7	65-125	PASS
N032065-003B	SAMP	1	0.98	98.14	65-125	PASS
N032065-003B	SAMP	5	1.009	100.9	65-125	PASS
N032065-003B-PS	PS	1	0.97	96.56	65-125	PASS
N032065-003B-MS	MS	1	1.025	102.47	65-125	PASS
N032065-003B-MSD	MSD	1	1.02	102.04	65-125	PASS
N032065-004B	SAMP	1	1.015	101.54	65-125	PASS
N032065-005B	SAMP	1	1.036	103.6	65-125	PASS
N032065-006B	SAMP	1	1.052	105.24	65-125	PASS
CCV1	CCV	1	1.017	101.69	65-125	PASS
CCB1	CCB	1	1.04	103.98	65-125	PASS
N032065-007B	SAMP	1	1.032	103.25	65-125	PASS
N032065-008B	SAMP	1	1.033	103.33	65-125	PASS
N032065-009B	SAMP	1	1.024	102.37	65-125	PASS
N032065-010B	SAMP	1	1.05	104.95	65-125	PASS
N032065-013B	SAMP	1	1.068	106.84	65-125	PASS
N032065-014B	SAMP	1	1.045	104.46	65-125	PASS
N032065-015B	SAMP	1	1.02	102.01	65-125	PASS
CCV2	CCV	1	1.021	102.07	65-125	PASS
CCB2	CCB	1	1.041	104.1	65-125	PASS
CCV3	CCV	1	1.023	102.31	65-125	PASS
CCB3	CCB	1	1.042	104.22	65-125	PASS
CCV4	CCV	1	1.013	101.32	65-125	PASS
CCB4	CCB	1	1.043	104.26	65-125	PASS
ICSA2	ICSA	1	0.95	94.52	65-125	PASS
ICSAB2	ICSAB	1	0.88	87.7	65-125	PASS

# SERIAL DILUTION/ POST DIGESTION SPIKE



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-Metals in Water**

Work Order No.: N032065  
Test Method: EPA 6010  
Analysis Date: 9/25/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70629

Instrument ID: ICP-02  
Instrument Description: Perkin Elmer Optima DV Series

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Fe. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032065-003B DT 5X	Iron	ug/L	0	NA	22.72119	100.00%	10

Note: NA - Not applicable

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WDPGEPBB**

Sample ID	<b>N032065-003B-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>6010_WDPG</b>	Units:	<b>ug/L</b>	Prep Date:		RunNo:	<b>128807</b>		
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70629</b>	TestNo:	<b>EPA 6010B EPA 3010A</b>			Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>3151473</b>		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron		101.356		20	100.0	22.72	78.6	80	120				S

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Metals by ICP**  
 Method Number: EPA 200.7/ 6010  
 Analysis Date(s): 10/6, 10/7,11/10/17  
 Analyst: Mary Claire Ignacio

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **ICP-02**

Acceptance Criteria: MDL < spike < 10XMDL

Analyte	Wavelength	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	MDL	PQL
Ag	328.069	0.0033	0.0031	0.0033	0.0033	0.0031	0.0030	0.0047	0.003	0.00061604	<b>0.001936</b>	0.003
Al	237.312	0.0664	0.0603	0.0656	0.0650	0.0658	0.0660	0.0946	0.050	0.01254823	<b>0.039439</b>	0.050
As	188.983	0.0131	0.0089	0.0120	0.0089	0.0060	0.0102	0.0080	0.010	0.00223806	<b>0.007034</b>	0.010
B	249.679	0.1491	0.1267	0.1281	0.1467	0.1261	0.1195	0.1015	0.100	0.01801843	<b>0.056632</b>	0.100
Ba	233.529	0.0033	0.0031	0.0033	0.0031	0.0032	0.0030	0.0024	0.003	0.00033070	<b>0.001039</b>	0.003
Be	313.104	0.0012	0.0011	0.0012	0.0012	0.0011	0.0011	0.0011	0.001	0.00006873	<b>0.000216</b>	0.001
Ca	227.546	0.2381	0.2231	0.2559	0.2299	0.2194	0.2473	0.2691	0.200	0.02202408	<b>0.069222</b>	0.200
Cd	214.437	0.0031	0.0029	0.0031	0.0032	0.0031	0.0031	0.0025	0.003	0.00027049	<b>0.000850</b>	0.003
Co	228.614	0.0030	0.0028	0.0030	0.0031	0.0031	0.0031	0.0027	0.003	0.00014491	<b>0.000455</b>	0.003
Cr	267.719	0.0009	0.0008	0.0009	0.0012	0.0012	0.0013	0.0009	0.001	0.00017120	<b>0.000538</b>	0.001
Fe	273.953	0.0255	0.0226	0.0242	0.0255	0.0252	0.0248	0.0387	0.020	0.00552308	<b>0.017359</b>	0.020
Mg	279.079	0.1124	0.1052	0.1129	0.1315	0.1305	0.1314	0.1435	0.100	0.01532024	<b>0.048152</b>	0.100
Mn	257.607	0.0119	0.0111	0.0120	0.0122	0.0121	0.0122	0.0099	0.010	0.00098403	<b>0.003093</b>	0.010
Mo	202.03	0.0079	0.0068	0.0067	0.0065	0.0065	0.0062	0.0057	0.005	0.00083918	<b>0.002638</b>	0.005
Ni	231.604	0.0061	0.0056	0.0062	0.0060	0.0060	0.0062	0.0045	0.005	0.00062690	<b>0.001970</b>	0.005
Pb	220.351	0.0124	0.0117	0.0127	0.0115	0.0120	0.0118	0.0090	0.010	0.00126325	<b>0.003970</b>	0.010
Sb	206.836	0.0102	0.0095	0.0104	0.0112	0.0117	0.0111	0.0080	0.010	0.00117407	<b>0.003690</b>	0.010
Se	196.025	0.0102	0.0087	0.0114	0.0136	0.0144	0.0136	0.0075	0.010	0.00251341	<b>0.007900</b>	0.010
Sn	189.927	0.0095	0.0084	0.0090	0.0124	0.0126	0.0129	0.0099	0.010	0.00175765	<b>0.005524</b>	0.010
Ti	334.943	0.0114	0.0106	0.0115	0.0115	0.0115	0.0115	0.0098	0.010	0.00074093	<b>0.002329</b>	0.010
Tl	190.794	0.0170	0.0150	0.0165	0.0171	0.0180	0.0168	0.0151	0.015	0.00116288	<b>0.003655</b>	0.015
V	292.404	0.0025	0.0024	0.0025	0.0032	0.0032	0.0032	0.0027	0.003	0.00038496	<b>0.001210</b>	0.003
Zn	206.201	0.0109	0.0100	0.0107	0.0125	0.0124	0.0124	0.0095	0.010	0.00123731	<b>0.003889</b>	0.010



**ASSET LABORATORIES**

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 ELAP Cert 2921

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
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# METHOD DETECTION LIMIT 2017

Method Name: **Metals by ICP**  
 Method Number: EPA 200.7/ 6010  
 Analysis Date(s): 10/6, 10/7, 11/10/17  
 Analyst: Mary Claire Ignacio

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **ICP-02**

Analyte	ICP-02 MDL	MDL Blank	Higher MDL	LOD	PQL
Ag	0.001936	0.002362	0.002362	0.002	0.003
Al	0.039439	0.039859	0.039859	0.04	0.5
As	0.007034	0.007672	0.007672	0.0075	0.01
B	0.056632	0.074419	0.074419	0.075	0.1
Ba	0.001039	0.000433	0.001039	0.001	0.003
Be	0.000216	0.000311	0.000311	0.0005	0.003
Ca	0.069222	0.084832	0.084832	0.1	0.5
Cd	0.000850	0.000592	0.000850	0.001	0.003
Co	0.000455	0.001902	0.001902	0.001	0.003
Cr	0.000538	0.000527	0.000538	0.001	0.003
Fe	0.017359	0.017751	0.017751	0.018	0.1
Mg	0.048152	0.043017	0.048152	0.05	0.1
Mn	0.003093	0.000782	0.003093	0.005	0.5
Mo	0.002638	0.002482	0.002638	0.0025	0.005
Ni	0.001970	0.000822	0.001970	0.0025	0.005
Pb	0.003970	0.002762	0.003970	0.005	0.005
Sb	0.003690	0.004504	0.004504	0.005	0.01
Se	0.007900	0.008549	0.008549	0.008	0.01
Sn	0.005524	0.003415	0.005524	0.0075	0.05
Ti	0.002329	0.001493	0.002329	0.005	0.05
Tl	0.003655	0.005987	0.005987	0.005	0.015
V	0.001210	0.000749	0.001210	0.002	0.003
Zn	0.003889	0.007683	0.007683	0.008	0.01



# EPA 6010B



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
REV 2.1  
072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70628  
ASSET #: N032065

Instrument ID: ICPMS-02  
Analyst: CEI

Method:  
 EPA 6010B / 200.7 TOTAL       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 9/25/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)			X			X
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits	X			X		
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented			X			X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

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	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
2nd Level Reviewer Harvey 9/26/2018

Date: 9/26/18  
Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## SAMPLE CALCULATION

**METHOD:** EPA 6010B  
**TEST NAME:** Heavy Metals by ICP  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Iron concentration, in ug/L, in the original sample as follows:

$$\text{Iron, ug/L} = A * DF * PF * CF$$

where:

A = mg/L, calculated concentration  
DF = Dilution Factor  
PF = Final Volume of Digestate, mL / Amount of Sample, mL  
CF = Conversion Factor from mg/L to ug/L, 1000

For Sample **N032065-003C**, the concentration in ug/L is calculated as follows:

$$\text{Iron, ug/L} = 0.03397 * 1 * (25/25) * 1000$$

$$\text{Iron, ug/L} = 33.97$$

Reporting results in two significant figures,

$$\text{Iron, ug/L} = \mathbf{34}$$

# % RSD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**RSD SUMMARY: 180925A**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Fe	0	4.19	15	PASS
Standard1	ICAL	1	Fe	0.02	2.94	15	PASS
Standard2	ICAL	1	Fe	0.05	1.024	15	PASS
Standard3	ICAL	1	Fe	2	0.68	15	PASS
Standard4	ICAL	1	Fe	5	0.38	15	PASS
Standard5	ICAL	1	Fe	7.5	0.8	15	PASS
Standard6	ICAL	1	Fe	10	0.17	15	PASS
Standard7	ICAL	1	Fe	20	0.18	15	PASS
ICV	ICV	1	Fe	10.08	0.083	15	PASS
ICB	ICB	1	Fe	0.0012	40.8	15	<PQL
LLICV1	CCV1	1	Fe	0.02	2.77	20	PASS
ICSA1	ICSA	1	Fe	181.31	0.53	15	PASS
ICSAB1	ICSAB	1	Fe	178.27	0.34	15	PASS
CCV1	CCV	1	Fe	10.077	0.05	15	PASS
CCB1	CCB	1	Fe	0.0012	90.19	15	<PQL
MB-70628	MBLK	1	Fe	0.00021	272.47	15	<PQL
LCS-70628	LCS	1	Fe	0.1	0.33	15	PASS
N032065-003C	SAMP	1	Fe	0.034	1.026	15	PASS
CCV2	CCV	1	Fe	10.14	0.16	15	PASS
CCB2	CCB	1	Fe	0.00039	88.086	15	<PQL
N032065-003C	SAMP	5	Fe	0.0076	12.43	15	PASS
N032065-003C-PS	PS	1	Fe	0.13	0.67	15	PASS
N032065-003C-MS	MS	1	Fe	0.14	1.23	15	PASS
N032065-003C-MSD	MSD	1	Fe	0.14	0.81	15	PASS
N032065-004C	SAMP	1	Fe	0.034	7.17	15	PASS
N032065-005C	SAMP	1	Fe	0.032	0.84	15	PASS
N032065-006C	SAMP	1	Fe	0.032	2.51	15	PASS
N032065-007C	SAMP	1	Fe	0.036	1.51	15	PASS
N032065-008C	SAMP	1	Fe	0.028	2.41	15	PASS
N032065-009C	SAMP	1	Fe	0.033	3.58	15	PASS
CCV3	CCV	1	Fe	10.11	0.044	15	PASS
CCB3	CCB	1	Fe	0.0014	23.79	15	<PQL
N032065-010C	SAMP	1	Fe	0.039	1.28	15	PASS
N032065-013C	SAMP	1	Fe	0.036	1.32	15	PASS
N032065-014C	SAMP	1	Fe	0.033	2.66	15	PASS
N032065-015C	SAMP	1	Fe	0.033	6.55	15	PASS
CCV4	CCV	1	Fe	10.015	0.17	15	PASS
CCB4	CCB	1	Fe	0.0019	20	15	<PQL
ICSA2	ICSA	1	Fe	181.11	0.27	15	PASS
ICSAB2	ICSAB	1	Fe	176.87	0.23	15	PASS



# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INJECTION LOG: 180925A**

**Instrument ID: ICP-02**

STANDARD CODE	
Standard1	MWST-180420A,0.5<50mL
Standard2	MWST-180601F
Standard3	MWST-180601J,5<50mL
Standard4	MWST-180601J,12.5<50mL
Standard5	MWST-180601J,15<40mL
Standard6	MWST-180601J,25<50mL
Standard7	MWST-180601J
ICV	MWST-180430E
CCV	MWST-180601J,25<50mL
ICSA/ICSAB	MWST-180420F/ -180730A
Int. Std. (Y)	MSST-180420B/A
PS Spike	MWST-180517E/ -180430F/ -180601B

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	09/25/2018	07:44:30 AM
2	Standard1	ICAL	1	09/25/2018	07:49:50 AM
3	Standard2	ICAL	1	09/25/2018	07:55:09 AM
11	Standard3	ICAL	1	09/25/2018	08:00:28 AM
12	Standard4	ICAL	1	09/25/2018	08:05:49 AM
6	Standard5	ICAL	1	09/25/2018	08:11:12 AM
7	Standard6	ICAL	1	09/25/2018	08:16:31 AM
8	Standard7	ICAL	1	09/25/2018	08:21:24 AM
9	ICV	ICV	1	09/25/2018	08:24:51 AM
1	ICB	ICB	1	09/25/2018	08:31:45 AM
2	LLICV1	CCV1	1	09/25/2018	08:37:04 AM
4	ICSA1	ICSA	1	09/25/2018	08:42:22 AM
5	ICSAB1	ICSAB	1	09/25/2018	08:49:53 AM
38	MB-70629	MBLK	1	09/25/2018	08:56:57 AM
39	LCS-70629	LCS	1	09/25/2018	09:02:17 AM
40	N032065-003B	SAMP	1	09/25/2018	09:07:37 AM
41	N032065-003B	SAMP	5	09/25/2018	09:12:57 AM
42	N032065-003B-PS	PS	1	09/25/2018	09:18:18 AM
43	N032065-003B-MS	MS	1	09/25/2018	09:23:39 AM
44	N032065-003B-MSD	MSD	1	09/25/2018	09:28:59 AM
45	N032065-004B	SAMP	1	09/25/2018	09:34:20 AM
46	N032065-005B	SAMP	1	09/25/2018	09:39:42 AM
47	N032065-006B	SAMP	1	09/25/2018	09:45:02 AM
7	CCV1	CCV	1	09/25/2018	09:50:24 AM
1	CCB1	CCB	1	09/25/2018	09:57:18 AM
48	N032065-007B	SAMP	1	09/25/2018	10:02:51 AM
49	N032065-008B	SAMP	1	09/25/2018	10:08:12 AM
50	N032065-009B	SAMP	1	09/25/2018	10:13:35 AM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
51	N032065-010B	SAMP	1	09/25/2018	10:18:56 AM
52	N032065-013B	SAMP	1	09/25/2018	10:24:17 AM
53	N032065-014B	SAMP	1	09/25/2018	10:29:37 AM
54	N032065-015B	SAMP	1	09/25/2018	10:34:58 AM
55	MB-70628	MBLK	1	09/25/2018	10:40:19 AM
56	LCS-70628	LCS	1	09/25/2018	10:45:39 AM
57	N032065-003C	SAMP	1	09/25/2018	10:50:59 AM
7	CCV2	CCV	1	09/25/2018	10:56:20 AM
1	CCB2	CCB	1	09/25/2018	11:03:14 AM
58	N032065-003C	SAMP	5	09/25/2018	11:08:32 AM
59	N032065-003C-PS	PS	1	09/25/2018	11:13:53 AM
60	N032065-003C-MS	MS	1	09/25/2018	11:19:15 AM
61	N032065-003C-MSD	MSD	1	09/25/2018	11:24:38 AM
62	N032065-004C	SAMP	1	09/25/2018	11:30:01 AM
63	N032065-005C	SAMP	1	09/25/2018	11:35:37 AM
64	N032065-006C	SAMP	1	09/25/2018	11:40:58 AM
65	N032065-007C	SAMP	1	09/25/2018	11:46:20 AM
66	N032065-008C	SAMP	1	09/25/2018	11:51:42 AM
67	N032065-009C	SAMP	1	09/25/2018	11:57:04 AM
7	CCV3	CCV	1	09/25/2018	12:02:26 PM
1	CCB3	CCB	1	09/25/2018	12:09:19 PM
68	N032065-010C	SAMP	1	09/25/2018	12:14:38 PM
69	N032065-013C	SAMP	1	09/25/2018	12:20:02 PM
70	N032065-014C	SAMP	1	09/25/2018	12:25:23 PM
71	N032065-015C	SAMP	1	09/25/2018	12:30:48 PM
72	MB-70687	MBLK	1	09/25/2018	12:36:10 PM
73	LCS-70687	LCS	1	09/25/2018	12:41:31 PM
74	N032084-001B	SAMP	1	09/25/2018	12:46:52 PM
75	N032084-001B	SAMP	5	09/25/2018	12:52:14 PM
76	N032084-001B-PS	PS	1	09/25/2018	12:57:35 PM
77	N032084-001B-MS	MS	1	09/25/2018	01:02:57 PM
7	CCV4	CCV	1	09/25/2018	01:08:19 PM
1	CCB4	CCB	1	09/25/2018	01:15:13 PM
4	ICSA2	ICSA	1	09/25/2018	01:20:02 PM
5	ICSAB2	ICSAB	1	09/25/2018	01:27:33 PM
78	N032084-001B-MSD	MSD	1	09/25/2018	01:34:37 PM
79	N032084-002B	SAMP	1	09/25/2018	01:39:59 PM
80	N032084-003B	SAMP	1	09/25/2018	01:45:20 PM
81	N032084-004B	SAMP	1	09/25/2018	01:50:41 PM
82	N032084-005B	SAMP	1	09/25/2018	01:56:03 PM
83	N032084-006B	SAMP	1	09/25/2018	02:01:25 PM
84	N032084-007B	SAMP	1	09/25/2018	02:06:47 PM
85	N032084-008B	SAMP	1	09/25/2018	02:12:10 PM
86	N032084-009B	SAMP	1	09/25/2018	02:17:31 PM
87	N032084-010B	SAMP	1	09/25/2018	02:22:53 PM
7	CCV5	CCV	1	09/25/2018	02:28:16 PM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CCB5	CCB	1	09/25/2018	02:33:09 PM
88	N032084-011B	SAMP	1	09/25/2018	02:38:27 PM
89	N032084-012B	SAMP	1	09/25/2018	02:43:48 PM
90	N032084-013B	SAMP	1	09/25/2018	02:49:09 PM
91	N032084-014B	SAMP	1	09/25/2018	02:54:31 PM
92	N032084-015B	SAMP	1	09/25/2018	02:59:52 PM
93	MB-70686	MBLK	1	09/25/2018	03:05:14 PM
94	LCS-70686	LCS	1	09/25/2018	03:10:35 PM
95	N032084-001C	SAMP	1	09/25/2018	03:15:56 PM
96	N032084-001C	SAMP	5	09/25/2018	03:21:18 PM
97	N032084-001C-PS	PS	1	09/25/2018	03:26:38 PM
7	CCV6	CCV	1	09/25/2018	03:32:00 PM
1	CCB6	CCB	1	09/25/2018	03:38:53 PM
98	N032084-001C-MS	MS	1	09/25/2018	03:44:11 PM
99	N032084-001C-MSD	MSD	1	09/25/2018	03:49:34 PM
100	N032084-002C	SAMP	1	09/25/2018	03:54:56 PM
101	N032084-003C	SAMP	1	09/25/2018	04:00:18 PM
102	N032084-004C	SAMP	1	09/25/2018	04:05:41 PM
103	N032084-005C	SAMP	1	09/25/2018	04:11:03 PM
104	N032084-006C	SAMP	1	09/25/2018	04:16:26 PM
105	N032084-007C	SAMP	1	09/25/2018	04:21:48 PM
106	N032084-008C	SAMP	1	09/25/2018	04:27:11 PM
107	N032084-009C	SAMP	1	09/25/2018	04:32:37 PM
7	CCV7	CCV	1	09/25/2018	04:37:59 PM
1	CCB7	CCB	1	09/25/2018	04:44:53 PM
108	N032084-010C	SAMP	1	09/25/2018	04:50:12 PM
109	N032084-011C	SAMP	1	09/25/2018	04:55:34 PM
110	N032084-012C	SAMP	1	09/25/2018	05:00:57 PM
111	N032084-013C	SAMP	1	09/25/2018	05:06:19 PM
112	N032084-014C	SAMP	1	09/25/2018	05:11:42 PM
113	N032084-015C	SAMP	1	09/25/2018	05:17:05 PM
7	CCV8	CCV	1	09/25/2018	05:22:29 PM
1	CCB8	CCB	1	09/25/2018	05:29:23 PM
4	ICSA3	ICSA	1	09/25/2018	05:34:42 PM
5	ICSAB3	ICSAB	1	09/25/2018	05:42:14 PM

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 9/13/2018 3:00:00 P

Reviewed/ Date: *MM* 9/26/2018

Page: 1 of 2

Prep End Date: 9/13/2018 7:30:00 P

Initials/ Date: *CS* 9/26/2018

Prep Factor Units  
mL / mL

Temp. (°C):  
94.6

Location:  
01-10

Prep Batch 70628 Prep Code: 3010\_W

Technician: Claire Ignacio

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70628	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70628	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N032065-003C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-003C-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-003C-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-004C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-005C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-006C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-007C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-008C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-009C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-010C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-013C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-014C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
10132	NITRIC ACID
10136	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-180430F	ICP Solution B	LCS,MS,MSD	0.5
MWST-180517E	ICP Solution A	LCS,MS,MSD	0.5
MWST-180601B	ICP Solution C	LCS,MS,MSD	0.5

**ASSET Laboratories**

**PREP BATCH REPORT**

Prep Start Date: **9/13/2018 3:00:00 P**

Reviewed/ Date: *Manly* 9/26/2018  
*Manly* 9/26/2018

Page: 2 of 2

Prep End Date: **9/13/2018 7:30:00 P**

Initials/ Date: \_\_\_\_\_

Prep Factor Units

Temp. (°C):

Location:

Prep Batch **70628** Prep Code: **3010\_W**

Technician: **Claire Ignacio**

mL / mL

**94.6**

**01-10**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N032065-015C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
10132	NITRIC ACID
10136	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-180430F	ICP Solution B	LCS,MS,MSD	0.5
MWST-180517E	ICP Solution A	LCS,MS,MSD	0.5
MWST-180601B	ICP Solution C	LCS,MS,MSD	0.5

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



**INITIAL CALIBRATION SUMMARY: 180925A**

**Instrument ID: ICP-02**

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
<b>Iron</b>								
CalBlk	09/25/2018	07:44:30 AM	Fe	273.953	-423	0.00	mg/L	
Standard1	09/25/2018	07:49:50 AM	Fe	273.953	543	0.0200	mg/L	
Standard2	09/25/2018	07:55:09 AM	Fe	273.953	1934	0.050	mg/L	
Standard3	09/25/2018	08:00:28 AM	Fe	273.953	54835	2.000	mg/L	
Standard4	09/25/2018	08:05:49 AM	Fe	273.953	137778	5.000	mg/L	
Standard5	09/25/2018	08:11:12 AM	Fe	273.953	208671	7.500	mg/L	
Standard6	09/25/2018	08:16:31 AM	Fe	273.953	272555	10.000	mg/L	
Standard7	09/25/2018	08:21:24 AM	Fe	273.953	530345	20.000	mg/L	0.9998

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WPGEPB**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151558</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10080.191	20	10000	0	101	90	110				

Sample ID <b>LLICV1</b>	SampType: <b>CCV1</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151560</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	20.100	20	20.00	0	101	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151573</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10077.270	20	10000	0	101	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151585</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10145.312	20	10000	0	101	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151597</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10104.978	20	10000	0	101	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010\_WPGEPPB**

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>
Client ID: <b>CCV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151678</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron	10014.542	20	10000	0	100	90	110
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Sample ID <b>CCV5</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>
Client ID: <b>CCV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152130</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron	10000.936	20	10000	0	100	90	110
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Sample ID <b>CCV6</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>
Client ID: <b>CCV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152142</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron	10069.320	20	10000	0	101	90	110
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Sample ID <b>CCV7</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>
Client ID: <b>CCV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152154</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron	10105.492	20	10000	0	101	90	110
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Sample ID <b>CCV8</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>
Client ID: <b>CCV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152162</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron	10039.987	20	10000	0	100	90	110
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WPGEPB**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151559</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.226 20

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151574</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.167 20

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151586</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 0.393 20

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151598</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.353 20

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151679</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.938 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

# ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010\_WPGEPPB**

Sample ID <b>CCB5</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152131</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 2.540 20

Sample ID <b>CCB6</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152143</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 2.395 20

Sample ID <b>CCB7</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152155</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.924 20

Sample ID <b>CCB8</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152163</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 2.194 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WPGEPB**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151561</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	512534.632	50	500000	0	103	80	120				
Calcium	512266.139	500	500000	0	102	80	120				
Iron	181310.298	20	200000	0	90.7	80	120				
Magnesium	471619.155	100	500000	0	94.3	80	120				

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151562</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	546091.686	50	500000	0	109	80	120				
Calcium	537615.077	500	500000	0	108	80	120				
Iron	178272.494	20	200000	0	89.1	80	120				
Magnesium	491439.486	100	500000	0	98.3	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151680</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	511071.415	50	500000	0	102	80	120				
Calcium	489537.232	500	500000	0	97.9	80	120				
Iron	181113.701	20	200000	0	90.6	80	120				
Magnesium	415621.434	100	500000	0	83.1	80	120				

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151681</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	547107.889	50	500000	0	109	80	120				
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010\_WPGEPPB**

Sample ID <b>ICSAB2</b>	SampType: <b>ICSAB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151681</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	513720.470	500	500000	0	103	80	120				
Iron	176866.353	20	200000	0	88.4	80	120				
Magnesium	463516.592	100	500000	0	92.7	80	120				

Sample ID <b>ICSA3</b>	SampType: <b>ICSA</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152164</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	514857.745	50	500000	0	103	80	120				
Calcium	494133.116	500	500000	0	98.8	80	120				
Iron	182013.944	20	200000	0	91.0	80	120				
Magnesium	468342.465	100	500000	0	93.7	80	120				

Sample ID <b>ICSAB3</b>	SampType: <b>ICSAB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152165</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	550755.999	50	500000	0	110	80	120				
Calcium	518943.166	500	500000	0	104	80	120				
Iron	177724.055	20	200000	0	88.9	80	120				
Magnesium	483705.740	100	500000	0	96.7	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## INTERNAL STANDARD: 180925A

Instrument ID: ICP-02

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
CalBlk	IBLK	1	1	100	65-125	PASS
Standard1	ICAL	1	1.0047	100.47	65-125	PASS
Standard2	ICAL	1	1.033	103.34	65-125	PASS
Standard3	ICAL	1	1.012	101.2	65-125	PASS
Standard4	ICAL	1	1.0004	100.04	65-125	PASS
Standard5	ICAL	1	1.027	102.7	65-125	PASS
Standard6	ICAL	1	1.012	101.22	65-125	PASS
Standard7	ICAL	1	0.99	98.66	65-125	PASS
ICV	ICV	1	1.019	101.91	65-125	PASS
ICB	ICB	1	1.043	104.26	65-125	PASS
LLICV1	CCV1	1	1.029	102.92	65-125	PASS
ICSA1	ICSA	1	1.03	103	65-125	PASS
ICSAB1	ICSAB	1	0.89	89.053	65-125	PASS
CCV1	CCV	1	1.017	101.69	65-125	PASS
CCB1	CCB	1	1.04	103.98	65-125	PASS
MB-70628	MBLK	1	1.026	102.61	65-125	PASS
LCS-70628	LCS	1	1.1	110.03	65-125	PASS
N032065-003C	SAMP	1	1.058	105.82	65-125	PASS
CCV2	CCV	1	1.021	102.07	65-125	PASS
CCB2	CCB	1	1.041	104.1	65-125	PASS
N032065-003C	SAMP	5	1.021	102.13	65-125	PASS
N032065-003C-PS	PS	1	1.027	102.73	65-125	PASS
N032065-003C-MS	MS	1	1.031	103.07	65-125	PASS
N032065-003C-MSD	MSD	1	1.031	103.08	65-125	PASS
N032065-004C	SAMP	1	1.056	105.63	65-125	PASS
N032065-005C	SAMP	1	1.035	103.48	65-125	PASS
N032065-006C	SAMP	1	1.072	107.24	65-125	PASS
N032065-007C	SAMP	1	1.046	104.55	65-125	PASS
N032065-008C	SAMP	1	1.042	104.18	65-125	PASS
N032065-009C	SAMP	1	1.045	104.49	65-125	PASS
CCV3	CCV	1	1.023	102.31	65-125	PASS
CCB3	CCB	1	1.042	104.22	65-125	PASS
N032065-010C	SAMP	1	1.038	103.85	65-125	PASS
N032065-013C	SAMP	1	0.99	99.18	65-125	PASS
N032065-014C	SAMP	1	1.046	104.56	65-125	PASS
N032065-015C	SAMP	1	1.062	106.22	65-125	PASS
CCV4	CCV	1	1.013	101.32	65-125	PASS
CCB4	CCB	1	1.043	104.26	65-125	PASS
ICSA2	ICSA	1	0.95	94.52	65-125	PASS
ICSAB2	ICSAB	1	0.88	87.7	65-125	PASS

# SERIAL DILUTION/ POST DIGESTION SPIKE



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ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-Metals in Water**

Work Order No.: N032065  
Test Method: EPA 6010  
Analysis Date: 9/25/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70628

Instrument ID: ICP-02  
Instrument Description: Perkin Elmer Optima DV Series

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Fe. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032065-003C DT 5X	Iron	ug/L	0	NA	33.96564	100.00%	10

Note: NA - Not applicable

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WPGEPBB**

Sample ID	<b>N032065-003C-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>6010_WPGE</b>	Units:	<b>ug/L</b>	Prep Date:		RunNo:	<b>128810</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70628</b>	TestNo:	<b>EPA 6010B EPA 3010A</b>			Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>3151588</b>
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
Iron		134.777		20	100.0	33.97	101	80	120		

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Metals by ICP**  
 Method Number: EPA 200.7/ 6010  
 Analysis Date(s): 10/6, 10/7,11/10/17  
 Analyst: Mary Claire Ignacio

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **ICP-02**

Acceptance Criteria: MDL < spike < 10XMDL

Analyte	Wavelength	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	MDL	PQL
Ag	328.069	0.0033	0.0031	0.0033	0.0033	0.0031	0.0030	0.0047	0.003	0.00061604	<b>0.001936</b>	0.003
Al	237.312	0.0664	0.0603	0.0656	0.0650	0.0658	0.0660	0.0946	0.050	0.01254823	<b>0.039439</b>	0.050
As	188.983	0.0131	0.0089	0.0120	0.0089	0.0060	0.0102	0.0080	0.010	0.00223806	<b>0.007034</b>	0.010
B	249.679	0.1491	0.1267	0.1281	0.1467	0.1261	0.1195	0.1015	0.100	0.01801843	<b>0.056632</b>	0.100
Ba	233.529	0.0033	0.0031	0.0033	0.0031	0.0032	0.0030	0.0024	0.003	0.00033070	<b>0.001039</b>	0.003
Be	313.104	0.0012	0.0011	0.0012	0.0012	0.0011	0.0011	0.0011	0.001	0.00006873	<b>0.000216</b>	0.001
Ca	227.546	0.2381	0.2231	0.2559	0.2299	0.2194	0.2473	0.2691	0.200	0.02202408	<b>0.069222</b>	0.200
Cd	214.437	0.0031	0.0029	0.0031	0.0032	0.0031	0.0031	0.0025	0.003	0.00027049	<b>0.000850</b>	0.003
Co	228.614	0.0030	0.0028	0.0030	0.0031	0.0031	0.0031	0.0027	0.003	0.00014491	<b>0.000455</b>	0.003
Cr	267.719	0.0009	0.0008	0.0009	0.0012	0.0012	0.0013	0.0009	0.001	0.00017120	<b>0.000538</b>	0.001
Fe	273.953	0.0255	0.0226	0.0242	0.0255	0.0252	0.0248	0.0387	0.020	0.00552308	<b>0.017359</b>	0.020
Mg	279.079	0.1124	0.1052	0.1129	0.1315	0.1305	0.1314	0.1435	0.100	0.01532024	<b>0.048152</b>	0.100
Mn	257.607	0.0119	0.0111	0.0120	0.0122	0.0121	0.0122	0.0099	0.010	0.00098403	<b>0.003093</b>	0.010
Mo	202.03	0.0079	0.0068	0.0067	0.0065	0.0065	0.0062	0.0057	0.005	0.00083918	<b>0.002638</b>	0.005
Ni	231.604	0.0061	0.0056	0.0062	0.0060	0.0060	0.0062	0.0045	0.005	0.00062690	<b>0.001970</b>	0.005
Pb	220.351	0.0124	0.0117	0.0127	0.0115	0.0120	0.0118	0.0090	0.010	0.00126325	<b>0.003970</b>	0.010
Sb	206.836	0.0102	0.0095	0.0104	0.0112	0.0117	0.0111	0.0080	0.010	0.00117407	<b>0.003690</b>	0.010
Se	196.025	0.0102	0.0087	0.0114	0.0136	0.0144	0.0136	0.0075	0.010	0.00251341	<b>0.007900</b>	0.010
Sn	189.927	0.0095	0.0084	0.0090	0.0124	0.0126	0.0129	0.0099	0.010	0.00175765	<b>0.005524</b>	0.010
Ti	334.943	0.0114	0.0106	0.0115	0.0115	0.0115	0.0115	0.0098	0.010	0.00074093	<b>0.002329</b>	0.010
Tl	190.794	0.0170	0.0150	0.0165	0.0171	0.0180	0.0168	0.0151	0.015	0.00116288	<b>0.003655</b>	0.015
V	292.404	0.0025	0.0024	0.0025	0.0032	0.0032	0.0032	0.0027	0.003	0.00038496	<b>0.001210</b>	0.003
Zn	206.201	0.0109	0.0100	0.0107	0.0125	0.0124	0.0124	0.0095	0.010	0.00123731	<b>0.003889</b>	0.010



**ASSET LABORATORIES**  
ANALYTICAL SERVICES

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 ELAP Cert 2921

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
 ELAP Cert 2676 | NV Cert NV00922 | ORELAP/NELAP 4046

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# METHOD DETECTION LIMIT 2017

Method Name: **Metals by ICP**  
 Method Number: EPA 200.7/ 6010  
 Analysis Date(s): 10/6, 10/7, 11/10/17  
 Analyst: Mary Claire Ignacio

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **ICP-02**

Analyte	ICP-02 MDL	MDL Blank	Higher MDL	LOD	PQL
Ag	0.001936	0.002362	0.002362	0.002	0.003
Al	0.039439	0.039859	0.039859	0.04	0.5
As	0.007034	0.007672	0.007672	0.0075	0.01
B	0.056632	0.074419	0.074419	0.075	0.1
Ba	0.001039	0.000433	0.001039	0.001	0.003
Be	0.000216	0.000311	0.000311	0.0005	0.003
Ca	0.069222	0.084832	0.084832	0.1	0.5
Cd	0.000850	0.000592	0.000850	0.001	0.003
Co	0.000455	0.001902	0.001902	0.001	0.003
Cr	0.000538	0.000527	0.000538	0.001	0.003
Fe	0.017359	0.017751	0.017751	0.018	0.1
Mg	0.048152	0.043017	0.048152	0.05	0.1
Mn	0.003093	0.000782	0.003093	0.005	0.5
Mo	0.002638	0.002482	0.002638	0.0025	0.005
Ni	0.001970	0.000822	0.001970	0.0025	0.005
Pb	0.003970	0.002762	0.003970	0.005	0.005
Sb	0.003690	0.004504	0.004504	0.005	0.01
Se	0.007900	0.008549	0.008549	0.008	0.01
Sn	0.005524	0.003415	0.005524	0.0075	0.05
Ti	0.002329	0.001493	0.002329	0.005	0.05
Tl	0.003655	0.005987	0.005987	0.005	0.015
V	0.001210	0.000749	0.001210	0.002	0.003
Zn	0.003889	0.007683	0.007683	0.008	0.01



# EPA 6020 Dissolved



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**375**



**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70627  
 ASSET #: N032065

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 9/18/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)		X			X	
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.		X			X	
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X			X		
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits		X			X	
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X			X	X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

%RSD of Mn in N032065-014B/015B failed criteria. For rerun.  
 %Rec of Se in ICV failed, high bias. Samples affected are for rerun.  
 %Rec of Ba in N032065-003BPS/MS/MSD failed. However, LCS passed criteria.  
 Dilution test failed for As.

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer [Signature] 9/27/2018

Date: 9/27/18  
 Date: \_\_\_\_\_



**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70627  
 ASSET #: N032065

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 9/26/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits	X			X		
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented			X			X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

For Mn and Se rerun only.  
 %RSD of Se in LLICV failed criteria. However, %Rec of Se in LLICV passed criteria.

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer Handy 9/27/2018

Date: 9/27/18  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## SAMPLE CALCULATION

**METHOD:** EPA 6020  
**TEST NAME:** Heavy Metals by ICP-MS  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Barium concentration, in ug/L in the original sample as follows:

$$\text{Barium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration  
DF = Dilution Factor  
PF = Final Volume of Digestate, mL / Amount of Sample, mL

For Sample **N032065-003B**, the concentration in ug/L is calculated as follows:

$$\text{Barium, ug/L} = 110.839 * 1 * (25/25)$$

$$\text{Barium, ug/L} = 110.839$$

Reporting results in two significant figures,

$$\text{Barium, ug/L} = \mathbf{110}$$

# % RSD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



PERCENT RSD SUMMARY: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	137 Ba [3]				52 Cr [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.12	7.4	15	PASS	0.1	13.57	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.53	5.23	15	PASS	0.52	9.11	15	PASS
Std3-5/50 ppb	ICAL	1	5.11	1.42	15	PASS	5	1.92	15	PASS
Std4-10/100 ppb	ICAL	1	10.018	0.14	15	PASS	10	2.17	15	PASS
Std5-20/200 ppb	ICAL	1	20.24	0.85	15	PASS	20.13	0.61	15	PASS
Std6-40/400 ppb	ICAL	1	40.16	0.26	15	PASS	39.74	1.24	15	PASS
Std7-100/1000 ppb	ICAL	1	100.36	0.43	15	PASS	100.0075	0.29	15	PASS
Std8-200/2000 ppb	ICAL	1	199.76	0.88	15	PASS	200.036	0.73	15	PASS
ICV	ICV	1	10.11	0.66	15	PASS	10.11	1.27	15	PASS
ICB	ICB	1	0.055	8.87	15	PASS	0.0064	83.29	15	<PQL
LLICV	CCV1	1	1.07	2.33	20	PASS	1	2.96	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	0.061	58.2	15	<PQL
ICSAB1	ICSAB	1	18.26	1.9	15	PASS	20.69	1.85	15	PASS
LLICV	CCV1	1	1.048	2.4	20	PASS	1.0086	1.52	20	PASS
MB-70627	MBLK	1	0.024	11.82	15	PASS	<0.000	N/A	15	<PQL
LCS-70627	LCS	1	10.19	0.73	15	PASS	10.15	1.54	15	PASS
N032065-003B	SAMP	1	110.84	0.67	15	PASS	<0.000	N/A	15	<PQL
N032065-003B	SAMP	5	23.22	1.32	15	PASS	0.0031	420.6	15	<PQL
N032065-003B-PS	PS	1	118.11	0.25	15	PASS	9.47	0.78	15	PASS
N032065-003B-MS	MS	1	116.19	0.15	15	PASS	9.76	1.33	15	PASS
N032065-003B-MSD	MSD	1	116.18	0.43	15	PASS	9.55	0.78	15	PASS
N032065-004B	SAMP	1	107.38	0.56	15	PASS	<0.000	N/A	15	<PQL
N032065-005B	SAMP	1	108.031	0.2	15	PASS	<0.000	N/A	15	<PQL
N032065-006B	SAMP	1	109.64	0.67	15	PASS	<0.000	N/A	15	<PQL
CCV1	CCV	1	20.43	0.17	15	PASS	19.81	1.41	15	PASS
CCB1	CCB	1	0.052	10.021	15	PASS	<0.000	N/A	15	<PQL
N032065-007B	SAMP	1	108.33	0.35	15	PASS	<0.000	N/A	15	<PQL
N032065-008B	SAMP	1	108.94	1.16	15	PASS	0.022	59.18	15	<PQL
N032065-009B	SAMP	1	109.24	0.49	15	PASS	<0.000	N/A	15	<PQL
N032065-010B	SAMP	1	108.75	0.57	15	PASS	<0.000	N/A	15	<PQL
N032065-011B	SAMP	1	106.3	0.24	15	PASS	<0.000	N/A	15	<PQL
N032065-012B	SAMP	1	108.23	0.091	15	PASS	0.012	114.64	15	<PQL
N032065-013B	SAMP	1	109.25	0.65	15	PASS	<0.000	N/A	15	<PQL
N032065-014B	SAMP	1	112.99	0.2	15	PASS	<0.000	N/A	15	<PQL
N032065-015B	SAMP	1	107.94	0.76	15	PASS	<0.000	N/A	15	<PQL
CCV2	CCV	1	20.4	0.099	15	PASS	19.84	0.59	15	PASS
CCB2	CCB	1	0.052	16.13	15	<PQL	0.0021	206.86	15	<PQL
CCV3	CCV	1	20.2	0.45	15	PASS	19.91	0.8	15	PASS
CCB3	CCB	1	0.055	5.33	15	PASS	<0.000	N/A	15	<PQL
CCV4	CCV	1	20.11	1.78	15	PASS	19.99	1.049	15	PASS

PERCENT RSD SUMMARY: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	137 Ba [3]				52 Cr [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
CCB4	CCB	1	0.067	10.37	15	PASS	<0.000	N/A	15	<PQL
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	0.085	15.38	15	<PQL
ICSAB2	ICSAB	1	17.63	0.9	15	PASS	17.58	2.52	15	PASS

PERCENT RSD SUMMARY: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	55 Mn [2]				75 As [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.091	20.9	15	<PQL	0.11	37.64	15	NR!
Std2-0.5/5 ppb	ICAL	1	0.48	19.045	15	<PQL	0.55	16.99	15	NR!
Std3-5/50 ppb	ICAL	1	4.97	2.56	15	PASS	5.08	4.84	15	PASS
Std4-10/100 ppb	ICAL	1	9.79	0.56	15	PASS	9.79	4.29	15	PASS
Std5-20/200 ppb	ICAL	1	20.58	1.67	15	PASS	20.00088	2.5	15	PASS
Std6-40/400 ppb	ICAL	1	39.78	0.94	15	PASS	40.12	2.31	15	PASS
Std7-100/1000 ppb	ICAL	1	100.086	1.11	15	PASS	97.64	1.48	15	PASS
Std8-200/2000 ppb	ICAL	1	199.95	0.52	15	PASS	201.16	0.83	15	PASS
ICV	ICV	1	106.4	0.47	15	PASS	10.26	4.0018	15	PASS
ICB	ICB	1	0.014	152.76	15	<PQL	0.0034	1175.43	15	<PQL
LLICV	CCV1	1	0.52	8.52	20	PASS	0.087	49.46	20	<PQL
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	0.038	110.84	15	<PQL
ICSAB1	ICSAB	1	17.45	3.38	15	PASS	21.68	3.68	15	PASS
LLICV	CCV1	1	0.48	8.57	20	PASS	0.13	17.095	20	PASS
MB-70627	MBLK	1	<0.000	N/A	15	<PQL	0.031	133.085	15	<PQL
LCS-70627	LCS	1	105.87	1.71	15	PASS	10.18	1.89	15	PASS
N032065-003B	SAMP	1	1.00073	11.69	15	PASS	2.68	2.52	15	PASS
N032065-003B	SAMP	5	0.3	9.62	15	PASS	0.61	9.35	15	PASS
N032065-003B-PS	PS	1	100.25	1.05	15	PASS	12.76	4.36	15	PASS
N032065-003B-MS	MS	1	101.17	0.66	15	PASS	12.75	3.77	15	PASS
N032065-003B-MSD	MSD	1	101.012	1.99	15	PASS	12.81	0.91	15	PASS
N032065-004B	SAMP	1	1.1	2.44	15	PASS	2.56	4.51	15	PASS
N032065-005B	SAMP	1	1.34	10.58	15	PASS	2.64	4.75	15	PASS
N032065-006B	SAMP	1	1.37	10.46	15	PASS	2.56	4.71	15	PASS
CCV1	CCV	1	19.79	2.59	15	PASS	19.38	1.68	15	PASS
CCB1	CCB	1	0.015	29.81	15	<PQL	0.024	147.54	15	<PQL
N032065-007B	SAMP	1	0.78	8.032	15	PASS	2.56	2.93	15	PASS
N032065-008B	SAMP	1	1.19	13.49	15	PASS	2.49	6.015	15	PASS
N032065-009B	SAMP	1	1.28	3.17	15	PASS	2.59	2.7	15	PASS
N032065-010B	SAMP	1	1.31	6.58	15	PASS	2.64	2.94	15	PASS
N032065-011B	SAMP	1	1.64	8.39	15	PASS	2.44	0.67	15	PASS
N032065-012B	SAMP	1	0.31	29.6	15	<PQL	2.39	2.16	15	PASS
N032065-013B	SAMP	1	1.2	5.38	15	PASS	2.64	1.49	15	PASS
N032065-014B	SAMP	1	0.8	23.2	15	NR!	2.72	6.81	15	PASS
N032065-015B	SAMP	1	0.81	17.54	15	NR!	2.54	8.096	15	PASS
CCV2	CCV	1	19.88	1.023	15	PASS	20.17	1.39	15	PASS
CCB2	CCB	1	0.00069	2997.66	15	<PQL	<0.000	N/A	15	<PQL
CCV3	CCV	1	20.2	1.58	15	PASS	19.8	0.45	15	PASS
CCB3	CCB	1	0.015	84.089	15	<PQL	0.024	118.94	15	<PQL
CCV4	CCV	1	20.29	1.92	15	PASS	19.69	3.34	15	PASS

PERCENT RSD SUMMARY: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	55 Mn [2]				75 As [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
CCB4	CCB	1	0.00063	1599.64	15	<PQL	0.017	120.46	15	<PQL
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	0.014	264.44	15	<PQL
ICSAB2	ICSAB	1	20.67	0.49	15	PASS	17.79	0.2	15	PASS

PERCENT RSD SUMMARY: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	78 Se [1]				95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.064	92.043	15	<PQL	0.092	14.24	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.46	14.085	15	PASS	0.45	15.18	15	<PQL
Std3-5/50 ppb	ICAL	1	4.74	3.34	15	PASS	4.68	0.23	15	PASS
Std4-10/100 ppb	ICAL	1	9.23	6.9	15	PASS	9.54	1.85	15	PASS
Std5-20/200 ppb	ICAL	1	19.69	1.71	15	PASS	19.22	0.57	15	PASS
Std6-40/400 ppb	ICAL	1	40.011	4.18	15	PASS	38.74	0.89	15	PASS
Std7-100/1000 ppb	ICAL	1	100.15	1.081	15	PASS	98.85	0.35	15	PASS
Std8-200/2000 ppb	ICAL	1	204.84	1.94	15	PASS	200.94	0.46	15	PASS
ICV	ICV	1	11.12	6.13	15	PASS	10.69	0.82	15	PASS
ICB	ICB	1	0.033	173.21	15	<PQL	<0.000	N/A	15	<PQL
LLICV	CCV1	1	0.45	47.098	20	<PQL	0.42	12.1	20	PASS
ICSA1	ICSA	1	0.12	34.71	15	<PQL	0.18	6.53	15	PASS
ICSAB1	ICSAB	1	20.79	2.59	15	PASS	22.027	0.94	15	PASS
LLICV	CCV1	1	0.64	17.89	20	PASS	0.58	6.72	20	PASS
MB-70627	MBLK	1	0.028	86.61	15	<PQL	0.052	20.87	15	<PQL
LCS-70627	LCS	1	10.043	8.32	15	PASS	9.82	1.16	15	PASS
N032065-003B	SAMP	1	1.52	11.84	15	PASS	4.94	0.4	15	PASS
N032065-003B	SAMP	5	0.46	7.39	15	PASS	0.96	4.76	15	PASS
N032065-003B-PS	PS	1	12.07	5.97	15	PASS	15.57	1.06	15	PASS
N032065-003B-MS	MS	1	11.29	4.36	15	PASS	15.51	0.75	15	PASS
N032065-003B-MSD	MSD	1	11.95	7.45	15	PASS	15.59	1.75	15	PASS
N032065-004B	SAMP	1	1.75	10.19	15	PASS	4.5	1.024	15	PASS
N032065-005B	SAMP	1	1.51	13.33	15	PASS	4.61	2.5	15	PASS
N032065-006B	SAMP	1	1.59	4.94	15	PASS	4.81	3.98	15	PASS
CCV1	CCV	1	19.96	3.34	15	PASS	19.34	1.7	15	PASS
CCB1	CCB	1	0.11	57.17	15	<PQL	0.091	31.47	15	<PQL
N032065-007B	SAMP	1	1.62	11.48	15	PASS	4.55	4.58	15	PASS
N032065-008B	SAMP	1	1.51	7.23	15	PASS	4.67	1.71	15	PASS
N032065-009B	SAMP	1	1.54	9.86	15	PASS	4.68	2.39	15	PASS
N032065-010B	SAMP	1	1.52	12.62	15	PASS	4.61	0.77	15	PASS
N032065-011B	SAMP	1	1.29	4.51	15	PASS	4.89	0.59	15	PASS
N032065-012B	SAMP	1	1.41	8.47	15	PASS	4.62	2.66	15	PASS
N032065-013B	SAMP	1	1.99	3.028	15	PASS	4.61	2.58	15	PASS
N032065-014B	SAMP	1	1.32	11.56	15	PASS	4.74	4.057	15	PASS
N032065-015B	SAMP	1	1.35	14.5	15	PASS	4.43	2.47	15	PASS
CCV2	CCV	1	19.89	1.74	15	PASS	19.14	1.13	15	PASS
CCB2	CCB	1	0.055	41.75	15	<PQL	0.07	19.68	15	<PQL
CCV3	CCV	1	19.18	8.12	15	PASS	19.29	0.081	15	PASS
CCB3	CCB	1	0.085	49.55	15	<PQL	0.076	22.084	15	<PQL
CCV4	CCV	1	20.074	5.84	15	PASS	19.25	0.18	15	PASS

PERCENT RSD SUMMARY: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	78 Se [1]				95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
CCB4	CCB	1	0.03	173.21	15	<PQL	0.076	5.23	15	PASS
ICSA2	ICSA	1	0.075	68.24	15	<PQL	0.11	18.77	15	<PQL
ICSAB2	ICSAB	1	16.24	1.36	15	PASS	18.46	1.43	15	PASS

PERCENT RSD SUMMARY: 180926A

Instrument ID: ICPMS-02

Sample Name	Type	DF	55 Mn [2]				78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.14	26.13	15	<PQL	0.08	52.45	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.52	0.99	15	PASS	0.5	61.44	15	NR!
Std3-5/50 ppb	ICAL	1	5.086	4.62	15	PASS	4.94	9.88	15	PASS
Std4-10/100 ppb	ICAL	1	10.08	1.23	15	PASS	9.59	5.19	15	PASS
Std5-20/200 ppb	ICAL	1	19.96	0.91	15	PASS	20.21	5.25	15	PASS
Std6-40/400 ppb	ICAL	1	39.85	2.38	15	PASS	39.58	3.022	15	PASS
Std7-100/1000 ppb	ICAL	1	100.55	0.39	15	PASS	100.17	3.018	15	PASS
Std8-200/2000 ppb	ICAL	1	199.75	0.65	15	PASS	196.021	0.68	15	PASS
ICV	ICV	1	106.93	1.36	15	PASS	10.21	4.3	15	PASS
ICB	ICB	1	0.019	115.64	15	<PQL	<0.000	N/A	15	<PQL
LLICV	CCV1	1	0.58	1.79	20	PASS	0.5	25.36	20	NR!
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	0.05	93.46	15	<PQL
ICSAB1	ICSAB	1	18.2	3.56	15	PASS	19.27	2.49	15	PASS
MB-70627	MBLK	1	<0.000	N/A	15	<PQL	0.038	155.2	15	<PQL
LCS-70627	LCS	1	104.95	2.21	15	PASS	9.71	4.29	15	PASS
N032065-003B	SAMP	1	1.42	8.32	15	PASS	1.57	11.46	15	PASS
N032065-003B	SAMP	5	0.28	12.37	15	PASS	0.37	4.34	15	PASS
N032065-003B-PS	PS	1	100.81	0.5	15	PASS	11.061	6.64	15	PASS
N032065-003B-MS	MS	1	101.56	1.024	15	PASS	10.17	6.86	15	PASS
N032065-003B-MSD	MSD	1	102.58	0.97	15	PASS	11.6	3.25	15	PASS
N032065-004B	SAMP	1	1.26	7.71	15	PASS	1.45	11.96	15	PASS
N032065-005B	SAMP	1	1.36	2.78	15	PASS	1.48	22.65	15	NR!
N032065-006B	SAMP	1	1.62	1.3	15	PASS	1.52	3.52	15	PASS
CCV1	CCV	1	20.32	2.13	15	PASS	20.82	3.39	15	PASS
CCB1	CCB	1	0.0059	6.52	15	PASS	0.059	119.26	15	<PQL
N032065-007B	SAMP	1	1.1	3.95	15	PASS	1.39	18.97	15	NR!
N032065-008B	SAMP	1	1.46	7.43	15	PASS	1.6	3.96	15	PASS
N032065-009B	SAMP	1	1.6	6.42	15	PASS	1.68	22.86	15	NR!
N032065-010B	SAMP	1	1.64	2.81	15	PASS	1.68	8.74	15	PASS
N032065-011B	SAMP	1	1.98	5.88	15	PASS	1.24	10.46	15	PASS
N032065-012B	SAMP	1	0.48	17.99	15	<PQL	1.23	19.015	15	NR!
N032065-013B	SAMP	1	1.46	2.97	15	PASS	1.49	16.41	15	NR!
N032065-014B	SAMP	1	1.11	6.011	15	PASS	1.46	11.34	15	PASS
N032065-015B	SAMP	1	1.031	4.83	15	PASS	1.47	5.45	15	PASS
N032065-005B	SAMP	1	1.45	6.63	15	PASS	1.42	17.8	15	NR!
CCV2	CCV	1	19.89	0.77	15	PASS	18.84	2.39	15	PASS
CCB2	CCB	1	<0.000	N/A	15	<PQL	0.022	69.15	15	<PQL
N032065-007B	SAMP	1	1.11	10.49	15	PASS	1.55	20.072	15	NR!
N032065-009B	SAMP	1	1.63	6.088	15	PASS	1.47	10.54	15	PASS
N032065-012B	SAMP	1	0.5	14.46	15	PASS	1.44	3.11	15	PASS

PERCENT RSD SUMMARY: 180926A

Instrument ID: ICPMS-02

Sample Name	Type	DF	55 Mn [2]				78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N032065-013B	SAMP	1	1.36	5.14	15	PASS	1.72	5.89	15	PASS
N032065-005B	SAMP	1	1.51	2.44	15	PASS	1.51	5.65	15	PASS
N032065-007B	SAMP	1	1.12	2.62	15	PASS	1.46	15.71	15	NR!
N032065-007B	SAMP	1	1.11	15.97	15	NR!	1.48	6.35	15	PASS
CCV3	CCV	1	20.3	1.48	15	PASS	18.66	4.37	15	PASS
CCB3	CCB	1	0.0045	265.12	15	<PQL	<0.000	N/A	15	<PQL
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	<0.000	0	15	PASS
ICSAB2	ICSAB	1	18	2.086	15	PASS	20.38	1.58	15	PASS



# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"

**INJECTION LOG: 180918B**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
B0918001.D	RINSE	RINSE	1	09/18/18 11:33 PM
B0918002.D	Cal Blank	IBLK	1	09/18/18 11:38 PM
B0918003.D	Std1-0.1/1 ppb	ICAL	1	09/18/18 11:44 PM
B0918004.D	Std2-0.5/5 ppb	ICAL	1	09/18/18 11:50 PM
B0918005.D	Std3-5/50 ppb	ICAL	1	09/18/18 11:55 PM
B0918006.D	Std4-10/100 ppb	ICAL	1	09/19/18 12:01 AM
B0918007.D	Std5-20/200 ppb	ICAL	1	09/19/18 12:06 AM
B0918008.D	Std6-40/400 ppb	ICAL	1	09/19/18 12:12 AM
B0918009.D	Std7-100/1000 ppb	ICAL	1	09/19/18 12:17 AM
B0918010.D	Std8-200/2000 ppb	ICAL	1	09/19/18 12:23 AM
B0918011.D	ICV	ICV	1	09/19/18 12:29 AM
B0918012.D	ICB	ICB	1	09/19/18 12:33 AM
B0918013.D	LLICV	CCV1	1	09/19/18 12:39 AM
B0918014.D	ICSA1	ICSA	1	09/19/18 12:45 AM
B0918015.D	ICSAB1	ICSAB	1	09/19/18 12:51 AM
B0918016.D	LLICV	CCV1	1	09/19/18 12:56 AM
B0918017.D	MB-70627	MBLK	1	09/19/18 1:02 AM
B0918018.D	LCS-70627	LCS	1	09/19/18 1:08 AM
B0918019.D	N032065-003B	SAMP	1	09/19/18 1:13 AM
B0918020.D	N032065-003B	SAMP	5	09/19/18 1:19 AM
B0918021.D	N032065-003B-PS	PS	1	09/19/18 1:24 AM
B0918022.D	N032065-003B-MS	MS	1	09/19/18 1:30 AM
B0918023.D	N032065-003B-MSD	MSD	1	09/19/18 1:35 AM
B0918024.D	N032065-004B	SAMP	1	09/19/18 1:41 AM
B0918025.D	N032065-005B	SAMP	1	09/19/18 1:47 AM
B0918026.D	N032065-006B	SAMP	1	09/19/18 1:52 AM
B0918027.D	CCV1	CCV	1	09/19/18 1:58 AM
B0918028.D	CCB1	CCB	1	09/19/18 2:03 AM
B0918029.D	N032065-007B	SAMP	1	09/19/18 2:11 AM
B0918030.D	N032065-008B	SAMP	1	09/19/18 2:15 AM
B0918031.D	N032065-009B	SAMP	1	09/19/18 2:21 AM
B0918032.D	N032065-010B	SAMP	1	09/19/18 2:26 AM
B0918033.D	N032065-011B	SAMP	1	09/19/18 2:31 AM
B0918034.D	N032065-012B	SAMP	1	09/19/18 2:37 AM
B0918035.D	N032065-013B	SAMP	1	09/19/18 2:42 AM
B0918036.D	N032065-014B	SAMP	1	09/19/18 2:48 AM
B0918037.D	N032065-015B	SAMP	1	09/19/18 2:53 AM
B0918038.D	MB-70685	MBLK	1	09/19/18 2:59 AM
B0918039.D	CCV2	CCV	1	09/19/18 3:04 AM
B0918040.D	CCB2	CCB	1	09/19/18 3:10 AM
B0918041.D	LCS-70685	LCS	1	09/19/18 3:16 AM
B0918042.D	N032084-001B	SAMP	1	09/19/18 3:22 AM

**INJECTION LOG: 180918B**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
B0918043.D	N032084-001B	SAMP	5	09/19/18 3:27 AM
B0918044.D	N032084-001B-PS	PS	1	09/19/18 3:32 AM
B0918045.D	N032084-001B-MS	MS	1	09/19/18 3:38 AM
B0918046.D	N032084-001B-MSD	MSD	1	09/19/18 3:44 AM
B0918047.D	N032084-002B	SAMP	1	09/19/18 3:49 AM
B0918048.D	N032084-003B	SAMP	1	09/19/18 3:55 AM
B0918049.D	N032084-004B	SAMP	1	09/19/18 4:00 AM
B0918050.D	N032084-005B	SAMP	1	09/19/18 4:05 AM
B0918051.D	CCV3	CCV	1	09/19/18 4:12 AM
B0918052.D	CCB3	CCB	1	09/19/18 4:17 AM
B0918053.D	N032084-006B	SAMP	1	09/19/18 4:23 AM
B0918054.D	N032084-007B	SAMP	1	09/19/18 4:30 AM
B0918055.D	N032084-008B	SAMP	1	09/19/18 4:34 AM
B0918056.D	N032084-009B	SAMP	1	09/19/18 4:40 AM
B0918057.D	N032084-010B	SAMP	1	09/19/18 4:45 AM
B0918058.D	N032084-011B	SAMP	1	09/19/18 4:51 AM
B0918059.D	N032084-012B	SAMP	1	09/19/18 4:56 AM
B0918060.D	N032084-013B	SAMP	1	09/19/18 5:02 AM
B0918061.D	N032084-014B	SAMP	1	09/19/18 5:07 AM
B0918062.D	N032084-015B	SAMP	1	09/19/18 5:13 AM
B0918063.D	CCV4	CCV	1	09/19/18 5:19 AM
B0918064.D	CCB4	CCB	1	09/19/18 5:24 AM
B0918065.D	ICSA2	ICSA	1	09/19/18 5:30 AM
B0918066.D	ICSAB2	ICSAB	1	09/19/18 5:43 AM

**INJECTION LOG: 180926A**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A0926001.D	RINSE	RINSE	1	09/26/18 9:21 AM
A0926002.D	Cal Blank	IBLK	1	09/26/18 9:26 AM
A0926003.D	Std1-0.1/1 ppb	ICAL	1	09/26/18 9:32 AM
A0926004.D	Std2-0.5/5 ppb	ICAL	1	09/26/18 9:37 AM
A0926005.D	Std3-5/50 ppb	ICAL	1	09/26/18 9:43 AM
A0926006.D	Std4-10/100 ppb	ICAL	1	09/26/18 9:48 AM
A0926007.D	Std5-20/200 ppb	ICAL	1	09/26/18 9:54 AM
A0926008.D	Std6-40/400 ppb	ICAL	1	09/26/18 10:00 AM
A0926009.D	Std7-100/1000 ppb	ICAL	1	09/26/18 10:05 AM
A0926010.D	Std8-200/2000 ppb	ICAL	1	09/26/18 10:11 AM
A0926011.D	ICV	ICV	1	09/26/18 10:17 AM
A0926012.D	ICB	ICB	1	09/26/18 10:23 AM
A0926013.D	LLICV	CCV1	1	09/26/18 10:28 AM
A0926014.D	ICSA1	ICSA	1	09/26/18 10:34 AM
A0926015.D	ICSAB1	ICSAB	1	09/26/18 10:40 AM
A0926016.D	MB-70627	MBLK	1	09/26/18 10:45 AM
A0926017.D	LCS-70627	LCS	1	09/26/18 10:50 AM
A0926018.D	N032065-003B	SAMP	1	09/26/18 10:56 AM
A0926019.D	N032065-003B	SAMP	5	09/26/18 11:01 AM
A0926020.D	N032065-003B-PS	PS	1	09/26/18 11:08 AM
A0926021.D	N032065-003B-MS	MS	1	09/26/18 11:13 AM
A0926022.D	N032065-003B-MSD	MSD	1	09/26/18 11:19 AM
A0926023.D	N032065-004B	SAMP	1	09/26/18 11:24 AM
A0926024.D	N032065-005B	SAMP	1	09/26/18 11:30 AM
A0926025.D	N032065-006B	SAMP	1	09/26/18 11:35 AM
A0926026.D	CCV1	CCV	1	09/26/18 11:42 AM
A0926027.D	CCB1	CCB	1	09/26/18 11:47 AM
A0926028.D	N032065-007B	SAMP	1	09/26/18 11:52 AM
A0926029.D	N032065-008B	SAMP	1	09/26/18 11:58 AM
A0926030.D	N032065-009B	SAMP	1	09/26/18 12:03 PM
A0926031.D	N032065-010B	SAMP	1	09/26/18 12:09 PM
A0926032.D	N032065-011B	SAMP	1	09/26/18 12:14 PM
A0926033.D	N032065-012B	SAMP	1	09/26/18 12:20 PM
A0926034.D	N032065-013B	SAMP	1	09/26/18 12:25 PM
A0926035.D	N032065-014B	SAMP	1	09/26/18 12:31 PM
A0926036.D	N032065-015B	SAMP	1	09/26/18 12:37 PM
A0926037.D	N032065-005B	SAMP	1	09/26/18 12:42 PM
A0926038.D	CCV2	CCV	1	09/26/18 12:48 PM
A0926039.D	CCB2	CCB	1	09/26/18 12:53 PM
A0926040.D	N032065-007B	SAMP	1	09/26/18 12:59 PM
A0926041.D	N032065-009B	SAMP	1	09/26/18 1:04 PM
A0926042.D	N032065-012B	SAMP	1	09/26/18 1:10 PM

**INJECTION LOG: 180926A**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A0926043.D	N032065-013B	SAMP	1	09/26/18 1:17 PM
A0926044.D	N032065-005B	SAMP	1	09/26/18 1:22 PM
A0926045.D	N032065-007B	SAMP	1	09/26/18 1:28 PM
A0926046.D	N032065-007B	SAMP	1	09/26/18 1:33 PM
A0926047.D	MB-70685	MBLK	1	09/26/18 1:39 PM
A0926048.D	LCS-70685	LCS	1	09/26/18 1:45 PM
A0926049.D	N032084-001B	SAMP	1	09/26/18 1:50 PM
A0926050.D	CCV3	CCV	1	09/26/18 1:56 PM
A0926051.D	CCB3	CCB	1	09/26/18 2:01 PM
A0926052.D	ICSA2	ICSA	1	09/26/18 2:07 PM
A0926053.D	ICSAB2	ICSAB	1	09/26/18 2:12 PM
A0926054.D	N032084-001B	SAMP	1	09/26/18 2:18 PM
A0926055.D	N032084-001B	SAMP	5	09/26/18 2:23 PM
A0926056.D	N032084-001B-PS	PS	1	09/26/18 2:29 PM
A0926057.D	N032084-001B-MS	MS	1	09/26/18 2:34 PM
A0926058.D	N032084-001B-MSD	MSD	1	09/26/18 2:40 PM
A0926059.D	N032084-002B	SAMP	1	09/26/18 2:46 PM
A0926060.D	N032084-003B	SAMP	1	09/26/18 2:51 PM
A0926061.D	N032084-004B	SAMP	1	09/26/18 2:57 PM
A0926062.D	N032084-005B	SAMP	1	09/26/18 3:02 PM
A0926063.D	N032084-006B	SAMP	1	09/26/18 3:08 PM
A0926064.D	CCV4	CCV	1	09/26/18 3:13 PM
A0926065.D	CCB4	CCB	1	09/26/18 3:19 PM
A0926066.D	N032084-007B	SAMP	1	09/26/18 3:25 PM
A0926067.D	N032084-008B	SAMP	1	09/26/18 3:30 PM
A0926068.D	N032084-009B	SAMP	1	09/26/18 3:36 PM
A0926069.D	N032084-010B	SAMP	1	09/26/18 3:41 PM
A0926070.D	N032084-011B	SAMP	1	09/26/18 3:47 PM
A0926071.D	N032084-012B	SAMP	1	09/26/18 3:53 PM
A0926072.D	N032084-013B	SAMP	1	09/26/18 3:58 PM
A0926073.D	N032084-014B	SAMP	1	09/26/18 4:04 PM
A0926074.D	N032084-015B	SAMP	1	09/26/18 4:09 PM
A0926075.D	N032084-006B	SAMP	1	09/26/18 4:15 PM
A0926076.D	CCV5	CCV	1	09/26/18 4:21 PM
A0926077.D	CCB5	CCB	1	09/26/18 4:26 PM
A0926078.D	N032084-009B	SAMP	1	09/26/18 4:32 PM
A0926079.D	N032084-010B	SAMP	1	09/26/18 4:37 PM
A0926080.D	N032084-011B	SAMP	1	09/26/18 4:43 PM
A0926081.D	N032084-015B	SAMP	1	09/26/18 4:48 PM
A0926082.D	N032084-011B	SAMP	1	09/26/18 4:54 PM
A0926083.D	N032084-015B	SAMP	1	09/26/18 5:00 PM
A0926084.D	N032084-015B	SAMP	1	09/26/18 5:05 PM

**INJECTION LOG: 180926A**

**Instrument ID: ICPMS-02**

<b>Data File</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq. Date-Time</b>
A0926085.D	CCV6	CCV	1	09/26/18 5:11 PM
A0926086.D	CCB6	CCB	1	09/26/18 5:16 PM
A0926087.D	ICSA3	ICSA	1	09/26/18 5:22 PM
A0926088.D	ICSAB3	ICSAB	1	09/26/18 5:27 PM

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 9/13/2018 3:00:00

Reviewed/ Date: *Murphy* 9/27/2018

Page: 1 of 2

Prep End Date: 9/13/2018 7:30:00

Initials/ Date: *[Signature]* 9/27/2018

Prep Factor Units  
mL / mL

Temp. (°C):  
94.6

Location:  
02-2

Prep Batch 70627 Prep Code: 3010\_W\_MSDI

Technician Claire Ignacio

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70627	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70627	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N032065-003B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-003B-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-003B-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-004B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-005B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-006B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-007B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-008B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-009B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-010B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-011B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-012B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25



ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 9/13/2018 3:00:00

Prep End Date: 9/13/2018 7:30:00

Reviewed/ Date: *MM* 9/27/2018

Page: 2 of 2

Initials/ Date: *CI* 9/27/2018

Prep Factor Units  
mL / mL

Temp. (°C):  
94.6

Location:  
02-2

Prep Batch 70627 Prep Code: 3010\_W\_MSDI

Technician Claire Ignacio

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N032065-013B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-014B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032065-015B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

# INSTRUMENT TUNING CHECK



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 18 Sep 2018 08:50:23 am  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	141967.00	0.00	
24 Mg	438951.00	0.00	
25 Mg	57112.80	0.00	
26 Mg	64457.90	0.00	
59 Co	351745.00	0.00	
115 In	534958.00	0.00	
206 Pb	168054.00	0.00	
207 Pb	146818.00	0.00	
208 Pb	363000.00	0.00	

## RSD (%)

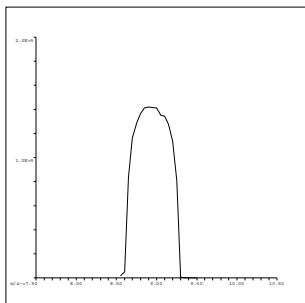
Element	Actual	Required	Flag
9 Be	0.68	5.00	
24 Mg	0.73	5.00	
25 Mg	1.26	5.00	
26 Mg	0.54	5.00	
59 Co	0.96	5.00	
115 In	1.48	5.00	
206 Pb	1.12	5.00	
207 Pb	1.81	5.00	
208 Pb	0.74	5.00	

## Ion Ratio

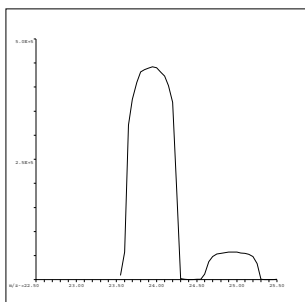
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

## Maximum Bkg. Count (CPS)

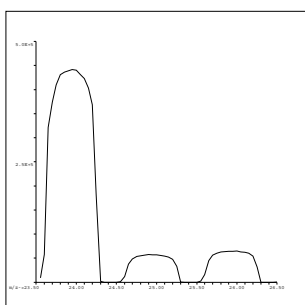
Element	Actual	Required	Flag
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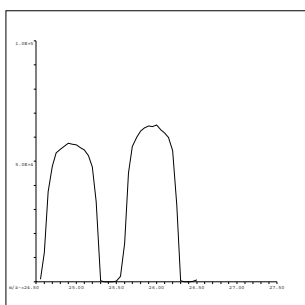
9 Be  
Mass Calib.  
Actual: 8.90  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



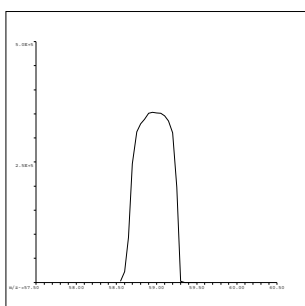
24 Mg  
Mass Calib.  
Actual: 23.90  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



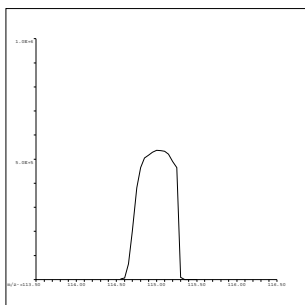
25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



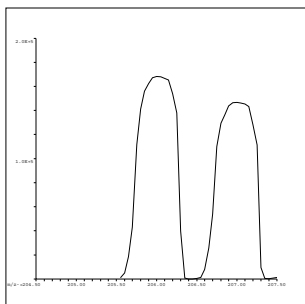
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



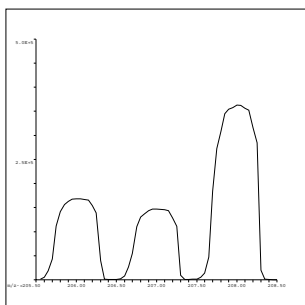
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



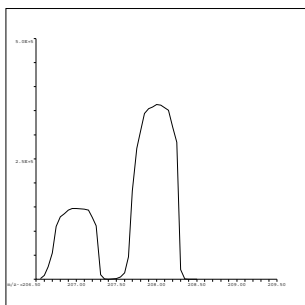
115 In  
Mass Calib.  
Actual: 115.05  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.05  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.00  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 208.00  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:

QC Tune Result:Pass

## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 26 Sep 2018 09:09:25 am  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	100982.00	0.00	
24 Mg	400890.00	0.00	
25 Mg	51782.90	0.00	
26 Mg	58963.00	0.00	
59 Co	342044.00	0.00	
115 In	582881.00	0.00	
206 Pb	206785.00	0.00	
207 Pb	181601.00	0.00	
208 Pb	448014.00	0.00	

## RSD (%)

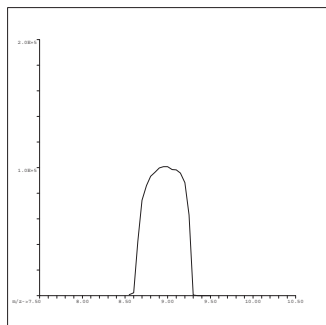
Element	Actual	Required	Flag
9 Be	0.82	5.00	
24 Mg	0.69	5.00	
25 Mg	0.75	5.00	
26 Mg	0.24	5.00	
59 Co	0.97	5.00	
115 In	1.14	5.00	
206 Pb	1.40	5.00	
207 Pb	1.33	5.00	
208 Pb	1.56	5.00	

## Ion Ratio

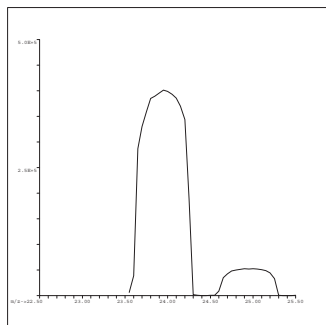
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

## Maximum Bkg. Count (CPS)

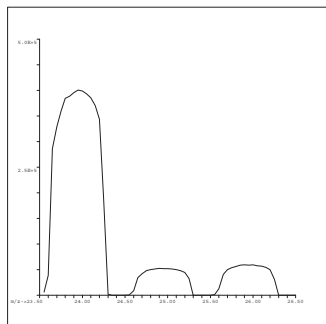
Element	Actual	Required	Flag
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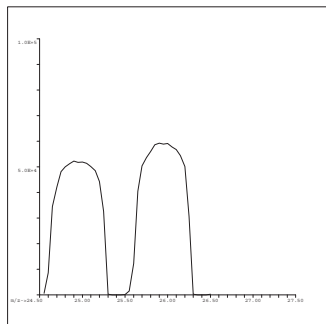
9 Be  
Mass Calib.  
Actual: 9.00  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



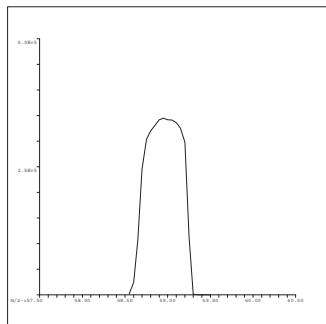
24 Mg  
Mass Calib.  
Actual: 23.95  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



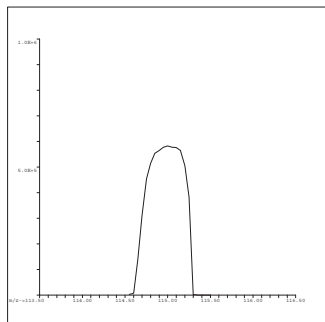
25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



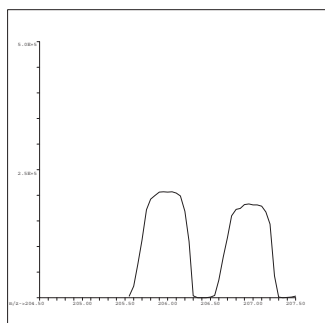
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



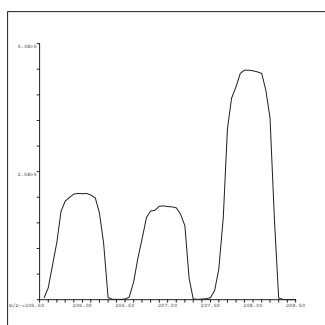
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



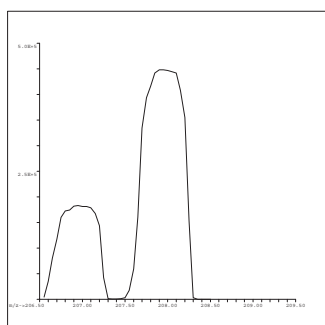
115 In  
Mass Calib.  
Actual: 115.00  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.00  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.00  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 207.95  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

QC Tune Result:Pass



# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

INITIAL CALIBRATION SUMMARY: 180918B

Instrument ID: ICPMS-02

Analyte	Data File	B0918002.D	B0918003.D	B0918004.D	B0918005.D	B0918006.D	B0918007.D	B0918008.D	B0918009.D	B0918010.D	R
	Acq. Date-Time	09/18/2018 11:38 PM	09/18/2018 11:44 PM	09/18/2018 11:50 PM	09/18/2018 11:55 PM	09/19/2018 12:01 AM	09/19/2018 12:06 AM	09/19/2018 12:12 AM	09/19/2018 12:17 AM	09/19/2018 12:23 AM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	2	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std1-0.1/1 ppb	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.1/1 ug/L	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L		
45 Sc (ISTD) [ 2 ]	CPS	43988.8		44148.1	44492.3	44235	41736.6	43371.8	41452.3	41069.2	
55 Mn [ 2 ]	CPS	80.3		809.4	7760.8	15138	29924.9	60060.5	144294	285578.1	1.0000
52 Cr [ 2 ]	CPS	162.2		1838.2	16506.6	32675	61907.6	126849.9	304900.2	604127.4	1.0000
72 Ge (ISTD) [ 1 ]	CPS	23642.2		25163.4	25762.2	25719.8	24467.9	23287.2	22389.3	21735.1	
78 Se [ 1 ]	CPS	0		41.1	433.4	841.2	1707.9	3303.8	7945.6	15773.7	1.0000
72 Ge (ISTD) [ 2 ]	CPS	27533.9	28224	28132.6	27989.1	27718.6	26606.8	27142.2	26733.7	25885.5	
75 As [ 2 ]	CPS	21.8	60.4	210.2	1757.9	3337.7	6520	13317.9	31902.1	63619.4	0.9999
103 Rh (ISTD) [ 2 ]	CPS	789683.9		810355.2	808955.2	802309.5	770505.4	784014.8	751464.6	738069.2	
95 Mo [ 2 ]	CPS	75.6		911.2	8838.3	17773.8	34328.6	70323.2	171892.2	343078.6	1.0000
159 Tb (ISTD) [ 3 ]	CPS	3013541.9		2881100.7	3115108.2	3095144.8	3050381.7	3009629.7	2979658.5	2931675.9	
137 Ba [ 3 ]	CPS	-211.2		2081.8	23537.6	46017.7	91829.9	180026.8	445686.7	873055.2	1.0000

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MWST-180618C

Calibration Acceptance Criteria: > 0.995 Correlation

INITIAL CALIBRATION SUMMARY: 180926A

Instrument ID: ICPMS-02

Analyte	Data File	A0926002.D	A0926004.D	A0926005.D	A0926006.D	A0926007.D	A0926008.D	A0926009.D	A0926010.D	
	Acq. Date-Time	09/26/2018 09:26 AM	09/26/2018 09:37 AM	09/26/2018 09:43 AM	09/26/2018 09:48 AM	09/26/2018 09:54 AM	09/26/2018 10:00 AM	09/26/2018 10:05 AM	09/26/2018 10:11 AM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L	R	
45 Sc ( ISTD ) [ 2 ]	CPS	47413.9	52380.9	51878.3	53633.7	54156.8	54271.4	51641.9	52195.9	
55 Mn [ 2 ]	CPS	74.9	1036.6	9340.8	19053.6	38014.5	75947.6	182261.4	365871.6	1.0000
72 Ge ( ISTD ) [ 1 ]	CPS	31695	35308.9	35231	35775.6	35340.1	35842.3	33613.2	34363.6	
78 Se [ 1 ]	CPS	2.2	63.3	597.8	1176.8	2445.8	4858.7	11525.6	23060.5	1.0000

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MWST-180618C

Calibration Acceptance Criteria: > 0.995 Correlation

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145714</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	10.257	0.10	10.00	0	103	90	110				
Barium	10.107	1.0	10.00	0	101	90	110				
Manganese	106.395	0.50	100.0	0	106	90	110				
Molybdenum	10.685	0.50	10.00	0	107	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145716</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	0.087	0.10	0.1000	0	87.4	80	120				
Barium	1.070	1.0	1.000	0	107	80	120				
Manganese	0.516	0.50	0.5000	0	103	80	120				
Molybdenum	0.424	0.50	0.5000	0	84.7	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145730</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	19.380	0.10	20.00	0	96.9	90	110				
Barium	20.433	1.0	20.00	0	102	90	110				
Manganese	19.795	0.50	20.00	0	99.0	90	110				
Molybdenum	19.343	0.50	20.00	0	96.7	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145742</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	20.171	0.10	20.00	0	101	90	110				
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145742</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	20.399	1.0	20.00	0	102	90	110				
Manganese	19.882	0.50	20.00	0	99.4	90	110				
Molybdenum	19.140	0.50	20.00	0	95.7	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145754</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.800	0.10	20.00	0	99.0	90	110				
Barium	20.197	1.0	20.00	0	101	90	110				
Manganese	20.196	0.50	20.00	0	101	90	110				
Molybdenum	19.290	0.50	20.00	0	96.5	90	110				

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145766</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.694	0.10	20.00	0	98.5	90	110				
Barium	20.114	1.0	20.00	0	101	90	110				
Manganese	20.288	0.50	20.00	0	101	90	110				
Molybdenum	19.252	0.50	20.00	0	96.3	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152568</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	106.932	0.50	100.0	0	107	90	110				
Selenium	10.205	0.50	10.00	0	102	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152570</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.575	0.50	0.5000	0	115	80	120				
Selenium	0.504	0.50	0.5000	0	101	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152583</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.323	0.50	20.00	0	102	90	110				
Selenium	20.822	0.50	20.00	0	104	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152595</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	19.890	0.50	20.00	0	99.5	90	110				
Selenium	18.837	0.50	20.00	0	94.2	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152607</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.301	0.50	20.00	0	102	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152607</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	18.658	0.50	20.00	0	93.3	90	110				

**Qualifiers:**

- |    |   |   |                                      |   |  |
|----|---|---|--------------------------------------|---|--|
| B  | Analyte detected in the associated Method Blank | E | Value above quantitation range       | H | Holding times for preparation or analysis exceeded           |
| ND | Not Detected at the Reporting Limit             | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145770</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.109	1.0	10.00	0	101	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145772</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.997	1.0	1.000	0	99.7	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145786</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	19.807	1.0	20.00	0	99.0	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145798</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	19.843	1.0	20.00	0	99.2	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145810</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	19.907	1.0	20.00	0	99.5	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b> Units: <b>µg/L</b>				Prep Date:			RunNo: <b>127741</b>		
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>				Analysis Date: <b>9/19/2018</b>			SeqNo: <b>3145822</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	19.986	1.0	20.00	0	99.9	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145715</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Barium	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145731</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Barium	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145743</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Barium	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145755</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145755</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145767</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Barium	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>
Client ID: <b>ICB</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152569</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese	ND	0.50
Selenium	ND	0.50

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152584</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese	ND	0.50
Selenium	ND	0.50

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152596</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese	ND	0.50
Selenium	ND	0.50

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152608</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese	ND	0.50
Selenium	ND	0.50

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145771</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145787</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145799</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145811</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145823</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

### Qualifiers:

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values  
E Value above quantitation range  
R RPD outside accepted recovery limits  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145717</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Barium	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145718</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	21.680	0.10	20.00	0	108	80	120				
Barium	18.263	1.0	20.00	0	91.3	80	120				
Manganese	17.451	0.50	20.00	0	87.3	80	120				
Molybdenum	22.027	0.50	20.00	0	110	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145768</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Barium	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145769</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	17.789	0.10	20.00	0	88.9	80	120				
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	ICSAB2	SampType:	ICSAB	TestCode:	6020_DIS	Units:	µg/L	Prep Date:		RunNo:	127741
Client ID:	ICSAB	Batch ID:	R127741	TestNo:	EPA 6020			Analysis Date:	9/19/2018	SeqNo:	3145769
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	17.626	1.0	20.00	0	88.1	80	120				
Manganese	20.667	0.50	20.00	0	103	80	120				
Molybdenum	18.461	0.50	20.00	0	92.3	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152571</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152571</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	18.205	0.50	20.00	0	91.0 80 120
Selenium	19.273	0.50	20.00	0	96.4 80 120

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152609</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152610</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	17.998	0.50	20.00	0	90.0 80 120
Selenium	20.384	0.50	20.00	0	102 80 120

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145773</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145773</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	20.695	1.0	20.00	0	103	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145824</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145825</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	17.576	1.0	20.00	0	87.9	80	120				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## INTERNAL STANDARD: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	159 Tb ( ISTD ) [ 3 ]					45 Sc ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	3013541.9	3013541.9	100	PASS	70-125	43988.8	43988.8	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	3150652.2	3013541.9	104.55	PASS	70-125	44958.3	43988.8	102.2	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	2881100.7	3013541.9	95.61	PASS	70-125	44148.1	43988.8	100.36	PASS	70-125
Std3-5/50 ppb	ICAL	1	3115108.2	3013541.9	103.37	PASS	70-125	44492.3	43988.8	101.14	PASS	70-125
Std4-10/100 ppb	ICAL	1	3095144.8	3013541.9	102.71	PASS	70-125	44235	43988.8	100.56	PASS	70-125
Std5-20/200 ppb	ICAL	1	3050381.7	3013541.9	101.22	PASS	70-125	41736.6	43988.8	94.88	PASS	70-125
Std6-40/400 ppb	ICAL	1	3009629.7	3013541.9	99.87	PASS	70-125	43371.8	43988.8	98.6	PASS	70-125
Std7-100/1000 ppb	ICAL	1	2979658.5	3013541.9	98.88	PASS	70-125	41452.3	43988.8	94.23	PASS	70-125
Std8-200/2000 ppb	ICAL	1	2931675.9	3013541.9	97.28	PASS	70-125	41069.2	43988.8	93.36	PASS	70-125
ICV	ICV	1	2901855.4	3013541.9	96.29	PASS	70-125	38221.2	43988.8	86.89	PASS	70-125
ICB	ICB	1	2660272	3013541.9	88.28	PASS	70-125	37232.5	43988.8	84.64	PASS	70-125
LLICV	CCV1	1	2724146.5	3013541.9	90.4	PASS	70-125	38487.4	43988.8	87.49	PASS	70-125
ICSA1	ICSA	1	3203630.6	3013541.9	106.31	PASS	70-125	45497.4	43988.8	103.43	PASS	70-125
ICSAB1	ICSAB	1	2568017.4	3013541.9	85.22	PASS	70-125	36471.8	43988.8	82.91	PASS	70-125
LLICV	CCV1	1	3097169.3	3013541.9	102.78	PASS	70-125	41961.4	43988.8	95.39	PASS	70-125
MB-70627	MBLK	1	3027802.9	3013541.9	100.47	PASS	70-125	41201.7	43988.8	93.66	PASS	70-125
LCS-70627	LCS	1	2908640	3013541.9	96.52	PASS	70-125	38761.4	43988.8	88.12	PASS	70-125
N032065-003B	SAMP	1	3083183.2	3013541.9	102.31	PASS	70-125	40618.1	43988.8	92.34	PASS	70-125
N032065-003B	SAMP	5	3053293.6	3013541.9	101.32	PASS	70-125	42150.8	43988.8	95.82	PASS	70-125
N032065-003B-PS	PS	1	3132814.5	3013541.9	103.96	PASS	70-125	42755.5	43988.8	97.2	PASS	70-125
N032065-003B-MS	MS	1	3159022.8	3013541.9	104.83	PASS	70-125	43027.5	43988.8	97.81	PASS	70-125
N032065-003B-MSD	MSD	1	3152758.1	3013541.9	104.62	PASS	70-125	43580	43988.8	99.071	PASS	70-125
N032065-004B	SAMP	1	2823453.7	3013541.9	93.69	PASS	70-125	37485.1	43988.8	85.22	PASS	70-125
N032065-005B	SAMP	1	2875041.9	3013541.9	95.4	PASS	70-125	37885.1	43988.8	86.12	PASS	70-125
N032065-006B	SAMP	1	3102984.4	3013541.9	102.97	PASS	70-125	42879.3	43988.8	97.48	PASS	70-125
CCV1	CCV	1	3148253.7	3013541.9	104.47	PASS	70-125	44288.5	43988.8	100.68	PASS	70-125
CCB1	CCB	1	3062664.3	3013541.9	101.63	PASS	70-125	40983.3	43988.8	93.17	PASS	70-125
N032065-007B	SAMP	1	2821252.7	3013541.9	93.62	PASS	70-125	37687.8	43988.8	85.68	PASS	70-125
N032065-008B	SAMP	1	2878224.1	3013541.9	95.51	PASS	70-125	38400.6	43988.8	87.3	PASS	70-125
N032065-009B	SAMP	1	2915697.4	3013541.9	96.75	PASS	70-125	39376.3	43988.8	89.51	PASS	70-125
N032065-010B	SAMP	1	2932290.8	3013541.9	97.3	PASS	70-125	39157.9	43988.8	89.018	PASS	70-125
N032065-011B	SAMP	1	3050556.6	3013541.9	101.23	PASS	70-125	41419.9	43988.8	94.16	PASS	70-125
N032065-012B	SAMP	1	3140064.3	3013541.9	104.2	PASS	70-125	42847	43988.8	97.4	PASS	70-125
N032065-013B	SAMP	1	2791377.7	3013541.9	92.63	PASS	70-125	36942.8	43988.8	83.98	PASS	70-125
N032065-014B	SAMP	1	2824099.1	3013541.9	93.71	PASS	70-125	37907.2	43988.8	86.17	PASS	70-125
N032065-015B	SAMP	1	2729071.8	3013541.9	90.56	PASS	70-125	35942.9	43988.8	81.71	PASS	70-125
CCV2	CCV	1	3081321.1	3013541.9	102.25	PASS	70-125	42081.7	43988.8	95.66	PASS	70-125
CCB2	CCB	1	2967415.5	3013541.9	98.47	PASS	70-125	39279.3	43988.8	89.29	PASS	70-125
CCV3	CCV	1	3084737.2	3013541.9	102.36	PASS	70-125	41608.3	43988.8	94.59	PASS	70-125
CCB3	CCB	1	2992872.6	3013541.9	99.31	PASS	70-125	38898.3	43988.8	88.43	PASS	70-125
CCV4	CCV	1	3011496.8	3013541.9	99.93	PASS	70-125	40675.8	43988.8	92.47	PASS	70-125

INTERNAL STANDARD: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	159 Tb ( ISTD ) [ 3 ]					45 Sc ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
CCB4	CCB	1	2890616	3013541.9	95.92	PASS	70-125	37239.1	43988.8	84.66	PASS	70-125
ICSA2	ICSA	1	2771099.8	3013541.9	91.95	PASS	70-125	36396.1	43988.8	82.74	PASS	70-125
ICSAB2	ICSAB	1	2488311.8	3013541.9	82.57	PASS	70-125	33790.6	43988.8	76.82	PASS	70-125

## INTERNAL STANDARD: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 1 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	27533.9	27533.9	100	PASS	70-125	23642.2	23642.2	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	28224	27533.9	102.51	PASS	70-125	24190.8	23642.2	102.32	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	28132.6	27533.9	102.17	PASS	70-125	25163.4	23642.2	106.43	PASS	70-125
Std3-5/50 ppb	ICAL	1	27989.1	27533.9	101.65	PASS	70-125	25762.2	23642.2	108.97	PASS	70-125
Std4-10/100 ppb	ICAL	1	27718.6	27533.9	100.67	PASS	70-125	25719.8	23642.2	108.79	PASS	70-125
Std5-20/200 ppb	ICAL	1	26606.8	27533.9	96.63	PASS	70-125	24467.9	23642.2	103.49	PASS	70-125
Std6-40/400 ppb	ICAL	1	27142.2	27533.9	98.58	PASS	70-125	23287.2	23642.2	98.5	PASS	70-125
Std7-100/1000 ppb	ICAL	1	26733.7	27533.9	97.094	PASS	70-125	22389.3	23642.2	94.7	PASS	70-125
Std8-200/2000 ppb	ICAL	1	25885.5	27533.9	94.013	PASS	70-125	21735.1	23642.2	91.93	PASS	70-125
ICV	ICV	1	24353.2	27533.9	88.45	PASS	70-125	20447.8	23642.2	86.49	PASS	70-125
ICB	ICB	1	24128.4	27533.9	87.63	PASS	70-125	19372.1	23642.2	81.94	PASS	70-125
LLICV	CCV1	1	24607	27533.9	89.37	PASS	70-125	23124.7	23642.2	97.81	PASS	70-125
ICSA1	ICSA	1	27761.1	27533.9	100.83	PASS	70-125	23218.2	23642.2	98.21	PASS	70-125
ICSAB1	ICSAB	1	22626.3	27533.9	82.18	PASS	70-125	19365.4	23642.2	81.91	PASS	70-125
LLICV	CCV1	1	26870.6	27533.9	97.59	PASS	70-125	24102.9	23642.2	101.95	PASS	70-125
MB-70627	MBLK	1	26691.4	27533.9	96.94	PASS	70-125	22821	23642.2	96.53	PASS	70-125
LCS-70627	LCS	1	24775	27533.9	89.98	PASS	70-125	21706.2	23642.2	91.81	PASS	70-125
N032065-003B	SAMP	1	25832.2	27533.9	93.82	PASS	70-125	22027.7	23642.2	93.17	PASS	70-125
N032065-003B	SAMP	5	26398.6	27533.9	95.88	PASS	70-125	22718.6	23642.2	96.093	PASS	70-125
N032065-003B-PS	PS	1	26328.6	27533.9	95.62	PASS	70-125	22489.4	23642.2	95.12	PASS	70-125
N032065-003B-MS	MS	1	26853.9	27533.9	97.53	PASS	70-125	22555.1	23642.2	95.4	PASS	70-125
N032065-003B-MSD	MSD	1	27069.7	27533.9	98.31	PASS	70-125	23420.7	23642.2	99.063	PASS	70-125
N032065-004B	SAMP	1	23358.3	27533.9	84.83	PASS	70-125	21291.1	23642.2	90.055	PASS	70-125
N032065-005B	SAMP	1	24016	27533.9	87.22	PASS	70-125	21534.8	23642.2	91.086	PASS	70-125
N032065-006B	SAMP	1	27093.1	27533.9	98.4	PASS	70-125	25290.2	23642.2	106.97	PASS	70-125
CCV1	CCV	1	28247.4	27533.9	102.59	PASS	70-125	26172.8	23642.2	110.7	PASS	70-125
CCB1	CCB	1	26634.6	27533.9	96.73	PASS	70-125	22911.2	23642.2	96.91	PASS	70-125
N032065-007B	SAMP	1	23320.5	27533.9	84.7	PASS	70-125	21115.4	23642.2	89.31	PASS	70-125
N032065-008B	SAMP	1	24512.3	27533.9	89.026	PASS	70-125	22124.5	23642.2	93.58	PASS	70-125
N032065-009B	SAMP	1	24802.9	27533.9	90.081	PASS	70-125	22982.3	23642.2	97.21	PASS	70-125
N032065-010B	SAMP	1	24605.8	27533.9	89.37	PASS	70-125	21591.5	23642.2	91.33	PASS	70-125
N032065-011B	SAMP	1	26021.4	27533.9	94.51	PASS	70-125	22610.7	23642.2	95.64	PASS	70-125
N032065-012B	SAMP	1	27437.1	27533.9	99.65	PASS	70-125	23340.6	23642.2	98.72	PASS	70-125
N032065-013B	SAMP	1	23609.9	27533.9	85.75	PASS	70-125	20670.3	23642.2	87.43	PASS	70-125
N032065-014B	SAMP	1	24101.8	27533.9	87.54	PASS	70-125	21794	23642.2	92.18	PASS	70-125
N032065-015B	SAMP	1	23188.2	27533.9	84.22	PASS	70-125	20450	23642.2	86.5	PASS	70-125
CCV2	CCV	1	26484.4	27533.9	96.19	PASS	70-125	23227.1	23642.2	98.24	PASS	70-125
CCB2	CCB	1	25696.4	27533.9	93.33	PASS	70-125	22599.6	23642.2	95.59	PASS	70-125
CCV3	CCV	1	27070.8	27533.9	98.32	PASS	70-125	24010.5	23642.2	101.56	PASS	70-125
CCB3	CCB	1	25394.9	27533.9	92.23	PASS	70-125	21944.2	23642.2	92.82	PASS	70-125
CCV4	CCV	1	26451	27533.9	96.067	PASS	70-125	24095.2	23642.2	101.92	PASS	70-125



INTERNAL STANDARD: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 1 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
CCB4	CCB	1	24513.5	27533.9	89.03	PASS	70-125	21205.5	23642.2	89.69	PASS	70-125
ICSA2	ICSA	1	23181.5	27533.9	84.19	PASS	70-125	20897.3	23642.2	88.39	PASS	70-125
ICSAB2	ICSAB	1	21318.9	27533.9	77.43	PASS	70-125	19309.6	23642.2	81.67	PASS	70-125

## INTERNAL STANDARD: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	789683.9	789683.9	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	817149.1	789683.9	103.48	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	810355.2	789683.9	102.62	PASS	70-125
Std3-5/50 ppb	ICAL	1	808955.2	789683.9	102.44	PASS	70-125
Std4-10/100 ppb	ICAL	1	802309.5	789683.9	101.6	PASS	70-125
Std5-20/200 ppb	ICAL	1	770505.4	789683.9	97.57	PASS	70-125
Std6-40/400 ppb	ICAL	1	784014.8	789683.9	99.28	PASS	70-125
Std7-100/1000 ppb	ICAL	1	751464.6	789683.9	95.16	PASS	70-125
Std8-200/2000 ppb	ICAL	1	738069.2	789683.9	93.46	PASS	70-125
ICV	ICV	1	706600.1	789683.9	89.48	PASS	70-125
ICB	ICB	1	681069	789683.9	86.25	PASS	70-125
LLICV	CCV1	1	712631.8	789683.9	90.24	PASS	70-125
ICSA1	ICSA	1	761493.7	789683.9	96.43	PASS	70-125
ICSAB1	ICSAB	1	611318.4	789683.9	77.41	PASS	70-125
LLICV	CCV1	1	777474	789683.9	98.45	PASS	70-125
MB-70627	MBLK	1	758571.2	789683.9	96.06	PASS	70-125
LCS-70627	LCS	1	714874.6	789683.9	90.53	PASS	70-125
N032065-003B	SAMP	1	691541.4	789683.9	87.57	PASS	70-125
N032065-003B	SAMP	5	738423.5	789683.9	93.51	PASS	70-125
N032065-003B-PS	PS	1	718574.3	789683.9	91	PASS	70-125
N032065-003B-MS	MS	1	726239.6	789683.9	91.97	PASS	70-125
N032065-003B-MSD	MSD	1	730341.3	789683.9	92.49	PASS	70-125
N032065-004B	SAMP	1	647296.6	789683.9	81.97	PASS	70-125
N032065-005B	SAMP	1	652788.6	789683.9	82.66	PASS	70-125
N032065-006B	SAMP	1	727063.4	789683.9	92.07	PASS	70-125
CCV1	CCV	1	797234	789683.9	100.96	PASS	70-125
CCB1	CCB	1	765824.7	789683.9	96.98	PASS	70-125
N032065-007B	SAMP	1	644211.7	789683.9	81.58	PASS	70-125
N032065-008B	SAMP	1	654817.1	789683.9	82.92	PASS	70-125
N032065-009B	SAMP	1	663256.5	789683.9	83.99	PASS	70-125
N032065-010B	SAMP	1	666131.5	789683.9	84.35	PASS	70-125
N032065-011B	SAMP	1	701297.6	789683.9	88.81	PASS	70-125
N032065-012B	SAMP	1	722981.5	789683.9	91.55	PASS	70-125
N032065-013B	SAMP	1	637676	789683.9	80.75	PASS	70-125
N032065-014B	SAMP	1	648546	789683.9	82.13	PASS	70-125
N032065-015B	SAMP	1	624519.1	789683.9	79.085	PASS	70-125
CCV2	CCV	1	763662.2	789683.9	96.7	PASS	70-125
CCB2	CCB	1	726869.8	789683.9	92.046	PASS	70-125
CCV3	CCV	1	764766.3	789683.9	96.84	PASS	70-125
CCB3	CCB	1	723839.5	789683.9	91.66	PASS	70-125
CCV4	CCV	1	754444.4	789683.9	95.54	PASS	70-125

INTERNAL STANDARD: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria
CCB4	CCB	1	694214.5	789683.9	87.91	PASS	70-125
ICSA2	ICSA	1	631194.8	789683.9	79.93	PASS	70-125
ICSAB2	ICSAB	1	578336.7	789683.9	73.24	PASS	70-125

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 1 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	47413.9	47413.9	100	PASS	70-125	31695	31695	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	52591.4	47413.9	110.92	PASS	70-125	35353.4	31695	111.54	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	52380.9	47413.9	110.48	PASS	70-125	35308.9	31695	111.4	PASS	70-125
Std3-5/50 ppb	ICAL	1	51878.3	47413.9	109.42	PASS	70-125	35231	31695	111.16	PASS	70-125
Std4-10/100 ppb	ICAL	1	53633.7	47413.9	113.12	PASS	70-125	35775.6	31695	112.87	PASS	70-125
Std5-20/200 ppb	ICAL	1	54156.8	47413.9	114.22	PASS	70-125	35340.1	31695	111.5	PASS	70-125
Std6-40/400 ppb	ICAL	1	54271.4	47413.9	114.46	PASS	70-125	35842.3	31695	113.09	PASS	70-125
Std7-100/1000 ppb	ICAL	1	51641.9	47413.9	108.92	PASS	70-125	33613.2	31695	106.05	PASS	70-125
Std8-200/2000 ppb	ICAL	1	52195.9	47413.9	110.09	PASS	70-125	34363.6	31695	108.42	PASS	70-125
ICV	ICV	1	42406.9	47413.9	89.44	PASS	70-125	26418.7	31695	83.35	PASS	70-125
ICB	ICB	1	49396.3	47413.9	104.18	PASS	70-125	31829.6	31695	100.42	PASS	70-125
LLICV	CCV1	1	51858.1	47413.9	109.37	PASS	70-125	33960.4	31695	107.15	PASS	70-125
ICSA1	ICSA	1	52297.4	47413.9	110.3	PASS	70-125	32188	31695	101.56	PASS	70-125
ICSAB1	ICSAB	1	53965.7	47413.9	113.82	PASS	70-125	32818.2	31695	103.54	PASS	70-125
MB-70627	MBLK	1	57890	47413.9	122.1	PASS	70-125	38966.3	31695	122.94	PASS	70-125
LCS-70627	LCS	1	48889.1	47413.9	103.11	PASS	70-125	33369.4	31695	105.28	PASS	70-125
N032065-003B	SAMP	1	50029.1	47413.9	105.52	PASS	70-125	33580.8	31695	105.95	PASS	70-125
N032065-003B	SAMP	5	50604.3	47413.9	106.73	PASS	70-125	33499.7	31695	105.69	PASS	70-125
N032065-003B-PS	PS	1	52403.1	47413.9	110.52	PASS	70-125	35258.9	31695	111.24	PASS	70-125
N032065-003B-MS	MS	1	52778.9	47413.9	111.32	PASS	70-125	35514.9	31695	112.05	PASS	70-125
N032065-003B-MSD	MSD	1	52372.9	47413.9	110.46	PASS	70-125	35395.8	31695	111.68	PASS	70-125
N032065-004B	SAMP	1	51434.6	47413.9	108.48	PASS	70-125	35378	31695	111.62	PASS	70-125
N032065-005B	SAMP	1	52903.8	47413.9	111.58	PASS	70-125	35901.4	31695	113.27	PASS	70-125
N032065-006B	SAMP	1	52236.9	47413.9	110.17	PASS	70-125	35313.5	31695	111.42	PASS	70-125
CCV1	CCV	1	44830	47413.9	94.55	PASS	70-125	27714.2	31695	87.44	PASS	70-125
CCB1	CCB	1	53728.4	47413.9	113.32	PASS	70-125	36619.7	31695	115.54	PASS	70-125
N032065-007B	SAMP	1	52317.5	47413.9	110.34	PASS	70-125	33662	31695	106.21	PASS	70-125
N032065-008B	SAMP	1	52739.6	47413.9	111.23	PASS	70-125	35543.9	31695	112.14	PASS	70-125
N032065-009B	SAMP	1	53654.8	47413.9	113.16	PASS	70-125	35537.1	31695	112.12	PASS	70-125
N032065-010B	SAMP	1	54887.8	47413.9	115.76	PASS	70-125	36154.2	31695	114.07	PASS	70-125
N032065-011B	SAMP	1	52093.4	47413.9	109.87	PASS	70-125	34738.7	31695	109.6	PASS	70-125
N032065-012B	SAMP	1	54086.3	47413.9	114.07	PASS	70-125	35232.1	31695	111.16	PASS	70-125
N032065-013B	SAMP	1	54276.9	47413.9	114.47	PASS	70-125	36129.7	31695	113.99	PASS	70-125
N032065-014B	SAMP	1	53982.7	47413.9	113.85	PASS	70-125	35650.8	31695	112.48	PASS	70-125
N032065-015B	SAMP	1	53320.4	47413.9	112.46	PASS	70-125	35361.2	31695	111.57	PASS	70-125
N032065-005B	SAMP	1	53634.9	47413.9	113.12	PASS	70-125	35468.2	31695	111.9	PASS	70-125
CCV2	CCV	1	51817.9	47413.9	109.29	PASS	70-125	35097.4	31695	110.73	PASS	70-125
CCB2	CCB	1	56096.2	47413.9	118.31	PASS	70-125	37994.8	31695	119.88	PASS	70-125
N032065-007B	SAMP	1	51502.5	47413.9	108.62	PASS	70-125	34761	31695	109.67	PASS	70-125
N032065-009B	SAMP	1	52496.7	47413.9	110.72	PASS	70-125	35070.6	31695	110.65	PASS	70-125
N032065-012B	SAMP	1	52694.3	47413.9	111.14	PASS	70-125	35070.6	31695	110.65	PASS	70-125

INTERNAL STANDARD: 180926A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 1 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
N032065-013B	SAMP	1	48096.9	47413.9	101.44	PASS	70-125	30514.8	31695	96.28	PASS	70-125
N032065-005B	SAMP	1	50120.5	47413.9	105.71	PASS	70-125	33614.3	31695	106.06	PASS	70-125
N032065-007B	SAMP	1	51552.7	47413.9	108.73	PASS	70-125	33837	31695	106.76	PASS	70-125
N032065-007B	SAMP	1	51770.9	47413.9	109.19	PASS	70-125	33642	31695	106.14	PASS	70-125
CCV3	CCV	1	46814.4	47413.9	98.74	PASS	70-125	30854.3	31695	97.35	PASS	70-125
CCB3	CCB	1	52604.9	47413.9	110.95	PASS	70-125	35427	31695	111.77	PASS	70-125
ICSA2	ICSA	1	58327.1	47413.9	123.02	PASS	70-125	36633	31695	115.58	PASS	70-125
ICSAB2	ICSAB	1	53612.4	47413.9	113.07	PASS	70-125	33096.5	31695	104.42	PASS	70-125

# SERIAL DILUTION/ POST DIGESTION SPIKE



**ASSET LABORATORIES**  
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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

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3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N032065  
Test Method: 6020  
Analysis Date: 9/18/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70627

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to several analytes. The calculated concentration is <25RL.

Dilution test failed for As. However, PS passed criteria.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032065-003B DT 5X	Arsenic	ug/L	3.059915	FAIL	2.680319	14.16%	10
N032065-003B DT 5X	Barium	ug/L	116.1233	PASS	110.839	4.77%	10
N032065-003B DT 5X	Chromium	ug/L	0	NA	0		10
N032065-003B DT 5X	Manganese	ug/L	1.511254	NA	1.000731	51.02%	10
N032065-003B DT 5X	Molybdenum	ug/L	4.803445	NA	4.938049	2.73%	10

Note: NA - Not applicable

**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N032065  
Test Method: 6020  
Analysis Date: 9/26/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70627

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Se. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032065-003B DT 5X	Selenium	ug/L	1.833581	NA	1.572731	16.59%	10

Note: NA - Not applicable



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID	<b>N032065-003B-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>127741</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70627</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>9/19/2018</b>	SeqNo:	<b>3145724</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic		12.755		0.10	10.00	2.680		101	80	120				
Barium		118.114		1.0	10.00	110.8		72.8	80	120				S
Manganese		100.249		0.50	100.0	1.001		99.2	80	120				
Molybdenum		15.568		0.50	10.00	4.938		106	80	120				

Sample ID	<b>N032065-003B-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>128842</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70627</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>9/26/2018</b>	SeqNo:	<b>3152577</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Selenium		11.061		0.50	10.00	1.573		94.9	80	120				
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032065  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>N032065-003B-PS</b>	SampType: <b>PS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70627</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145780</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.473	1.0	10.00	0	94.7	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# MDL STUDY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Amount of Sample:** 25 mL  
**Units:** ug/L

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	LOD	PQL
ANTIMONY	0.50	0.525	0.514	0.473	0.500	0.492	0.486	0.530	0.0210	0.0660	0.100	0.50
ARSENIC	0.10	0.099	0.104	0.087	0.048	0.060	0.069	0.120	0.0259	0.0813	0.080	0.10
BARIUM	1.00	1.041	1.059	1.052	1.011	0.967	0.957	1.023	0.0403	0.1264	0.250	1.00
BERYLLIUM	0.50	0.469	0.476	0.473	0.495	0.480	0.488	0.507	0.0135	0.0424	0.100	0.50
CADMIUM	0.50	0.515	0.513	0.492	0.534	0.499	0.483	0.508	0.0168	0.0527	0.100	0.50
CHROMIUM	1.00	0.979	0.986	0.940	0.990	0.946	0.978	0.977	0.0197	0.0618	0.250	1.00
COBALT	0.50	0.499	0.489	0.486	0.488	0.465	0.502	0.505	0.0135	0.0424	0.100	0.50
COPPER	1.00	1.110	0.667	1.039	1.060	1.006	1.099	1.075	0.1544	0.4850	0.500	1.00
IRON	10.00	10.873	10.802	10.142	9.991	9.846	9.852	10.596	0.4463	1.4014	2.500	10.00
LEAD	1.00	0.928	0.931	0.899	0.996	0.990	0.987	0.997	0.0406	0.1274	0.250	1.00
MANGANESE	0.50	0.577	0.588	0.561	0.566	0.517	0.541	0.520	0.0276	0.0866	0.100	0.50
MOLYBDENUM	0.50	0.514	0.504	0.467	0.478	0.456	0.433	0.527	0.0338	0.1061	0.250	0.50
NICKEL	1.00	0.961	0.965	0.977	0.907	0.914	0.962	1.075	0.0551	0.1731	0.250	1.00
SELENIUM	0.50	0.450	0.478	0.419	0.693	0.707	0.495	0.555	0.1155	0.3628	0.400	0.50
SILVER	0.50	0.558	0.511	0.490	0.542	0.458	0.490	0.684	0.0745	0.2340	0.250	0.50
THALLIUM	0.50	0.437	0.428	0.408	0.538	0.446	0.438	0.525	0.0504	0.1583	0.250	0.50
URANIUM	0.50	0.478	0.467	0.461	0.517	0.510	0.521	0.521	0.0267	0.0838	0.100	0.50
VANADIUM	1.00	0.950	0.969	0.900	0.844	0.829	0.848	1.053	0.0820	0.2574	0.500	1.00
ZINC	10.00	11.259	11.279	10.915	9.620	9.849	9.745	10.241	0.7235	2.2717	2.500	10.00



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CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
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NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Units:** ug/L

Analyte	MDLs	MDLb	MDL	LOD	PQL
ANTIMONY	0.0660	0.1564	0.1564	0.300	0.50
ARSENIC	0.0813	0.0387	0.0813	0.080	0.10
BARIUM	0.1264	0.1497	0.1497	0.300	1.00
BERYLLIUM	0.0424	0.0153	0.0424	0.100	0.50
CADMIUM	0.0527	0.0060	0.0527	0.100	0.50
CHROMIUM	0.0618	0.1298	0.1298	0.300	1.00
COBALT	0.0424	0.0339	0.0424	0.100	0.50
COPPER	0.4850	0.5459	0.5459	0.600	1.00
IRON	1.4014	4.3484	4.3484	5.000	10.00
LEAD	0.1274	0.1008	0.1274	0.300	1.00
MANGANESE	0.0866	0.2552	0.2552	0.300	0.50
MOLYBDENUM	0.1061	0.2149	0.2149	0.300	0.50
NICKEL	0.1731	0.2606	0.2606	0.300	1.00
SELENIUM	0.3628	0.0953	0.3628	0.400	0.50
SILVER	0.2340	0.2023	0.2340	0.250	0.50
THALLIUM	0.1583	0.1924	0.1924	0.300	0.50
URANIUM	0.0838	0.0020	0.0838	0.100	0.50
VANADIUM	0.2574	0.2768	0.2768	0.600	1.00
ZINC	2.2717	0.4511	2.2717	3.000	10.00



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 P: 562.219.7435 F: 562.219.7436  
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 P: 702.307.2659 F: 702.307.2691  
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September 27, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032084

RE: PG&E Topock - RMP, RC000753.0801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 13, 2018 by ASSET Laboratories .  
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in  
accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Nancy Libucan Tor*

Quennie Manimtim  
Laboratory Director

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CALIFORNIA | P:562.219.7435 F:562.219.7436  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
ELAP Cert 2921  
EPA ID CA01638

NEVADA | P:702.307.2659 F:702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118  
ELAP Cert 2676 | NV Cert NV00922  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab Order:** N032084

---

**CASE NARRATIVE**

**SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time except for pH. pH testing is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

Sample N032084-016 (AmbientBlank-3-Q318) was not analyzed as per COC.



**ASSET Laboratories**

Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab Order:** N032084  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032084-001A	C-CON-D-Q318	Groundwater	9/13/2018 10:05:00 AM	9/13/2018	9/27/2018
N032084-001B	C-CON-D-Q318	Groundwater	9/13/2018 10:05:00 AM	9/13/2018	9/27/2018
N032084-001C	C-CON-D-Q318	Groundwater	9/13/2018 10:05:00 AM	9/13/2018	9/27/2018
N032084-001D	C-CON-D-Q318	Groundwater	9/13/2018 10:05:00 AM	9/13/2018	9/27/2018
N032084-001E	C-CON-D-Q318	Groundwater	9/13/2018 10:05:00 AM	9/13/2018	9/27/2018
N032084-002A	C-CON-S-Q318	Groundwater	9/13/2018 10:20:00 AM	9/13/2018	9/27/2018
N032084-002B	C-CON-S-Q318	Groundwater	9/13/2018 10:20:00 AM	9/13/2018	9/27/2018
N032084-002C	C-CON-S-Q318	Groundwater	9/13/2018 10:20:00 AM	9/13/2018	9/27/2018
N032084-002D	C-CON-S-Q318	Groundwater	9/13/2018 10:20:00 AM	9/13/2018	9/27/2018
N032084-002E	C-CON-S-Q318	Groundwater	9/13/2018 10:20:00 AM	9/13/2018	9/27/2018
N032084-003A	MW-909-Q318	Groundwater	9/13/2018 10:30:00 AM	9/13/2018	9/27/2018
N032084-003B	MW-909-Q318	Groundwater	9/13/2018 10:30:00 AM	9/13/2018	9/27/2018
N032084-003C	MW-909-Q318	Groundwater	9/13/2018 10:30:00 AM	9/13/2018	9/27/2018
N032084-003D	MW-909-Q318	Groundwater	9/13/2018 10:30:00 AM	9/13/2018	9/27/2018
N032084-003E	MW-909-Q318	Groundwater	9/13/2018 10:30:00 AM	9/13/2018	9/27/2018
N032084-004A	C-MAR-D-Q318	Groundwater	9/13/2018 8:30:00 AM	9/13/2018	9/27/2018
N032084-004B	C-MAR-D-Q318	Groundwater	9/13/2018 8:30:00 AM	9/13/2018	9/27/2018
N032084-004C	C-MAR-D-Q318	Groundwater	9/13/2018 8:30:00 AM	9/13/2018	9/27/2018
N032084-004D	C-MAR-D-Q318	Groundwater	9/13/2018 8:30:00 AM	9/13/2018	9/27/2018
N032084-004E	C-MAR-D-Q318	Groundwater	9/13/2018 8:30:00 AM	9/13/2018	9/27/2018
N032084-005A	C-MAR-S-Q318	Groundwater	9/13/2018 9:00:00 AM	9/13/2018	9/27/2018
N032084-005B	C-MAR-S-Q318	Groundwater	9/13/2018 9:00:00 AM	9/13/2018	9/27/2018
N032084-005C	C-MAR-S-Q318	Groundwater	9/13/2018 9:00:00 AM	9/13/2018	9/27/2018
N032084-005D	C-MAR-S-Q318	Groundwater	9/13/2018 9:00:00 AM	9/13/2018	9/27/2018
N032084-005E	C-MAR-S-Q318	Groundwater	9/13/2018 9:00:00 AM	9/13/2018	9/27/2018
N032084-006A	C-NR1-D-Q318	Groundwater	9/13/2018 11:05:00 AM	9/13/2018	9/27/2018
N032084-006B	C-NR1-D-Q318	Groundwater	9/13/2018 11:05:00 AM	9/13/2018	9/27/2018
N032084-006C	C-NR1-D-Q318	Groundwater	9/13/2018 11:05:00 AM	9/13/2018	9/27/2018
N032084-006D	C-NR1-D-Q318	Groundwater	9/13/2018 11:05:00 AM	9/13/2018	9/27/2018



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"Servina Clients with Passion and Professionalism"



**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab Order:** N032084  
**Contract No:**

## Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032084-006E	C-NR1-D-Q318	Groundwater	9/13/2018 11:05:00 AM	9/13/2018	9/27/2018
N032084-007A	C-NR1-S-Q318	Groundwater	9/13/2018 11:35:00 AM	9/13/2018	9/27/2018
N032084-007B	C-NR1-S-Q318	Groundwater	9/13/2018 11:35:00 AM	9/13/2018	9/27/2018
N032084-007C	C-NR1-S-Q318	Groundwater	9/13/2018 11:35:00 AM	9/13/2018	9/27/2018
N032084-007D	C-NR1-S-Q318	Groundwater	9/13/2018 11:35:00 AM	9/13/2018	9/27/2018
N032084-007E	C-NR1-S-Q318	Groundwater	9/13/2018 11:35:00 AM	9/13/2018	9/27/2018
N032084-008A	C-NR3-D-Q318	Groundwater	9/13/2018 12:20:00 PM	9/13/2018	9/27/2018
N032084-008B	C-NR3-D-Q318	Groundwater	9/13/2018 12:20:00 PM	9/13/2018	9/27/2018
N032084-008C	C-NR3-D-Q318	Groundwater	9/13/2018 12:20:00 PM	9/13/2018	9/27/2018
N032084-008D	C-NR3-D-Q318	Groundwater	9/13/2018 12:20:00 PM	9/13/2018	9/27/2018
N032084-008E	C-NR3-D-Q318	Groundwater	9/13/2018 12:20:00 PM	9/13/2018	9/27/2018
N032084-009A	C-NR3-S-Q318	Groundwater	9/13/2018 12:40:00 PM	9/13/2018	9/27/2018
N032084-009B	C-NR3-S-Q318	Groundwater	9/13/2018 12:40:00 PM	9/13/2018	9/27/2018
N032084-009C	C-NR3-S-Q318	Groundwater	9/13/2018 12:40:00 PM	9/13/2018	9/27/2018
N032084-009D	C-NR3-S-Q318	Groundwater	9/13/2018 12:40:00 PM	9/13/2018	9/27/2018
N032084-009E	C-NR3-S-Q318	Groundwater	9/13/2018 12:40:00 PM	9/13/2018	9/27/2018
N032084-010A	MW-910-Q318	Groundwater	9/13/2018 11:15:00 AM	9/13/2018	9/27/2018
N032084-010B	MW-910-Q318	Groundwater	9/13/2018 11:15:00 AM	9/13/2018	9/27/2018
N032084-010C	MW-910-Q318	Groundwater	9/13/2018 11:15:00 AM	9/13/2018	9/27/2018
N032084-010D	MW-910-Q318	Groundwater	9/13/2018 11:15:00 AM	9/13/2018	9/27/2018
N032084-010E	MW-910-Q318	Groundwater	9/13/2018 11:15:00 AM	9/13/2018	9/27/2018
N032084-011A	C-NR4-D-Q318	Groundwater	9/13/2018 1:05:00 PM	9/13/2018	9/27/2018
N032084-011B	C-NR4-D-Q318	Groundwater	9/13/2018 1:05:00 PM	9/13/2018	9/27/2018
N032084-011C	C-NR4-D-Q318	Groundwater	9/13/2018 1:05:00 PM	9/13/2018	9/27/2018
N032084-011D	C-NR4-D-Q318	Groundwater	9/13/2018 1:05:00 PM	9/13/2018	9/27/2018
N032084-011E	C-NR4-D-Q318	Groundwater	9/13/2018 1:05:00 PM	9/13/2018	9/27/2018
N032084-012A	C-NR4-S-Q318	Groundwater	9/13/2018 1:20:00 PM	9/13/2018	9/27/2018
N032084-012B	C-NR4-S-Q318	Groundwater	9/13/2018 1:20:00 PM	9/13/2018	9/27/2018
N032084-012C	C-NR4-S-Q318	Groundwater	9/13/2018 1:20:00 PM	9/13/2018	9/27/2018
N032084-012D	C-NR4-S-Q318	Groundwater	9/13/2018 1:20:00 PM	9/13/2018	9/27/2018



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab Order:** N032084  
**Contract No:**

## Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032084-012E	C-NR4-S-Q318	Groundwater	9/13/2018 1:20:00 PM	9/13/2018	9/27/2018
N032084-013A	MW-911-Q318	Groundwater	9/13/2018 1:30:00 PM	9/13/2018	9/27/2018
N032084-013B	MW-911-Q318	Groundwater	9/13/2018 1:30:00 PM	9/13/2018	9/27/2018
N032084-013C	MW-911-Q318	Groundwater	9/13/2018 1:30:00 PM	9/13/2018	9/27/2018
N032084-013D	MW-911-Q318	Groundwater	9/13/2018 1:30:00 PM	9/13/2018	9/27/2018
N032084-013E	MW-911-Q318	Groundwater	9/13/2018 1:30:00 PM	9/13/2018	9/27/2018
N032084-014A	R-19-Q318	Groundwater	9/13/2018 9:25:00 AM	9/13/2018	9/27/2018
N032084-014B	R-19-Q318	Groundwater	9/13/2018 9:25:00 AM	9/13/2018	9/27/2018
N032084-014C	R-19-Q318	Groundwater	9/13/2018 9:25:00 AM	9/13/2018	9/27/2018
N032084-014D	R-19-Q318	Groundwater	9/13/2018 9:25:00 AM	9/13/2018	9/27/2018
N032084-014E	R-19-Q318	Groundwater	9/13/2018 9:25:00 AM	9/13/2018	9/27/2018
N032084-015A	MW-912-Q318	Groundwater	9/13/2018 9:35:00 AM	9/13/2018	9/27/2018
N032084-015B	MW-912-Q318	Groundwater	9/13/2018 9:35:00 AM	9/13/2018	9/27/2018
N032084-015C	MW-912-Q318	Groundwater	9/13/2018 9:35:00 AM	9/13/2018	9/27/2018
N032084-015D	MW-912-Q318	Groundwater	9/13/2018 9:35:00 AM	9/13/2018	9/27/2018
N032084-015E	MW-912-Q318	Groundwater	9/13/2018 9:35:00 AM	9/13/2018	9/27/2018
N032084-016A	AmbientBlank-3-Q318	Groundwater	9/13/2018 1:45:00 PM	9/13/2018	9/27/2018



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-001

**Client Sample ID:** C-CON-D-Q318  
**Collection Date:** 9/13/2018 10:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	850	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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# ANALYTICAL RESULTS

Print Date: 27-Sep-18

## ASSET Laboratories

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-002

**Client Sample ID:** C-CON-S-Q318  
**Collection Date:** 9/13/2018 10:20:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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### SPECIFIC CONDUCTANCE

#### EPA 120.1

RunID: NV00922-WC_180914D	QC Batch: R127615				PrepDate		Analyst: LR
Specific Conductance	860	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:**  
B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	MW-909-Q318
<b>Lab Order:</b>	N032084	<b>Collection Date:</b>	9/13/2018 10:30:00 AM
<b>Project:</b>	PG&E Topock - RMP, RC000753.0801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032084-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	860	0.10	0.10	umhos/cm	1		9/14/2018 10:20 AM

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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## ANALYTICAL RESULTS

Print Date: 27-Sep-18

### ASSET Laboratories

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-004

**Client Sample ID:** C-MAR-D-Q318  
**Collection Date:** 9/13/2018 8:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	850	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

<b>Qualifiers:</b>	<b>B</b> Analyte detected in the associated Method Blank	<b>E</b> Value above quantitation range
	<b>H</b> Holding times for preparation or analysis exceeded	<b>ND</b> Not Detected at the Reporting Limit
	<b>S</b> Spike/Surrogate outside of limits due to matrix interference	Results are wet unless otherwise specified
	<b>DO</b> Surrogate Diluted Out	



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-005

**Client Sample ID:** C-MAR-S-Q318  
**Collection Date:** 9/13/2018 9:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	870	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-006

**Client Sample ID:** C-NR1-D-Q318  
**Collection Date:** 9/13/2018 11:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	860	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-007

**Client Sample ID:** C-NR1-S-Q318  
**Collection Date:** 9/13/2018 11:35:00 AM  
**Matrix:** GROUNDWATER

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Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	850	0.10	0.10	umhos/cm	1		9/14/2018 10:20 AM

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**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-008

**Client Sample ID:** C-NR3-D-Q318  
**Collection Date:** 9/13/2018 12:20:00 PM  
**Matrix:** GROUNDWATER

**Analyses**                                      **Result**   **MDL**      **PQL**            **Qual**      **Units**            **DF**      **Date Analyzed**

**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: **NV00922-WC\_180914D**      QC Batch: **R127615**                                      PrepDate                                      Analyst: **LR**  
Specific Conductance                                      860      0.10            0.10                                      umhos/cm            1            9/14/2018 10:20 AM

**Qualifiers:**    B    Analyte detected in the associated Method Blank                                      E    Value above quantitation range  
                          H    Holding times for preparation or analysis exceeded                                      ND    Not Detected at the Reporting Limit  
                          S    Spike/Surrogate outside of limits due to matrix interference                                      Results are wet unless otherwise specified  
                          DO    Surrogate Diluted Out



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-009

**Client Sample ID:** C-NR3-S-Q318  
**Collection Date:** 9/13/2018 12:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	860	0.10	0.10	umhos/cm	1		9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-010

**Client Sample ID:** MW-910-Q318  
**Collection Date:** 9/13/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	850	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-011

**Client Sample ID:** C-NR4-D-Q318  
**Collection Date:** 9/13/2018 1:05:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	870	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories****ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-012

**Client Sample ID:** C-NR4-S-Q318  
**Collection Date:** 9/13/2018 1:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE****EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	860	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-013

**Client Sample ID:** MW-911-Q318  
**Collection Date:** 9/13/2018 1:30:00 PM  
**Matrix:** GROUNDWATER

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Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	860	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

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**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-014

**Client Sample ID:** R-19-Q318  
**Collection Date:** 9/13/2018 9:25:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	860	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-015

**Client Sample ID:** MW-912-Q318  
**Collection Date:** 9/13/2018 9:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	870	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID <b>N032084-005DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>120.1_WPGE</b>	Units: <b>umhos/cm</b>	Prep Date:	RunNo: <b>127615</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127615</b>	TestNo: <b>EPA 120.1</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3140110</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	870.000	0.10						868.0	0.230		2

Sample ID <b>N032084-011DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>120.1_WPGE</b>	Units: <b>umhos/cm</b>	Prep Date:	RunNo: <b>127615</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127615</b>	TestNo: <b>EPA 120.1</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3140117</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	875.000	0.10						873.0	0.229		2

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- E Value above quantitation range
- R RPD outside accepted recovery limits
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-001

**Client Sample ID:** C-CON-D-Q318  
**Collection Date:** 9/13/2018 10:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-002

**Client Sample ID:** C-CON-S-Q318  
**Collection Date:** 9/13/2018 10:20:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-003

**Client Sample ID:** MW-909-Q318  
**Collection Date:** 9/13/2018 10:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-004

**Client Sample ID:** C-MAR-D-Q318  
**Collection Date:** 9/13/2018 8:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.9	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-005

**Client Sample ID:** C-MAR-S-Q318  
**Collection Date:** 9/13/2018 9:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	8.0	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-006

**Client Sample ID:** C-NR1-D-Q318  
**Collection Date:** 9/13/2018 11:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-007

**Client Sample ID:** C-NR1-S-Q318  
**Collection Date:** 9/13/2018 11:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-008

**Client Sample ID:** C-NR3-D-Q318  
**Collection Date:** 9/13/2018 12:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-009

**Client Sample ID:** C-NR3-S-Q318  
**Collection Date:** 9/13/2018 12:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-010

**Client Sample ID:** MW-910-Q318  
**Collection Date:** 9/13/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-011

**Client Sample ID:** C-NR4-D-Q318  
**Collection Date:** 9/13/2018 1:05:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-012

**Client Sample ID:** C-NR4-S-Q318  
**Collection Date:** 9/13/2018 1:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-013

**Client Sample ID:** MW-911-Q318  
**Collection Date:** 9/13/2018 1:30:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-014

**Client Sample ID:** R-19-Q318  
**Collection Date:** 9/13/2018 9:25:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.9	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-015

**Client Sample ID:** MW-912-Q318  
**Collection Date:** 9/13/2018 9:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.9	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 150.1\_4500H+B\_W**

Sample ID <b>N032084-005DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>150.1_4500H</b>	Units: <b>pH Units</b>	Prep Date:	RunNo: <b>127614</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127614</b>	TestNo: <b>SM4500-H+B</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3140091</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.960	0.10						7.960	0	10	H
Temp. at time of pH Analysis	25.000	0.10						25.00	0	10	H

Sample ID <b>N032084-011DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>150.1_4500H</b>	Units: <b>pH Units</b>	Prep Date:	RunNo: <b>127614</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127614</b>	TestNo: <b>SM4500-H+B</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3140098</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH	7.820	0.10						7.840	0.255	10	H
Temp. at time of pH Analysis	25.000	0.10						25.00	0	10	H

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-001

**Client Sample ID:** C-CON-D-Q318  
**Collection Date:** 9/13/2018 10:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-002

**Client Sample ID:** C-CON-S-Q318  
**Collection Date:** 9/13/2018 10:20:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-003

**Client Sample ID:** MW-909-Q318  
**Collection Date:** 9/13/2018 10:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-004

**Client Sample ID:** C-MAR-D-Q318  
**Collection Date:** 9/13/2018 8:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	36	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-005

**Client Sample ID:** C-MAR-S-Q318  
**Collection Date:** 9/13/2018 9:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	21	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-006

**Client Sample ID:** C-NR1-D-Q318  
**Collection Date:** 9/13/2018 11:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	C-NR1-S-Q318
<b>Lab Order:</b>	N032084	<b>Collection Date:</b>	9/13/2018 11:35:00 AM
<b>Project:</b>	PG&E Topock - RMP, RC000753.0801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032084-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>		Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L		1	9/14/2018 08:09 AM

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-008

**Client Sample ID:** C-NR3-D-Q318  
**Collection Date:** 9/13/2018 12:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-009

**Client Sample ID:** C-NR3-S-Q318  
**Collection Date:** 9/13/2018 12:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-010

**Client Sample ID:** MW-910-Q318  
**Collection Date:** 9/13/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180917F</b>	QC Batch: <b>70670</b>			PrepDate	<b>9/17/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/17/2018 10:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-011

**Client Sample ID:** C-NR4-D-Q318  
**Collection Date:** 9/13/2018 1:05:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180917F</b>	QC Batch: <b>70670</b>			PrepDate	<b>9/17/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/17/2018 10:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-012

**Client Sample ID:** C-NR4-S-Q318  
**Collection Date:** 9/13/2018 1:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180917F</b>	QC Batch: <b>70670</b>			PrepDate	<b>9/17/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/17/2018 10:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-013

**Client Sample ID:** MW-911-Q318  
**Collection Date:** 9/13/2018 1:30:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180917F</b>	QC Batch: <b>70670</b>			PrepDate	<b>9/17/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/17/2018 10:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-014

**Client Sample ID:** R-19-Q318  
**Collection Date:** 9/13/2018 9:25:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180917F</b>	QC Batch: <b>70670</b>			PrepDate	<b>9/17/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/17/2018 10:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-015

**Client Sample ID:** MW-912-Q318  
**Collection Date:** 9/13/2018 9:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180917F</b>	QC Batch: <b>70670</b>			PrepDate	<b>9/17/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/17/2018 10:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 160.2\_2540D\_W**

Sample ID	<b>LCS-70639</b>	SampType:	<b>LCS</b>	TestCode:	<b>160.2_2540D</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/14/2018</b>	RunNo:	<b>127613</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>70639</b>	TestNo:	<b>SM2540D</b>			Analysis Date:	<b>9/14/2018</b>	SeqNo:	<b>3140060</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter		962.000		10	1000	0		96.2	80	120				

Sample ID	<b>MB-70639</b>	SampType:	<b>MBLK</b>	TestCode:	<b>160.2_2540D</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/14/2018</b>	RunNo:	<b>127613</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>70639</b>	TestNo:	<b>SM2540D</b>			Analysis Date:	<b>9/14/2018</b>	SeqNo:	<b>3140061</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter		ND		10										

Sample ID	<b>N032084-001DDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>160.2_2540D</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/14/2018</b>	RunNo:	<b>127613</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>70639</b>	TestNo:	<b>SM2540D</b>			Analysis Date:	<b>9/14/2018</b>	SeqNo:	<b>3140064</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter		ND		10							0	0	5	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 160.2\_2540D\_W**

Sample ID <b>LCS-70670</b>	SampType: <b>LCS</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/17/2018</b>	RunNo: <b>127664</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70670</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141550</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter	963.000	10	1000	0	96.3	80	120				

Sample ID <b>MB-70670</b>	SampType: <b>MBLK</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/17/2018</b>	RunNo: <b>127664</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70670</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141551</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter	ND	10									

Sample ID <b>N032084-010DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/17/2018</b>	RunNo: <b>127664</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70670</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141553</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter	ND	10						0	0	5	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-001

**Client Sample ID:** C-CON-D-Q318  
**Collection Date:** 9/13/2018 10:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180914A</b>	QC Batch: <b>R127666</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/14/2018 10:56 AM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 03:22 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-002

**Client Sample ID:** C-CON-S-Q318  
**Collection Date:** 9/13/2018 10:20:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_180917A	QC Batch: R127668				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/17/2018 01:06 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_180918B	QC Batch: 70685				PrepDate	9/18/2018	Analyst: CEI
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 03:49 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-003

**Client Sample ID:** MW-909-Q318  
**Collection Date:** 9/13/2018 10:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180914A</b>	QC Batch: <b>R127666</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/14/2018 11:36 AM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 03:55 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-004

**Client Sample ID:** C-MAR-D-Q318  
**Collection Date:** 9/13/2018 8:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180914A</b>	QC Batch: <b>R127666</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/14/2018 11:55 AM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-005

**Client Sample ID:** C-MAR-S-Q318  
**Collection Date:** 9/13/2018 9:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180914A</b>	QC Batch: <b>R127666</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/14/2018 12:33 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-006

**Client Sample ID:** C-NR1-D-Q318  
**Collection Date:** 9/13/2018 11:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180914A</b>	QC Batch: <b>R127666</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/14/2018 12:52 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:23 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-007

**Client Sample ID:** C-NR1-S-Q318  
**Collection Date:** 9/13/2018 11:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180914A</b>	QC Batch: <b>R127666</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/14/2018 01:11 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:30 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-008

**Client Sample ID:** C-NR3-D-Q318  
**Collection Date:** 9/13/2018 12:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180914A</b>	QC Batch: <b>R127666</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/14/2018 01:49 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:34 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-009

**Client Sample ID:** C-NR3-S-Q318  
**Collection Date:** 9/13/2018 12:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180917A</b>	QC Batch: <b>R127668</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/17/2018 01:26 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-010

**Client Sample ID:** MW-910-Q318  
**Collection Date:** 9/13/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180917A</b>	QC Batch: <b>R127668</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/17/2018 01:45 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:45 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-011

**Client Sample ID:** C-NR4-D-Q318  
**Collection Date:** 9/13/2018 1:05:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180917A</b>	QC Batch: <b>R127668</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/17/2018 02:04 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:51 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-012

**Client Sample ID:** C-NR4-S-Q318  
**Collection Date:** 9/13/2018 1:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: NV00922-IC7_180917A	QC Batch: R127668				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/17/2018 02:42 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685				PrepDate	9/18/2018	Analyst: CEI
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:56 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-013

**Client Sample ID:** MW-911-Q318  
**Collection Date:** 9/13/2018 1:30:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180917A</b>	QC Batch: <b>R127668</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/17/2018 03:01 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 05:02 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-014

**Client Sample ID:** R-19-Q318  
**Collection Date:** 9/13/2018 9:25:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_180917A	QC Batch: R127668				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/17/2018 03:20 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_180918B	QC Batch: 70685				PrepDate	9/18/2018	Analyst: CEI
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 05:07 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-015

**Client Sample ID:** MW-912-Q318  
**Collection Date:** 9/13/2018 9:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: NV00922-IC7_180917A	QC Batch: R127668				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/17/2018 03:38 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685				PrepDate	9/18/2018	Analyst: CEI
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 05:13 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>MB-R127666</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>
Client ID: <b>PBW</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141581</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>LCS-R127666</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141582</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.253	0.20	5.000	0	105 90 110

Sample ID <b>N032084-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141584</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	1.037	0.20	1.000	0	104 90 110

Sample ID <b>N032084-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141588</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	1.060	0.20	1.000	0	106 90 110

Sample ID <b>N032084-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141588</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	1.066	0.20	1.000	0.08490	98.1 90 110

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CALIFORNIA** | P: 562.219.7435 | F: 562.219.7436  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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EPA ID CA01638

**NEVADA** | P: 702.307.2659 | F: 702.307.2691  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032084-005AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141592</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.052	0.20	1.000	0	105	90	110				

Sample ID <b>N032084-006AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141594</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.046	0.20	1.000	0.05000	99.6	90	110				

Sample ID <b>N032084-007AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141596</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.118	0.20	1.000	0.08090	104	90	110				

Sample ID <b>N032084-007ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141597</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.087	0.20						0.08090	0	20	

Sample ID <b>N032084-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141598</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.038	0.20	1.000	0	104	90	110	1.037	0.135	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032084-008AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141600</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.026	0.20	1.000	0	103	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID: <b>MB-R127668</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141643</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      ND                      0.20

Sample ID: <b>LCS-R127668</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141644</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      5.295                      0.20                      5.000                      0                      106                      90                      110

Sample ID: <b>N032084-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141646</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      1.029                      0.20                      1.000                      0                      103                      90                      110

Sample ID: <b>N032084-009AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141648</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      0.996                      0.20                      1.000                      0                      99.6                      90                      110

Sample ID: <b>N032084-010AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141650</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium                      0.974                      0.20                      1.000                      0                      97.4                      90                      110

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032084-011AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141652</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.997	0.20	1.000	0.07240	92.5	90	110				

Sample ID <b>N032084-012AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141656</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.092	0.20	1.000	0.07530	102	90	110				

Sample ID <b>N032084-013AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141658</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.051	0.20	1.000	0.07570	97.6	90	110				

Sample ID <b>N032084-014AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141660</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.085	0.20	1.000	0.07960	101	90	110				

Sample ID <b>N032084-015AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141662</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.013	0.20	1.000	0	101	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032084-002ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141663</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20						0	0	20	

Sample ID <b>N032084-009AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141664</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.035	0.20	1.000	0	104	90	110	0.9964	3.83	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>MB-70685</b>	SampType: <b>MBLK</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145797</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>LCS-70685</b>	SampType: <b>LCS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145800</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium 9.950 1.0 10.00 0 99.5 85 115

Sample ID <b>N032084-001B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145804</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium 9.688 1.0 10.00 0 96.9 75 125

Sample ID <b>N032084-001B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145805</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium 9.741 1.0 10.00 0 97.4 75 125 9.688 0.553 20

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-001

**Client Sample ID:** C-CON-D-Q318  
**Collection Date:** 9/13/2018 10:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.41	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	C-CON-S-Q318
<b>Lab Order:</b>	N032084	<b>Collection Date:</b>	9/13/2018 10:20:00 AM
<b>Project:</b>	PG&E Topock - RMP, RC000753.0801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032084-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.52	0.032	0.050	mg/L	1		9/21/2018

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	MW-909-Q318
<b>Lab Order:</b>	N032084	<b>Collection Date:</b>	9/13/2018 10:30:00 AM
<b>Project:</b>	PG&E Topock - RMP, RC000753.0801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032084-003		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.38	0.032	0.050	mg/L	1		9/21/2018

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-004

**Client Sample ID:** C-MAR-D-Q318  
**Collection Date:** 9/13/2018 8:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.34	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-005

**Client Sample ID:** C-MAR-S-Q318  
**Collection Date:** 9/13/2018 9:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.52	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	C-NR1-D-Q318
<b>Lab Order:</b>	N032084	<b>Collection Date:</b>	9/13/2018 11:05:00 AM
<b>Project:</b>	PG&E Topock - RMP, RC000753.0801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032084-006		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.36	0.032	0.050	mg/L	1		9/21/2018

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-007

**Client Sample ID:** C-NR1-S-Q318  
**Collection Date:** 9/13/2018 11:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.37	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-008

**Client Sample ID:** C-NR3-D-Q318  
**Collection Date:** 9/13/2018 12:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.36	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-009

**Client Sample ID:** C-NR3-S-Q318  
**Collection Date:** 9/13/2018 12:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.35	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-010

**Client Sample ID:** MW-910-Q318  
**Collection Date:** 9/13/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.38	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-011

**Client Sample ID:** C-NR4-D-Q318  
**Collection Date:** 9/13/2018 1:05:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.35	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-012

**Client Sample ID:** C-NR4-S-Q318  
**Collection Date:** 9/13/2018 1:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.42	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-013

**Client Sample ID:** MW-911-Q318  
**Collection Date:** 9/13/2018 1:30:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.42	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-014

**Client Sample ID:** R-19-Q318  
**Collection Date:** 9/13/2018 9:25:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.39	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-015

**Client Sample ID:** MW-912-Q318  
**Collection Date:** 9/13/2018 9:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.44	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R127753</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>
Client ID: <b>PBW</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147334</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R127753</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147335</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.537	0.050	0.5000	0	107 85 115

Sample ID <b>N032084-003EDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147339</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.396	0.050			0.3788 4.44 20

Sample ID <b>N032084-004EMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147341</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.862	0.050	0.5000	0.3357	105 75 125

Sample ID <b>N032084-004EMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147342</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.947	0.050	0.5000	0.3357	122 75 125 0.8624 9.31 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-001

**Client Sample ID:** C-CON-D-Q318  
**Collection Date:** 9/13/2018 10:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 12:46 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	34	18	20		ug/L	1	9/25/2018 03:15 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-002

**Client Sample ID:** C-CON-S-Q318  
**Collection Date:** 9/13/2018 10:20:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925A	QC Batch: 70687				PrepDate	9/18/2018	Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 01:39 PM

**TOTAL METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925B	QC Batch: 70686				PrepDate	9/18/2018	Analyst: CEI
Iron	31	18	20		ug/L	1	9/25/2018 03:54 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-003

**Client Sample ID:** MW-909-Q318  
**Collection Date:** 9/13/2018 10:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 01:45 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	29	18	20		ug/L	1	9/25/2018 04:00 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-004

**Client Sample ID:** C-MAR-D-Q318  
**Collection Date:** 9/13/2018 8:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	39	18	20		ug/L	1	9/25/2018 01:50 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	1100	18	20		ug/L	1	9/25/2018 04:05 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-005

**Client Sample ID:** C-MAR-S-Q318  
**Collection Date:** 9/13/2018 9:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925A	QC Batch: 70687				PrepDate	9/18/2018	Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 01:56 PM

**TOTAL METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925B	QC Batch: 70686				PrepDate	9/18/2018	Analyst: CEI
Iron	360	18	20		ug/L	1	9/25/2018 04:11 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-006

**Client Sample ID:** C-NR1-D-Q318  
**Collection Date:** 9/13/2018 11:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:01 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	32	18	20		ug/L	1	9/25/2018 04:16 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-007

**Client Sample ID:** C-NR1-S-Q318  
**Collection Date:** 9/13/2018 11:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:06 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	33	18	20		ug/L	1	9/25/2018 04:21 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-008

**Client Sample ID:** C-NR3-D-Q318  
**Collection Date:** 9/13/2018 12:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925A	QC Batch: 70687				PrepDate	9/18/2018	Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:12 PM

**TOTAL METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925B	QC Batch: 70686				PrepDate	9/18/2018	Analyst: CEI
Iron	30	18	20		ug/L	1	9/25/2018 04:27 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-009

**Client Sample ID:** C-NR3-S-Q318  
**Collection Date:** 9/13/2018 12:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:17 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	37	18	20		ug/L	1	9/25/2018 04:32 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-010

**Client Sample ID:** MW-910-Q318  
**Collection Date:** 9/13/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:22 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	41	18	20		ug/L	1	9/25/2018 04:50 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-011

**Client Sample ID:** C-NR4-D-Q318  
**Collection Date:** 9/13/2018 1:05:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925A	QC Batch: 70687				PrepDate	9/18/2018	Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:38 PM

**TOTAL METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925B	QC Batch: 70686				PrepDate	9/18/2018	Analyst: CEI
Iron	28	18	20		ug/L	1	9/25/2018 04:55 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-012

**Client Sample ID:** C-NR4-S-Q318  
**Collection Date:** 9/13/2018 1:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925A	QC Batch: 70687				PrepDate	9/18/2018	Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:43 PM

**TOTAL METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925B	QC Batch: 70686				PrepDate	9/18/2018	Analyst: CEI
Iron	24	18	20		ug/L	1	9/25/2018 05:00 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-013

**Client Sample ID:** MW-911-Q318  
**Collection Date:** 9/13/2018 1:30:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:49 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	27	18	20		ug/L	1	9/25/2018 05:06 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-014

**Client Sample ID:** R-19-Q318  
**Collection Date:** 9/13/2018 9:25:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925A	QC Batch: 70687				PrepDate	9/18/2018	Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:54 PM

**TOTAL METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925B	QC Batch: 70686				PrepDate	9/18/2018	Analyst: CEI
Iron	58	18	20		ug/L	1	9/25/2018 05:11 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-015

**Client Sample ID:** MW-912-Q318  
**Collection Date:** 9/13/2018 9:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925A	QC Batch: 70687				PrepDate	9/18/2018	Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:59 PM

**TOTAL METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925B	QC Batch: 70686				PrepDate	9/18/2018	Analyst: CEI
Iron	32	18	20		ug/L	1	9/25/2018 05:17 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WDPGEPB**

Sample ID <b>MB-70687</b>	SampType: <b>MBLK</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128807</b>
Client ID: <b>PBW</b>	Batch ID: <b>70687</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151727</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Iron	ND	20			

Sample ID <b>LCS-70687</b>	SampType: <b>LCS</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128807</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70687</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151728</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Iron	102.627	20	100.0	0	103 85 115

Sample ID <b>N032084-001B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128807</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70687</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151732</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Iron	108.085	20	100.0	0	108 75 125

Sample ID <b>N032084-001B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128807</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70687</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151737</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Iron	112.606	20	100.0	0	113 75 125 108.1 4.10 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010\_WPGEPB**

Sample ID <b>MB-70686</b>	SampType: <b>MBLK</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128810</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70686</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152137</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron ND 20

Sample ID <b>LCS-70686</b>	SampType: <b>LCS</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128810</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70686</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152138</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 103.728 20 100.0 0 104 85 115

Sample ID <b>N032084-001C-MS</b>	SampType: <b>MS</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128810</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70686</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152144</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 135.364 20 100.0 34.43 101 75 125

Sample ID <b>N032084-001C-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128810</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70686</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152145</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 139.127 20 100.0 34.43 105 75 125 135.4 2.74 20

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-001

**Client Sample ID:** C-CON-D-Q318  
**Collection Date:** 9/13/2018 10:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 03:22 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 03:22 AM
Manganese	1.7	0.26	0.50	µg/L	1	9/19/2018 03:22 AM
Molybdenum	4.5	0.21	0.50	µg/L	1	9/19/2018 03:22 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 02:18 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-002

**Client Sample ID:** C-CON-S-Q318  
**Collection Date:** 9/13/2018 10:20:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID:	NV00922-ICP7_180918B	QC Batch:	70685	PrepDate	9/18/2018	Analyst:	CEI
Arsenic	2.8	0.081	0.10	µg/L	1	9/19/2018 03:49 AM	
Barium	110	0.15	1.0	µg/L	1	9/19/2018 03:49 AM	
Manganese	1.8	0.26	0.50	µg/L	1	9/19/2018 03:49 AM	
Molybdenum	4.8	0.21	0.50	µg/L	1	9/19/2018 03:49 AM	
Selenium	1.4	0.36	0.50	µg/L	1	9/26/2018 02:46 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-003

**Client Sample ID:** MW-909-Q318  
**Collection Date:** 9/13/2018 10:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 03:55 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 03:55 AM
Manganese	1.8	0.26	0.50	µg/L	1	9/19/2018 03:55 AM
Molybdenum	4.6	0.21	0.50	µg/L	1	9/19/2018 03:55 AM
Selenium	1.4	0.36	0.50	µg/L	1	9/26/2018 02:51 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-004

**Client Sample ID:** C-MAR-D-Q318  
**Collection Date:** 9/13/2018 8:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.7	0.081	0.10	µg/L	1	9/19/2018 04:00 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:00 AM
Manganese	14	0.26	0.50	µg/L	1	9/19/2018 04:00 AM
Molybdenum	4.6	0.21	0.50	µg/L	1	9/19/2018 04:00 AM
Selenium	1.6	0.36	0.50	µg/L	1	9/26/2018 02:57 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-005

**Client Sample ID:** C-MAR-S-Q318  
**Collection Date:** 9/13/2018 9:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.5	0.081	0.10	µg/L	1	9/19/2018 04:05 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:05 AM
Manganese	11	0.26	0.50	µg/L	1	9/19/2018 04:05 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 04:05 AM
Selenium	1.4	0.36	0.50	µg/L	1	9/26/2018 03:02 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-006

**Client Sample ID:** C-NR1-D-Q318  
**Collection Date:** 9/13/2018 11:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 04:23 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:23 AM
Manganese	1.8	0.26	0.50	µg/L	1	9/19/2018 04:23 AM
Molybdenum	4.6	0.21	0.50	µg/L	1	9/19/2018 04:23 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 04:15 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-007

**Client Sample ID:** C-NR1-S-Q318  
**Collection Date:** 9/13/2018 11:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.5	0.081	0.10	µg/L	1	9/19/2018 04:30 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:30 AM
Manganese	2.1	0.26	0.50	µg/L	1	9/19/2018 04:30 AM
Molybdenum	4.4	0.21	0.50	µg/L	1	9/19/2018 04:30 AM
Selenium	1.7	0.36	0.50	µg/L	1	9/26/2018 03:25 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-008

**Client Sample ID:** C-NR3-D-Q318  
**Collection Date:** 9/13/2018 12:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.7	0.081	0.10	µg/L	1	9/19/2018 04:34 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:34 AM
Manganese	2.1	0.26	0.50	µg/L	1	9/19/2018 04:34 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 04:34 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 03:30 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-009

**Client Sample ID:** C-NR3-S-Q318  
**Collection Date:** 9/13/2018 12:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.7	0.081	0.10	µg/L	1	9/19/2018 04:40 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:40 AM
Manganese	2.0	0.26	0.50	µg/L	1	9/19/2018 04:40 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 04:40 AM
Selenium	1.7	0.36	0.50	µg/L	1	9/26/2018 04:32 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-010

**Client Sample ID:** MW-910-Q318  
**Collection Date:** 9/13/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 04:45 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:45 AM
Manganese	1.8	0.26	0.50	µg/L	1	9/19/2018 04:45 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 04:45 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 04:37 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-011

**Client Sample ID:** C-NR4-D-Q318  
**Collection Date:** 9/13/2018 1:05:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.7	0.081	0.10	µg/L	1	9/19/2018 04:51 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:51 AM
Manganese	2.9	0.26	0.50	µg/L	1	9/19/2018 04:51 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 04:51 AM
Selenium	1.4	0.36	0.50	µg/L	1	9/26/2018 04:43 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-012

**Client Sample ID:** C-NR4-S-Q318  
**Collection Date:** 9/13/2018 1:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>			PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 04:56 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:56 AM
Manganese	2.4	0.26	0.50	µg/L	1	9/19/2018 04:56 AM
Molybdenum	4.4	0.21	0.50	µg/L	1	9/19/2018 04:56 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 03:53 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-013

**Client Sample ID:** MW-911-Q318  
**Collection Date:** 9/13/2018 1:30:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 05:02 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 05:02 AM
Manganese	2.2	0.26	0.50	µg/L	1	9/19/2018 05:02 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 05:02 AM
Selenium	1.7	0.36	0.50	µg/L	1	9/26/2018 03:58 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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 EPA ID CA01638

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"Servina Clients with Passion and Professionalism"

**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-014

**Client Sample ID:** R-19-Q318  
**Collection Date:** 9/13/2018 9:25:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.4	0.081	0.10	µg/L	1	9/19/2018 05:07 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 05:07 AM
Manganese	1.5	0.26	0.50	µg/L	1	9/19/2018 05:07 AM
Molybdenum	4.3	0.21	0.50	µg/L	1	9/19/2018 05:07 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 04:04 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-015

**Client Sample ID:** MW-912-Q318  
**Collection Date:** 9/13/2018 9:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.7	0.081	0.10	µg/L	1	9/19/2018 05:13 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 05:13 AM
Manganese	1.7	0.26	0.50	µg/L	1	9/19/2018 05:13 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 05:13 AM
Selenium	1.7	0.36	0.50	µg/L	1	9/26/2018 05:05 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>MB-70685</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>
Client ID: <b>PBW</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145741</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Barium	ND	1.0			
Manganese	ND	0.50			
Molybdenum	ND	0.50			

Sample ID <b>LCS-70685</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145744</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	9.913	0.10	10.00	0	99.1 85 115
Barium	10.090	1.0	10.00	0	101 85 115
Manganese	105.691	0.50	100.0	0	106 85 115
Molybdenum	9.904	0.50	10.00	0	99.0 85 115

Sample ID <b>N032084-001B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145748</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	12.548	0.10	10.00	2.607	99.4 75 125
Barium	118.714	1.0	10.00	108.0	107 75 125
Manganese	104.994	0.50	100.0	1.653	103 75 125
Molybdenum	15.624	0.50	10.00	4.534	111 75 125

Sample ID <b>N032084-001B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145749</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	12.760	0.10	10.00	2.607	102 75 125 12.55 1.67 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CALIFORNIA** | P:562.219.7435 F:562.219.7436  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 ELAP Cert 2921  
 EPA ID CA01638

**NEVADA** | P:702.307.2659 F:702.307.2691  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>N032084-001B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145749</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	119.613	1.0	10.00	108.0	116	75	125	118.7	0.754	20	
Manganese	103.210	0.50	100.0	1.653	102	75	125	105.0	1.71	20	
Molybdenum	15.894	0.50	10.00	4.534	114	75	125	15.62	1.72	20	

Sample ID <b>MB-70685</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128842</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152604</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	ND	0.50									

Sample ID <b>LCS-70685</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128842</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152605</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	10.444	0.50	10.00	0	104	85	115				

Sample ID <b>N032084-001B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128842</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152944</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	11.107	0.50	10.00	1.516	95.9	75	125				

Sample ID <b>N032084-001B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128842</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152945</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	11.186	0.50	10.00	1.516	96.7	75	125	11.11	0.715	20	

**Qualifiers:**

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- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
ELAP Cert 2921  
EPA ID CA01638

**NEVADA** | P: 702.307.2659 F: 702.307.2691  
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Page 1 of 1

<b>Client:</b> Arcadia		<b>Report to:</b> Dan Bush		<b>Bill to:</b> Marty Bloes				<b>EDD Requirement</b>		<b>QA/QC</b>		<b>Sample Receipt Condition</b>		
<b>Address:</b> 1410 Rocky Ridge Dr # 330		<b>Company:</b> Arcadia		<b>Address:</b>				<input type="checkbox"/> Excol EDD	<input type="checkbox"/> RTNE		<input type="checkbox"/> 1. Chilled			
<b>Address:</b> Roseville, CA 95661		<b>Email:</b> dan.bush@arcadis.com daniel.moore@ortogen.com		<b>Address:</b>				<input type="checkbox"/> Geotracker	<input type="checkbox"/> RWQCB		<input checked="" type="checkbox"/> 2. Headspace			
<b>Phone:</b> 916-786-3302	<b>Fax:</b>	<b>Address:</b> 1410 Rocky Ridge Dr # 330 Roseville, CA 95661		<b>Email to:</b> mbloes@pivox.com		<b>P.O.#</b>		<input type="checkbox"/> Labspec	<input checked="" type="checkbox"/> CaITrans		<input type="checkbox"/> 3. Container Intact			
<b>Submitted By:</b> Nana Tep		<b>Phone:</b> 916-786-3302		<b>Phone:</b> 949-727-1400, ext 200		<b>Fax:</b>		<input type="checkbox"/> Others		<input checked="" type="checkbox"/> LEVEL III		<input type="checkbox"/> 4. Seal Present		
<b>Title:</b> sample test		<b>Signature:</b> [Signature]		<b>Date:</b> 9/13/18		<b>Signature:</b> Nana Tep		<b>Specify:</b> RWQCB		<input type="checkbox"/> LEVEL IV		<input checked="" type="checkbox"/> 5. IR number		
<b>Signature:</b> [Signature]		<b>Date:</b> 9/13/18		<b>Signature:</b> [Signature]		<b>Date:</b> 9/13/18		<b>Global ID:</b>		<input type="checkbox"/> Regulatory		<input type="checkbox"/> 6. Method of Cooling: 100		
<b>Project Name:</b> PG&E Topock - RMP		<b>Project Number:</b> RC000753.801D		<b>Matrix</b>		<b>Ground</b>		<b>Sample Temp:</b> 29C/81F/85/4.1C		<input type="checkbox"/> Potable		<input type="checkbox"/> NPDES		
<b>Signature:</b> [Signature]		<b>Date:</b> 9/13/18		<b>Surface</b>		<b>Other Solid</b>		<b>Tracking No.:</b>		<input type="checkbox"/> Soil		<input type="checkbox"/> NPDES		
<b>Signature:</b> [Signature]		<b>Date:</b> 9/13/18		<b>Surface</b>		<b>Other Solid</b>		<b>Tracking No.:</b>		<input type="checkbox"/> NPDES		<input type="checkbox"/> NPDES		
<b>Signature:</b> [Signature]		<b>Date:</b> 9/13/18		<b>Surface</b>		<b>Other Solid</b>		<b>Tracking No.:</b>		<input type="checkbox"/> NPDES		<input type="checkbox"/> NPDES		
<b>Item No.</b>	<b>Laboratory Work Order No.</b>	<b>Sample ID/Location</b>		<b>Sample Date</b>	<b>Sample Time</b>	<b>Others</b>	<b>Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH</b>					<b>Turn Around Time</b>	<b>Remarks</b>	
		<b>Sample ID/Location</b>					<b>Field QC Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH</b>							
		<b>Sample ID/Location</b>					<b>Dissolved metals (SW8010B) (SW8020Adis) FF: HNO3</b>							
		<b>Sample ID/Location</b>					<b>Dissolved metals (SW8010B) (SW8020Adis) FF: HNO3</b>							
		<b>Sample ID/Location</b>					<b>Dissolved metals (SW8010B) (SW8020Adis) FF: HNO3</b>							
		<b>Sample ID/Location</b>					<b>Total metals (SW8010B) (SW8020Adis) FF: HNO3</b>							
		<b>Sample ID/Location</b>					<b>Ca, Mg, K, Na, B</b>							
		<b>Sample ID/Location</b>					<b>As, Mn, Fe, Se, Mo, Ba</b>							
		<b>Sample ID/Location</b>					<b>Antions (E300.0): Br, Cl, SO4</b>							
		<b>Sample ID/Location</b>					<b>Dissolved metals (SW8010B) (SW8020Adis) FF: HNO3</b>							
		<b>Sample ID/Location</b>					<b>Specific Conductance (E120.1)</b>							
		<b>Sample ID/Location</b>					<b>pH (SM4500HB)</b>							
		<b>Sample ID/Location</b>					<b>TDS (SM2540C)</b>							
		<b>Sample ID/Location</b>					<b>Alkalinity (Total, reported as CaCO3) (SM2320B)</b>							
		<b>Sample ID/Location</b>					<b>TSS (SM2540)</b>							
		<b>Sample ID/Location</b>					<b>Nitrate/Nitrite (SM4500NO3) Nitrogen: H2SO4</b>							
1		C-BNS-Q318					X	X	X	X	X	X	E 5	P BNS
2	N032084-01	C-CON-D-Q318		9/13/18	10:05		X	X	X	X	X	X	E 5	P BNS
3	-02	C-CON-S-Q318		9/13/18	10:20		X	X	X	X	X	X	E 5	P BNS
4		<del>C-I-3-D-Q318</del>					X	X	X	X	X	X	E 5	P BNS
5	-03	MW-909-Q318		9/13/18	10:30		X	X	X	X	X	X	E 5	P BNS
6		<del>C-I-3-S-Q318</del>					X	X	X	X	X	X	E 5	P BNS
7	-04	C-MAR-D-Q318		9/13/18	08:30		X	X	X	X	X	X	E 5	P BNS
8	-05	C-MAR-S-Q318		9/13/18	09:00		X	X	X	X	X	X	E 5	P BNS
9	-06	C-NR1-D-Q318		9/13/18	11:05		X	X	X	X	X	X	E 5	P BNS
10	-07	C-NR1-S-Q318		9/13/18	11:25		X	X	X	X	X	X	E 5	P BNS
11	-08	C-NR3-D-Q318		9/13/18	12:20		X	X	X	X	X	X	E 5	P BNS
12	-09	C-NR3-S-Q318		9/13/18	12:40		X	X	X	X	X	X	E 5	P BNS
13	-10	MW-910-Q318		9/13/18	11:15		X	X	X	X	X	X	E 5	P BNS
14	-11	C-NR4-D-Q318		9/13/18	13:25		X	X	X	X	X	X	E 5	P BNS

Relinquished by (Signature and Printed Name): [Signature] Nana Tep Date/Time: 9/13/18 1535  
 Relinquished by (Signature and Printed Name): [Signature] Marty Bloes Date/Time: 9/13/18 1740  
 Relinquished by (Signature and Printed Name): [Signature] Marty Bloes Date/Time: 9/13/18 1740

- A < 24 Hrs or Same Day TAT
- B = Next Workday
- C = 2 Workdays
- D = 3 Workdays
- E = Routine 5-7 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00PM.

<b>Preservatives:</b>		<b>Container Type:</b>	
H=HCL	N=HNO3	S=H2SO4	C=4°C
Z=Zn(AC)2	O=NaOH	T=Na2S2O3	T=Tube
Others/Specify: B (NH4)2SO4/NH4OH		J=Lar	V=VOA
		M=Metal	P=Plnt
		G=Glass	C=Can

**Terms**  
 1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report.  
 2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis  
 Less than 24 Hrs.=200% Next Day=100% 2 Workdays=50% 3 Workdays=35% 4 Workdays=20%  
 3. Custom EDD formats will be an additional 3% of the total project price.  
 4. Add 10% surcharge for Level III Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.  
**White=Laboratory Copy**

Yellow=Customer's Copy



# ASSET LABORATORIES

ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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 P: 702.307.2659 F: 702.307.2691  
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 P: 562.219.7435 F: 562.219.7436  
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Client: Arcadis		Report to: Dan Bush			Bill to: Marty Bloes						EDD Requirement		QA/QC		Sample Receipt Condition						
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis			Address:						Excel EDD		RTNE		Y N						
Address: Roseville, CA 95661		Email: dan.bush@arcadis.com daniel.moore@critegen.com			Address:						GeoTracker		RWQCB		1. Chilled						
Phone: 916-786-3302 Fax:		Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661			Email to: mbloes@pivo.com						Others		LEVEL III		2. Headspace						
Submitted By: <i>Nana Top</i>		Phone: 916-786-3302 Fax:			Phone: 949-727-1400, ext 200						Specify: RWQCB		LEVEL IV		3. Container Intact						
Title: <i>sample tech</i>					P.O.#						Global ID:		Regulatory		4. Seal Present						
Signature: <i>[Signature]</i> Date: 9/13/18		Sampled By: <i>Nana Top</i>			Field QC Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH						Specify State:		Specify State:		5. IR number <b>10</b>						
Project Name: PG&E Topock - RMP		Signature: <i>[Signature]</i> Date: 9/13/18			Field QC Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH						Global ID:		Specify State:		6. Method of Cooling:						
Project Number: RC000753.0801					Dissolved metals (SW6010B/SW6020Adis) FF: HNO3						Global ID:		Specify State:		Sample Temp: <b>3.10</b>						
					Dissolved metals (SW6010B/SW6020Adis) FF: HNO3						Global ID:		Specify State:								
					Dissolved metals (SW6010B/SW6020Adis) FF: HNO3						Global ID:		Specify State:								
					Dissolved metals (SW6010B/SW6020Adis) FF: HNO3						Global ID:		Specify State:								
					Dissolved metals (SW6010B/SW6020Adis) FF: HNO3						Global ID:		Specify State:								
					Total metals (SW6010B); HNO3						Global ID:		Specify State:								
					Antons (E300.0); Br, Cl, SO4						Global ID:		Specify State:								
					Specific Conductance (E120-1)						Global ID:		Specify State:								
					pH (SM4500HB)						Global ID:		Specify State:								
					TDS (SM2540C)						Global ID:		Specify State:								
					Alkalinity (Total, reported as CaCO3) (SM2320B)						Global ID:		Specify State:								
					TSS (SM2540)						Global ID:		Specify State:								
					Nitrate/Nitrite (SM4600NO3) Nitrogen; H2SO4						Global ID:		Specify State:								
					Oxygen and deuterium stable isotopes (CFIRM)						Global ID:		Specify State:								
Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	3x250 mL poly	3x500mL poly	3x500mL poly	500 mL poly	1 liter poly	1 liter poly	1 liter poly	1 liter poly	1 liter poly	125 mL poly	1 250 mL poly	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1	N032084-12	C-NR4-S-Q318	9/13/18	12:20		X	X	X	X	X	X	X	X	X	X	X	5	P	BNS		
2		C-R22A-D-Q318				X	X	X	X	X	X	X	X	X	X	X	5	P	BNS		
3		C-R22A-S-Q318				X	X	X	X	X	X	X	X	X	X	X	5	P	BNS		
4		C-R27-D-Q318				X	X	X	X	X	X	X	X	X	X	X	5	P	BNS		
5		C-R27-S-Q318				X	X	X	X	X	X	X	X	X	X	X	5	P	BNS		
7		C-TAZ-D-Q318				X	X	X	X	X	X	X	X	X	X	X	5	P	BNS		
8	-13	MW-911-Q318	9/13/18	13:30		X	X	X	X	X	X	X	X	X	X	X	5	P	BNS		
9	-14	R-19-Q318	9/13/18	09:25		X	X	X	X	X	X	X	X	X	X	X	5	P	BNS		
10		R-28-Q318				X	X	X	X	X	X	X	X	X	X	X	5	P	BNS		
11		R63-Q318				X	X	X	X	X	X	X	X	X	X	X	5	P	BNS		
12		RRB-Q318				X	X	X	X	X	X	X	X	X	X	X	5	P	BNS		
13		SW1-Q318				X	X	X	X	X	X	X	X	X	X	X	3	P	BNS		
14		SW2-Q318				X	X	X	X	X	X	X	X	X	X	X	3	P	BNS		

Relinquished by (Signature and Printed Name): *[Signature]* Date/Time: 9/13/18 1535

Relinquished by (Signature and Printed Name): *[Signature]* Date/Time: 9/13/18 1740

Relinquished by (Signature and Printed Name): *[Signature]* Date/Time: 9/13/18 1740

Relinquished by (Signature and Printed Name): *[Signature]* Date/Time: 9/13/18 1535

- Turn Around Time (TAT)
- A < 24 Hrs or Same Day TAT
  - B = Next Workday
  - C = 2 Workdays
  - D = 3 Workdays
  - E = Routine 5-7 Workdays

Terms: 1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report. 2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis. 3. Custom EDD forms will be an additional 3% of the total project price. 4. Add 10% surcharge for Level II Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.

5. Trip Blankets and Equipment Blankets are billable items. 6. Asset Laboratories is not responsible for samples collected using incorrect methodology. 7. Terms are net 30 days. 8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed. 9. For subcontract analysis, TAT and surcharges will vary.

Preservatives: H=HCL, N=HNO3, S=H2SO4, C=4°C, T=Tube, V=VOA, P=Pint, Z=Zn(AC)2, O=NaOH, T=Na2S2O3, J=Jar, B=Tedlar, G=Glass, Others/Specify: B, (NH4)2SO4/NH4OH, M=Metal, M=Metal, C=Can

White=Laboratory Copy Yellow=Customer's Copy



# ASSET LABORATORIES

ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

## CHAIN OF CUSTODY RECORD

Page **1** of **1**

Contact us:  
 Nevada: 3151 W. Post Road, Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
 11060 Artesia Blvd., Ste C, Carritos, CA 90703  
 California: P: 562.219.7435 F: 562.219.7436  
 www.assetlaboratories.com

Client: Arcadis Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661 Phone: 916-788-3302 Submitted By: <i>Nana Tee</i> Title: <i>Sample test</i> Signature: <i>[Signature]</i> Date: <i>9/13/16</i>		Report to: Dan Bush Company: Arcadis Email: <i>dan.bush@arcadis.com</i> <i>daniel.moore@crt@ae.com</i> Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661 Phone: 916-788-3302 Signature: <i>[Signature]</i> Date: <i>9/13/16</i>		Bill to: Marty Bloes Address: Email: <i>mbloes@pivox.com</i> P.O.# Phone: 949-727-1400, ext 200 Fax:		EDD Requirement Excel EDD Geotracker Labspec Others Specify: RWQCB Global ID:		QA/QC RTNE RWQCB CalTrans LEVEL III LEVEL IV Regulatory Specify State:		Sample Receipt Condition Y N 1. Chilled 2. Headspace 3. Container Intact 4. Seal Present 5. IR number 6. Method of Cooling: Sample Temp: <i>5.12</i>							
Project Name: PG&E Topock - RMP Project Number: RC000753.0801		Signature: <i>[Signature]</i> Date: <i>9/13/16</i>		Matrix Ground x Sediment Potable Soil NPDES Other Solid Surface		3x250 mL poly 250 ml Poly 3x500mL poly 3x500mL poly 3x500mL poly 500 mL poly 1 liter poly 1 liter poly 1 liter poly 1 liter poly 1 liter poly 1 liter poly 125 mL poly		C(VI) FF (E218.6) (NH4)2, SO4, NH4, OH Field QC Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH Dissolved metals (SW6010B/SW6020A) FF: HNO3 Dissolved metals (SW6010B/SW6020A) FF: HNO3 Dissolved metals (SW6010B/SW6020A) FF: HNO3 As, Mn, Fe, Se, Mo, Ba Total metals (SW6010B); HNO3 Antons (E300.0); Br, Cl, SO4 Specific Conductance (E120.1) pH (SM4500-HB) TDS (SM2540C) Alkalinity (Total, reported as CaCO3) (SM2320B) TSS (SM2540) Nitrate/Nitrite (SM4600ND3) Nitrate; H2SO4		Turn Around Time No. of Container Container Type PRESERVATION Remarks							
Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others												
	N032084-15	MW-912-Q318	<i>9/13/16</i>	<i>09:35</i>		X	X	X	X	X	X	X					
		AB1-Q318				X							E 1 P BN Hold				
	-16	AB2-Q318	<i>9/13/16</i>	<i>13:45</i>		X							E 1 P BN Hold				
		AB3-Q318				X							E 1 P BN Hold				
Relinquished by (Signature and Printed Name): <i>Nana Tee</i> Date/Time: <i>9/13/16</i>			Relinquished by (Signature and Printed Name): <i>Marty Bloes</i> Date/Time: <i>9/13/16</i>			Turn Around Time (TAT) A < 24 Hrs or Same Day TAT B = Next Workday C = 2 Workdays D = 3 Workdays E = Routine 5-7 Workdays X			Special Instruction:								
Relinquished by (Signature and Printed Name): <i>[Signature]</i> Date/Time: <i>9/13/16 1740</i>			Relinquished by (Signature and Printed Name): <i>[Signature]</i> Date/Time: <i>9/13/16 1740</i>			TAT Starts at 8 AM the following day if samples received after 3:00PM.											
Terms: 1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report. 2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis. 3. Less than 24 Hrs=200% Next Day=100% 2 Workdays=50% 3 Workdays=35% 4 Workdays=20% 4. Add 10% surcharge for Level III Data Packages, 15% for Level IV Data Packages. Surcharges applied on total project price.						5. Trip Blanks and Equipment Blanks are billable samples. 6. Asset Laboratories is not responsible for samples collected using incorrect methodology. 7. Terms are net 30 days. 8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed. 9. For subcontract analysis, TAT and Surcharges will vary.						Preservatives: H=HCL N=HNO3 S=H2SO4 C=4°C Z=Zn(Ac)2 O=NaOH T=Na2S2O3 Others/Specify: B ((NH4)2SO4/NH4OH)			Container Type: T=Tube V=VOA P=Pinnt J=Jar B=Tedlar G=Glass M=Metal M=Metal C=Can		

White=Laboratory Copy

Yellow=Customer's Copy

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 9/13/2018 Workorder: N032084  
 Rep sample Temp (Deg C): 2.9/3.1/3.5/4.1 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |  |  |  |
|---|--|--|--|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>                       |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>            |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>            |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 7. Chain of custody agrees with sample labels?  | Yes <input type="checkbox"/>   | No <input checked="" type="checkbox"/>                     |  |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 11. All samples received within holding time?   | Yes <input type="checkbox"/>   | No <input checked="" type="checkbox"/>                     |  |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>                     |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input checked="" type="checkbox"/><br>Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input type="checkbox"/><br>NA <input type="checkbox"/> |

Comments: Samples for pH were past holding time upon receipt. See Correspondence.

Checklist Completed By: YR  9/17/2018

Reviewed By:  LG 091818

**Subject:** RE: PG&E Topock - RMP, RC000753.0801 (Asset Labs No. N032084)  
**From:** "Madsen, Laura" <Laura.Madsen@arcadis.com>  
**Date:** 9/17/2018 2:25 PM  
**To:** Yoandra Rodriguez <yoandra@assetlaboratories.com>  
**CC:** "maryann.balilu@assetlaboratoriesph.com" <maryann.balilu@assetlaboratoriesph.com>, "Andreafe. Gallardo" <andrea.gallardo@assetlaboratories.com>, "Sonny. Lorenzo" <sonny.lorenzo@assetlaboratories.com>

I confirm those changes to be consistent with previous instructions.

Laura

---

**From:** Yoandra Rodriguez <yoandra@assetlaboratories.com>  
**Sent:** Monday, September 17, 2018 4:22 PM  
**To:** Madsen, Laura <Laura.Madsen@arcadis.com>  
**Cc:** maryann.balilu@assetlaboratoriesph.com; 'Andreafe. Gallardo' <andrea.gallardo@assetlaboratories.com>; 'Sonny. Lorenzo' <sonny.lorenzo@assetlaboratories.com>  
**Subject:** PG&E Topock - RMP, RC000753.0801 (Asset Labs No. N032084)

Hi Laura,

Based on your instructions below regarding previous WO N032065, same issues were solved as follow:

- Used PN ".0801D"
- The dissolved metals on page 2 same as listed on pages 1 and 3.
- Sample 16: ID is AB3-Q318 on COC and AmbientBlank-3-Q318 on label, followed ID on label.

Please confirm.

Thanks,

----- Forwarded Message -----

**Subject:** RE: PG&E Topock - RMP, RC000753.0801 (Asset Labs No. N032065)  
**Date:** Mon, 17 Sep 2018 15:22:17 +0000  
**From:** Madsen, Laura <Laura.Madsen@arcadis.com>  
**To:** Yoandra Rodriguez <yoandra@assetlaboratories.com>  
**CC:** 'Andreafe. Gallardo' <andrea.gallardo@assetlaboratories.com>, 'Sonny. Lorenzo' <sonny.lorenzo@assetlaboratories.com>, maryann.balilu@assetlaboratoriesph.com <maryann.balilu@assetlaboratoriesph.com>

Hi Yoandra,

Please use PN ".0801D"

Please use "AmbientBlank-1-Q318", "AmbientBlank-2-Q318"



-----Original Message-----

From: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
Sent: Friday, September 14, 2018 6:27 PM  
To: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
Cc: 'Andreafe. Gallardo' <[andrea.gallardo@assetlaboratories.com](mailto:andrea.gallardo@assetlaboratories.com)>; 'Sonny. Lorenzo' <[sonny](mailto:sonny)>  
Subject: Re: PG&E Topock - RMP, RC000753.0801 (Asset Labs No. N032065)

Hi Laura,

Please also advise on the following issues:

- Which Project number to use: RC000753.0801 (pages 1 and 2) or RC000753.0801D (page 3).
- Sample 1 and 2: ID is "AB1-Q318", "AB2-Q318" on COC while "AmbientBlank-1-Q318", "Ambi

Thanks,

On 9/13/2018 1:03 PM, Madsen, Laura wrote:

> HI,  
> That is correct. The dissolved metals on page 3 are the same as listed on page 2.  
>  
> Thanks,  
> Laura

> -----Original Message-----

> From: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
> Sent: Thursday, September 13, 2018 2:59 PM  
> To: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
> Cc: 'Marlon B. Cartin' <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>; 'Andreafe.  
> Gallardo' <[andrea.gallardo@assetlaboratories.com](mailto:andrea.gallardo@assetlaboratories.com)>; 'Sonny. Lorenzo'  
> <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>;  
> <[maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com)>  
> Subject: PG&E Topock - RMP, RC000753.0801 (Asset Labs No. N032065)

> Hi Laura,

> Please kindly inform list of dissolved metals needed for the samples on page 2 of the a  
>  
> Thanks,

> --

> Yoandra Rodriguez  
> Sample Control Officer  
> Asset Laboratories

> This email and any files transmitted with it are the property of Arcadis and its affili

--

Yoandra Rodriguez  
Sample Control Officer  
Asset Laboratories

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# ASSET Laboratories

## WORK ORDER Summary

18-Sep-18

WorkOrder: N032084

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/13/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032084-001A	C-CON-D-Q318	9/13/2018 10:05:00 AM	9/27/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-001B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-001C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-001D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-001E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-002A	C-CON-S-Q318	9/13/2018 10:20:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-002B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-002C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-002D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR

# ASSET Laboratories

## WORK ORDER Summary

18-Sep-18

WorkOrder: N032084

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/13/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032084-002D	C-CON-S-Q318	9/13/2018 10:20:00 AM	9/27/2018	Groundwater	SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-002E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-003A	MW-909-Q318	9/13/2018 10:30:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-003B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-003C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-003D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-003E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-004A	C-MAR-D-Q318	9/13/2018 8:30:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-004B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

18-Sep-18

WorkOrder: N032084

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/13/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032084-004B	C-MAR-D-Q318	9/13/2018 8:30:00 AM	9/27/2018	Groundwater	EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-004C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-004D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-004E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-005A	C-MAR-S-Q318	9/13/2018 9:00:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-005B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-005C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-005D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR

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18-Sep-18

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Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/13/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032084-005E	C-MAR-S-Q318	9/13/2018 9:00:00 AM	9/27/2018	Groundwater	SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-006A	C-NR1-D-Q318	9/13/2018 11:05:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-006B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-006C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-006D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-006E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-007A	C-NR1-S-Q318	9/13/2018 11:35:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-007B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-007C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

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## WORK ORDER Summary

18-Sep-18

WorkOrder: N032084

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/13/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032084-007C	C-NR1-S-Q318	9/13/2018 11:35:00 AM	9/27/2018	Groundwater	EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-007D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-007E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-008A	C-NR3-D-Q318	9/13/2018 12:20:00 PM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-008B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-008C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-008D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-008E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-009A	C-NR3-S-Q318	9/13/2018 12:40:00 PM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-009B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

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18-Sep-18

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Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/13/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032084-009B	C-NR3-S-Q318	9/13/2018 12:40:00 PM	9/27/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-009C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-009D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-009E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-010A	MW-910-Q318	9/13/2018 11:15:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-010B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-010C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-010D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR

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## WORK ORDER Summary

18-Sep-18

WorkOrder: N032084

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/13/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032084-010D	MW-910-Q318	9/13/2018 11:15:00 AM	9/27/2018	Groundwater		Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-010E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-011A	C-NR4-D-Q318	9/13/2018 1:05:00 PM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-011B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-011C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-011D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-011E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-012A	C-NR4-S-Q318	9/13/2018 1:20:00 PM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-012B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW



# ASSET Laboratories

## WORK ORDER Summary

18-Sep-18

WorkOrder: N032084

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/13/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032084-012C	C-NR4-S-Q318	9/13/2018 1:20:00 PM	9/27/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-012D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-012E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-013A	MW-911-Q318	9/13/2018 1:30:00 PM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-013B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-013C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-013D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-013E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-014A	R-19-Q318	9/13/2018 9:25:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

18-Sep-18

WorkOrder: N032084

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/13/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032084-014B	R-19-Q318	9/13/2018 9:25:00 AM	9/27/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-014C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-014D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-014E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-015A	MW-912-Q318	9/13/2018 9:35:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-015B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-015C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-015D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR

# ASSET Laboratories

## WORK ORDER Summary

18-Sep-18

**WorkOrder:** N032084

**Client ID:** ARCUS02

**Project:** PG&E Topock - RMP, RC000753.0801D

**QC Level:** Level IV

**Date Received:** 9/13/2018

**Comments:**

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032084-015D	MW-912-Q318	9/13/2018 9:35:00 AM	9/27/2018	Groundwater	SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-015E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-016A	AmbientBlank-3-Q318	9/13/2018 1:45:00 PM					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-017A	FOLDER	9/27/2018	9/27/2018		EDD	RWQCB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			9/27/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			9/27/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

# ***ARCADIS***

Project: PG&E Topock - RMP  
Project No.: RC000753.0801D

ASSET Laboratories Work Order:  
N032084

## ***ANALYTICAL and QC RESULTS SAMPLE RECEIVING ITEMS***

***PRIVILEGED AND CONFIDENTIAL***



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September 27, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032084

RE: PG&E Topock - RMP, RC000753.0801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 13, 2018 by ASSET Laboratories .  
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in  
accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Nancy Libucan Tor*

Quennie Manimtim  
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in  
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---

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab Order:** N032084

---

**CASE NARRATIVE**

**SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time except for pH. pH testing is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

Sample N032084-016 (AmbientBlank-3-Q318) was not analyzed as per COC.



**ASSET Laboratories**

Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab Order:** N032084  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032084-001A	C-CON-D-Q318	Groundwater	9/13/2018 10:05:00 AM	9/13/2018	9/27/2018
N032084-001B	C-CON-D-Q318	Groundwater	9/13/2018 10:05:00 AM	9/13/2018	9/27/2018
N032084-001C	C-CON-D-Q318	Groundwater	9/13/2018 10:05:00 AM	9/13/2018	9/27/2018
N032084-001D	C-CON-D-Q318	Groundwater	9/13/2018 10:05:00 AM	9/13/2018	9/27/2018
N032084-001E	C-CON-D-Q318	Groundwater	9/13/2018 10:05:00 AM	9/13/2018	9/27/2018
N032084-002A	C-CON-S-Q318	Groundwater	9/13/2018 10:20:00 AM	9/13/2018	9/27/2018
N032084-002B	C-CON-S-Q318	Groundwater	9/13/2018 10:20:00 AM	9/13/2018	9/27/2018
N032084-002C	C-CON-S-Q318	Groundwater	9/13/2018 10:20:00 AM	9/13/2018	9/27/2018
N032084-002D	C-CON-S-Q318	Groundwater	9/13/2018 10:20:00 AM	9/13/2018	9/27/2018
N032084-002E	C-CON-S-Q318	Groundwater	9/13/2018 10:20:00 AM	9/13/2018	9/27/2018
N032084-003A	MW-909-Q318	Groundwater	9/13/2018 10:30:00 AM	9/13/2018	9/27/2018
N032084-003B	MW-909-Q318	Groundwater	9/13/2018 10:30:00 AM	9/13/2018	9/27/2018
N032084-003C	MW-909-Q318	Groundwater	9/13/2018 10:30:00 AM	9/13/2018	9/27/2018
N032084-003D	MW-909-Q318	Groundwater	9/13/2018 10:30:00 AM	9/13/2018	9/27/2018
N032084-003E	MW-909-Q318	Groundwater	9/13/2018 10:30:00 AM	9/13/2018	9/27/2018
N032084-004A	C-MAR-D-Q318	Groundwater	9/13/2018 8:30:00 AM	9/13/2018	9/27/2018
N032084-004B	C-MAR-D-Q318	Groundwater	9/13/2018 8:30:00 AM	9/13/2018	9/27/2018
N032084-004C	C-MAR-D-Q318	Groundwater	9/13/2018 8:30:00 AM	9/13/2018	9/27/2018
N032084-004D	C-MAR-D-Q318	Groundwater	9/13/2018 8:30:00 AM	9/13/2018	9/27/2018
N032084-004E	C-MAR-D-Q318	Groundwater	9/13/2018 8:30:00 AM	9/13/2018	9/27/2018
N032084-005A	C-MAR-S-Q318	Groundwater	9/13/2018 9:00:00 AM	9/13/2018	9/27/2018
N032084-005B	C-MAR-S-Q318	Groundwater	9/13/2018 9:00:00 AM	9/13/2018	9/27/2018
N032084-005C	C-MAR-S-Q318	Groundwater	9/13/2018 9:00:00 AM	9/13/2018	9/27/2018
N032084-005D	C-MAR-S-Q318	Groundwater	9/13/2018 9:00:00 AM	9/13/2018	9/27/2018
N032084-005E	C-MAR-S-Q318	Groundwater	9/13/2018 9:00:00 AM	9/13/2018	9/27/2018
N032084-006A	C-NR1-D-Q318	Groundwater	9/13/2018 11:05:00 AM	9/13/2018	9/27/2018
N032084-006B	C-NR1-D-Q318	Groundwater	9/13/2018 11:05:00 AM	9/13/2018	9/27/2018
N032084-006C	C-NR1-D-Q318	Groundwater	9/13/2018 11:05:00 AM	9/13/2018	9/27/2018
N032084-006D	C-NR1-D-Q318	Groundwater	9/13/2018 11:05:00 AM	9/13/2018	9/27/2018



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab Order:** N032084  
**Contract No:**

## Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032084-006E	C-NR1-D-Q318	Groundwater	9/13/2018 11:05:00 AM	9/13/2018	9/27/2018
N032084-007A	C-NR1-S-Q318	Groundwater	9/13/2018 11:35:00 AM	9/13/2018	9/27/2018
N032084-007B	C-NR1-S-Q318	Groundwater	9/13/2018 11:35:00 AM	9/13/2018	9/27/2018
N032084-007C	C-NR1-S-Q318	Groundwater	9/13/2018 11:35:00 AM	9/13/2018	9/27/2018
N032084-007D	C-NR1-S-Q318	Groundwater	9/13/2018 11:35:00 AM	9/13/2018	9/27/2018
N032084-007E	C-NR1-S-Q318	Groundwater	9/13/2018 11:35:00 AM	9/13/2018	9/27/2018
N032084-008A	C-NR3-D-Q318	Groundwater	9/13/2018 12:20:00 PM	9/13/2018	9/27/2018
N032084-008B	C-NR3-D-Q318	Groundwater	9/13/2018 12:20:00 PM	9/13/2018	9/27/2018
N032084-008C	C-NR3-D-Q318	Groundwater	9/13/2018 12:20:00 PM	9/13/2018	9/27/2018
N032084-008D	C-NR3-D-Q318	Groundwater	9/13/2018 12:20:00 PM	9/13/2018	9/27/2018
N032084-008E	C-NR3-D-Q318	Groundwater	9/13/2018 12:20:00 PM	9/13/2018	9/27/2018
N032084-009A	C-NR3-S-Q318	Groundwater	9/13/2018 12:40:00 PM	9/13/2018	9/27/2018
N032084-009B	C-NR3-S-Q318	Groundwater	9/13/2018 12:40:00 PM	9/13/2018	9/27/2018
N032084-009C	C-NR3-S-Q318	Groundwater	9/13/2018 12:40:00 PM	9/13/2018	9/27/2018
N032084-009D	C-NR3-S-Q318	Groundwater	9/13/2018 12:40:00 PM	9/13/2018	9/27/2018
N032084-009E	C-NR3-S-Q318	Groundwater	9/13/2018 12:40:00 PM	9/13/2018	9/27/2018
N032084-010A	MW-910-Q318	Groundwater	9/13/2018 11:15:00 AM	9/13/2018	9/27/2018
N032084-010B	MW-910-Q318	Groundwater	9/13/2018 11:15:00 AM	9/13/2018	9/27/2018
N032084-010C	MW-910-Q318	Groundwater	9/13/2018 11:15:00 AM	9/13/2018	9/27/2018
N032084-010D	MW-910-Q318	Groundwater	9/13/2018 11:15:00 AM	9/13/2018	9/27/2018
N032084-010E	MW-910-Q318	Groundwater	9/13/2018 11:15:00 AM	9/13/2018	9/27/2018
N032084-011A	C-NR4-D-Q318	Groundwater	9/13/2018 1:05:00 PM	9/13/2018	9/27/2018
N032084-011B	C-NR4-D-Q318	Groundwater	9/13/2018 1:05:00 PM	9/13/2018	9/27/2018
N032084-011C	C-NR4-D-Q318	Groundwater	9/13/2018 1:05:00 PM	9/13/2018	9/27/2018
N032084-011D	C-NR4-D-Q318	Groundwater	9/13/2018 1:05:00 PM	9/13/2018	9/27/2018
N032084-011E	C-NR4-D-Q318	Groundwater	9/13/2018 1:05:00 PM	9/13/2018	9/27/2018
N032084-012A	C-NR4-S-Q318	Groundwater	9/13/2018 1:20:00 PM	9/13/2018	9/27/2018
N032084-012B	C-NR4-S-Q318	Groundwater	9/13/2018 1:20:00 PM	9/13/2018	9/27/2018
N032084-012C	C-NR4-S-Q318	Groundwater	9/13/2018 1:20:00 PM	9/13/2018	9/27/2018
N032084-012D	C-NR4-S-Q318	Groundwater	9/13/2018 1:20:00 PM	9/13/2018	9/27/2018



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab Order:** N032084  
**Contract No:**

## Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032084-012E	C-NR4-S-Q318	Groundwater	9/13/2018 1:20:00 PM	9/13/2018	9/27/2018
N032084-013A	MW-911-Q318	Groundwater	9/13/2018 1:30:00 PM	9/13/2018	9/27/2018
N032084-013B	MW-911-Q318	Groundwater	9/13/2018 1:30:00 PM	9/13/2018	9/27/2018
N032084-013C	MW-911-Q318	Groundwater	9/13/2018 1:30:00 PM	9/13/2018	9/27/2018
N032084-013D	MW-911-Q318	Groundwater	9/13/2018 1:30:00 PM	9/13/2018	9/27/2018
N032084-013E	MW-911-Q318	Groundwater	9/13/2018 1:30:00 PM	9/13/2018	9/27/2018
N032084-014A	R-19-Q318	Groundwater	9/13/2018 9:25:00 AM	9/13/2018	9/27/2018
N032084-014B	R-19-Q318	Groundwater	9/13/2018 9:25:00 AM	9/13/2018	9/27/2018
N032084-014C	R-19-Q318	Groundwater	9/13/2018 9:25:00 AM	9/13/2018	9/27/2018
N032084-014D	R-19-Q318	Groundwater	9/13/2018 9:25:00 AM	9/13/2018	9/27/2018
N032084-014E	R-19-Q318	Groundwater	9/13/2018 9:25:00 AM	9/13/2018	9/27/2018
N032084-015A	MW-912-Q318	Groundwater	9/13/2018 9:35:00 AM	9/13/2018	9/27/2018
N032084-015B	MW-912-Q318	Groundwater	9/13/2018 9:35:00 AM	9/13/2018	9/27/2018
N032084-015C	MW-912-Q318	Groundwater	9/13/2018 9:35:00 AM	9/13/2018	9/27/2018
N032084-015D	MW-912-Q318	Groundwater	9/13/2018 9:35:00 AM	9/13/2018	9/27/2018
N032084-015E	MW-912-Q318	Groundwater	9/13/2018 9:35:00 AM	9/13/2018	9/27/2018
N032084-016A	AmbientBlank-3-Q318	Groundwater	9/13/2018 1:45:00 PM	9/13/2018	9/27/2018



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	C-CON-D-Q318
<b>Lab Order:</b>	N032084	<b>Collection Date:</b>	9/13/2018 10:05:00 AM
<b>Project:</b>	PG&E Topock - RMP, RC000753.0801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032084-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	850	0.10	0.10	umhos/cm	1		9/14/2018 10:20 AM

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-002

**Client Sample ID:** C-CON-S-Q318  
**Collection Date:** 9/13/2018 10:20:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	860	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-003

**Client Sample ID:** MW-909-Q318  
**Collection Date:** 9/13/2018 10:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	860	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:**

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
DO	Surrogate Diluted Out		



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-004

**Client Sample ID:** C-MAR-D-Q318  
**Collection Date:** 9/13/2018 8:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	850	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-005

**Client Sample ID:** C-MAR-S-Q318  
**Collection Date:** 9/13/2018 9:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	870	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-006

**Client Sample ID:** C-NR1-D-Q318  
**Collection Date:** 9/13/2018 11:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	860	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-007

**Client Sample ID:** C-NR1-S-Q318  
**Collection Date:** 9/13/2018 11:35:00 AM  
**Matrix:** GROUNDWATER

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Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	850	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

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**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	C-NR3-D-Q318
<b>Lab Order:</b>	N032084	<b>Collection Date:</b>	9/13/2018 12:20:00 PM
<b>Project:</b>	PG&E Topock - RMP, RC000753.0801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032084-008		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	860	0.10	0.10	umhos/cm	1		9/14/2018 10:20 AM

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	ND Not Detected at the Reporting Limit
	S Spike/Surrogate outside of limits due to matrix interference	Results are wet unless otherwise specified
	DO Surrogate Diluted Out	



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-009

**Client Sample ID:** C-NR3-S-Q318  
**Collection Date:** 9/13/2018 12:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	860	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-010

**Client Sample ID:** MW-910-Q318  
**Collection Date:** 9/13/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	850	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-011

**Client Sample ID:** C-NR4-D-Q318  
**Collection Date:** 9/13/2018 1:05:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	870	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-012

**Client Sample ID:** C-NR4-S-Q318  
**Collection Date:** 9/13/2018 1:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	860	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-013

**Client Sample ID:** MW-911-Q318  
**Collection Date:** 9/13/2018 1:30:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	860	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-014

**Client Sample ID:** R-19-Q318  
**Collection Date:** 9/13/2018 9:25:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	860	0.10	0.10		umhos/cm	1	9/14/2018 10:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	MW-912-Q318
<b>Lab Order:</b>	N032084	<b>Collection Date:</b>	9/13/2018 9:35:00 AM
<b>Project:</b>	PG&E Topock - RMP, RC000753.0801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032084-015		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180914D</b>	QC Batch: <b>R127615</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	870	0.10	0.10	umhos/cm	1		9/14/2018 10:20 AM

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID	<b>N032084-005DDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>120.1_WPGE</b>	Units:	<b>umhos/cm</b>	Prep Date:		RunNo:	<b>127615</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R127615</b>	TestNo:	<b>EPA 120.1</b>			Analysis Date:	<b>9/14/2018</b>	SeqNo:	<b>3140110</b>
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC	
Specific Conductance		870.000		0.10						868.0	0.230
											2

Sample ID	<b>N032084-011DDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>120.1_WPGE</b>	Units:	<b>umhos/cm</b>	Prep Date:		RunNo:	<b>127615</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R127615</b>	TestNo:	<b>EPA 120.1</b>			Analysis Date:	<b>9/14/2018</b>	SeqNo:	<b>3140117</b>
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC	
Specific Conductance		875.000		0.10						873.0	0.229
											2

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- ND Not Detected at the Reporting Limit
- E Value above quantitation range
- R RPD outside accepted recovery limits
- H Holding times for preparation or analysis exceeded
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-001

**Client Sample ID:** C-CON-D-Q318  
**Collection Date:** 9/13/2018 10:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>PH</b>							
<b>SM4500-H+B</b>							
RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>		PrepDate		Analyst: <b>LR</b>		
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

- Qualifiers:**
- B Analyte detected in the associated Method Blank
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
  - DO Surrogate Diluted Out
  - E Value above quantitation range
  - ND Not Detected at the Reporting Limit
  - Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-002

**Client Sample ID:** C-CON-S-Q318  
**Collection Date:** 9/13/2018 10:20:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-003

**Client Sample ID:** MW-909-Q318  
**Collection Date:** 9/13/2018 10:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-004

**Client Sample ID:** C-MAR-D-Q318  
**Collection Date:** 9/13/2018 8:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.9	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-005

**Client Sample ID:** C-MAR-S-Q318  
**Collection Date:** 9/13/2018 9:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	8.0	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-006

**Client Sample ID:** C-NR1-D-Q318  
**Collection Date:** 9/13/2018 11:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>PH</b>							
<b>SM4500-H+B</b>							
RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>			PrepDate			Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-007

**Client Sample ID:** C-NR1-S-Q318  
**Collection Date:** 9/13/2018 11:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-008

**Client Sample ID:** C-NR3-D-Q318  
**Collection Date:** 9/13/2018 12:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-009

**Client Sample ID:** C-NR3-S-Q318  
**Collection Date:** 9/13/2018 12:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-010

**Client Sample ID:** MW-910-Q318  
**Collection Date:** 9/13/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-011

**Client Sample ID:** C-NR4-D-Q318  
**Collection Date:** 9/13/2018 1:05:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-012

**Client Sample ID:** C-NR4-S-Q318  
**Collection Date:** 9/13/2018 1:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-013

**Client Sample ID:** MW-911-Q318  
**Collection Date:** 9/13/2018 1:30:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.8	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-014

**Client Sample ID:** R-19-Q318  
**Collection Date:** 9/13/2018 9:25:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.9	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-015

**Client Sample ID:** MW-912-Q318  
**Collection Date:** 9/13/2018 9:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_180914C</b>	QC Batch: <b>R127614</b>				PrepDate		Analyst: <b>LR</b>
pH	7.9	0.10	0.10	H	pH Units	1	9/14/2018 10:00 AM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	9/14/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 150.1\_4500H+B\_W**

Sample ID	<b>N032084-005DDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>150.1_4500H</b>	Units:	<b>pH Units</b>	Prep Date:		RunNo:	<b>127614</b>											
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R127614</b>	TestNo:	<b>SM4500-H+B</b>			Analysis Date:	<b>9/14/2018</b>	SeqNo:	<b>3140091</b>											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual
pH		7.960		0.10								7.960						0		10		H
Temp. at time of pH Analysis		25.000		0.10								25.00						0		10		H

Sample ID	<b>N032084-011DDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>150.1_4500H</b>	Units:	<b>pH Units</b>	Prep Date:		RunNo:	<b>127614</b>											
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R127614</b>	TestNo:	<b>SM4500-H+B</b>			Analysis Date:	<b>9/14/2018</b>	SeqNo:	<b>3140098</b>											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual
pH		7.820		0.10								7.840						0.255		10		H
Temp. at time of pH Analysis		25.000		0.10								25.00						0		10		H

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-001

**Client Sample ID:** C-CON-D-Q318  
**Collection Date:** 9/13/2018 10:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-002

**Client Sample ID:** C-CON-S-Q318  
**Collection Date:** 9/13/2018 10:20:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-003

**Client Sample ID:** MW-909-Q318  
**Collection Date:** 9/13/2018 10:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-004

**Client Sample ID:** C-MAR-D-Q318  
**Collection Date:** 9/13/2018 8:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>				PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	36	10	10		mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-005

**Client Sample ID:** C-MAR-S-Q318  
**Collection Date:** 9/13/2018 9:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	21	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-006

**Client Sample ID:** C-NR1-D-Q318  
**Collection Date:** 9/13/2018 11:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-007

**Client Sample ID:** C-NR1-S-Q318  
**Collection Date:** 9/13/2018 11:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>	
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-008

**Client Sample ID:** C-NR3-D-Q318  
**Collection Date:** 9/13/2018 12:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>	
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-009

**Client Sample ID:** C-NR3-S-Q318  
**Collection Date:** 9/13/2018 12:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180914B</b>	QC Batch: <b>70639</b>			PrepDate	<b>9/14/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/14/2018 08:09 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-010

**Client Sample ID:** MW-910-Q318  
**Collection Date:** 9/13/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180917F</b>	QC Batch: <b>70670</b>			PrepDate	<b>9/17/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/17/2018 10:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-011

**Client Sample ID:** C-NR4-D-Q318  
**Collection Date:** 9/13/2018 1:05:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180917F</b>	QC Batch: <b>70670</b>			PrepDate	<b>9/17/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/17/2018 10:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-012

**Client Sample ID:** C-NR4-S-Q318  
**Collection Date:** 9/13/2018 1:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180917F</b>	QC Batch: <b>70670</b>			PrepDate	<b>9/17/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/17/2018 10:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-013

**Client Sample ID:** MW-911-Q318  
**Collection Date:** 9/13/2018 1:30:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180917F</b>	QC Batch: <b>70670</b>			PrepDate	<b>9/17/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/17/2018 10:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-014

**Client Sample ID:** R-19-Q318  
**Collection Date:** 9/13/2018 9:25:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180917F</b>	QC Batch: <b>70670</b>			PrepDate	<b>9/17/2018</b>	Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1	9/17/2018 10:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	MW-912-Q318
<b>Lab Order:</b>	N032084	<b>Collection Date:</b>	9/13/2018 9:35:00 AM
<b>Project:</b>	PG&E Topock - RMP, RC000753.0801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032084-015		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL NON-FILTERABLE RESIDUE**

**SM2540D**

RunID: <b>NV00922-WC_180917F</b>	QC Batch: <b>70670</b>			PrepDate	<b>9/17/2018</b>		Analyst: <b>LR</b>
Suspended Solids (Residue, Non-Filterable)	ND	10	10	mg/L	1		9/17/2018 10:35 AM

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 160.2\_2540D\_W**

Sample ID <b>LCS-70639</b>	SampType: <b>LCS</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/14/2018</b>	RunNo: <b>127613</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70639</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3140060</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter	962.000	10	1000	0	96.2	80	120				

Sample ID <b>MB-70639</b>	SampType: <b>MBLK</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/14/2018</b>	RunNo: <b>127613</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70639</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3140061</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter	ND	10									

Sample ID <b>N032084-001DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/14/2018</b>	RunNo: <b>127613</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70639</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3140064</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter	ND	10						0	0	5	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 160.2\_2540D\_W**

Sample ID <b>LCS-70670</b>	SampType: <b>LCS</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/17/2018</b>	RunNo: <b>127664</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70670</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141550</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter	963.000	10	1000	0	96.3	80	120				

Sample ID <b>MB-70670</b>	SampType: <b>MBLK</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/17/2018</b>	RunNo: <b>127664</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70670</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141551</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter	ND	10									

Sample ID <b>N032084-010DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>160.2_2540D</b>	Units: <b>mg/L</b>	Prep Date: <b>9/17/2018</b>	RunNo: <b>127664</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70670</b>	TestNo: <b>SM2540D</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141553</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Suspended Solids (Residue, Non-Filter	ND	10						0	0	5	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-001

**Client Sample ID:** C-CON-D-Q318  
**Collection Date:** 9/13/2018 10:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180914A</b>	QC Batch: <b>R127666</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/14/2018 10:56 AM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 03:22 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-002

**Client Sample ID:** C-CON-S-Q318  
**Collection Date:** 9/13/2018 10:20:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180917A</b>	QC Batch: <b>R127668</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/17/2018 01:06 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 03:49 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-003

**Client Sample ID:** MW-909-Q318  
**Collection Date:** 9/13/2018 10:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: <b>NV00922-IC7_180914A</b>	QC Batch: <b>R127666</b>			PrepDate	Analyst: <b>RAB</b>		
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/14/2018 11:36 AM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>			PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>	
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 03:55 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-004

**Client Sample ID:** C-MAR-D-Q318  
**Collection Date:** 9/13/2018 8:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180914A</b>	QC Batch: <b>R127666</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/14/2018 11:55 AM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-005

**Client Sample ID:** C-MAR-S-Q318  
**Collection Date:** 9/13/2018 9:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180914A</b>	QC Batch: <b>R127666</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/14/2018 12:33 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:05 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-006

**Client Sample ID:** C-NR1-D-Q318  
**Collection Date:** 9/13/2018 11:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180914A</b>	QC Batch: <b>R127666</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/14/2018 12:52 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:23 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-007

**Client Sample ID:** C-NR1-S-Q318  
**Collection Date:** 9/13/2018 11:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: <b>NV00922-IC7_180914A</b>	QC Batch: <b>R127666</b>			PrepDate	Analyst: <b>RAB</b>		
Hexavalent Chromium	ND	0.033	0.20	µg/L	1	9/14/2018 01:11 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>			PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>	
Chromium	ND	0.13	1.0	µg/L	1	9/19/2018 04:30 AM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-008

**Client Sample ID:** C-NR3-D-Q318  
**Collection Date:** 9/13/2018 12:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180914A</b>	QC Batch: <b>R127666</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/14/2018 01:49 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:34 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-009

**Client Sample ID:** C-NR3-S-Q318  
**Collection Date:** 9/13/2018 12:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180917A</b>	QC Batch: <b>R127668</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/17/2018 01:26 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:40 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-010

**Client Sample ID:** MW-910-Q318  
**Collection Date:** 9/13/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180917A</b>	QC Batch: <b>R127668</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/17/2018 01:45 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:45 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-011

**Client Sample ID:** C-NR4-D-Q318  
**Collection Date:** 9/13/2018 1:05:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180917A</b>	QC Batch: <b>R127668</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/17/2018 02:04 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:51 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-012

**Client Sample ID:** C-NR4-S-Q318  
**Collection Date:** 9/13/2018 1:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_180917A	QC Batch: R127668			PrepDate	Analyst: RAB		
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/17/2018 02:42 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI	
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 04:56 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-013

**Client Sample ID:** MW-911-Q318  
**Collection Date:** 9/13/2018 1:30:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_180917A	QC Batch: R127668				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/17/2018 03:01 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_180918B	QC Batch: 70685				PrepDate	9/18/2018	Analyst: CEI
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 05:02 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-014

**Client Sample ID:** R-19-Q318  
**Collection Date:** 9/13/2018 9:25:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180917A</b>	QC Batch: <b>R127668</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/17/2018 03:20 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 05:07 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-015

**Client Sample ID:** MW-912-Q318  
**Collection Date:** 9/13/2018 9:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180917A</b>	QC Batch: <b>R127668</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/17/2018 03:38 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>				PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	9/19/2018 05:13 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>MB-R127666</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>
Client ID: <b>PBW</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141581</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>LCS-R127666</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141582</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.253	0.20	5.000	0	105 90 110

Sample ID <b>N032084-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141584</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	1.037	0.20	1.000	0	104 90 110

Sample ID <b>N032084-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141588</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	1.060	0.20	1.000	0	106 90 110

Sample ID <b>N032084-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141588</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	1.066	0.20	1.000	0.08490	98.1 90 110

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032084-005AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141592</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.052	0.20	1.000	0	105	90	110				

Sample ID <b>N032084-006AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141594</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.046	0.20	1.000	0.05000	99.6	90	110				

Sample ID <b>N032084-007AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141596</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.118	0.20	1.000	0.08090	104	90	110				

Sample ID <b>N032084-007ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141597</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.087	0.20						0.08090	0	20	

Sample ID <b>N032084-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141598</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.038	0.20	1.000	0	104	90	110	1.037	0.135	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032084-008AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141600</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.026	0.20	1.000	0	103	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID: <b>MB-R127668</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141643</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	ND	0.20									
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Sample ID: <b>LCS-R127668</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141644</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	5.295	0.20	5.000	0	106	90	110				
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Sample ID: <b>N032084-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141646</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	1.029	0.20	1.000	0	103	90	110				
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Sample ID: <b>N032084-009AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141648</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	0.996	0.20	1.000	0	99.6	90	110				
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Sample ID: <b>N032084-010AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141650</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	0.974	0.20	1.000	0	97.4	90	110				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032084-011AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141652</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.997	0.20	1.000	0.07240	92.5	90	110				

Sample ID <b>N032084-012AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141656</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.092	0.20	1.000	0.07530	102	90	110				

Sample ID <b>N032084-013AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141658</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.051	0.20	1.000	0.07570	97.6	90	110				

Sample ID <b>N032084-014AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141660</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.085	0.20	1.000	0.07960	101	90	110				

Sample ID <b>N032084-015AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141662</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.013	0.20	1.000	0	101	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032084-002ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141663</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20						0	0	20	

Sample ID <b>N032084-009AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141664</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.035	0.20	1.000	0	104	90	110	0.9964	3.83	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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EPA ID CA01638

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>MB-70685</b>	SampType: <b>MBLK</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145797</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>LCS-70685</b>	SampType: <b>LCS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145800</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium 9.950 1.0 10.00 0 99.5 85 115

Sample ID <b>N032084-001B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145804</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium 9.688 1.0 10.00 0 96.9 75 125

Sample ID <b>N032084-001B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145805</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium 9.741 1.0 10.00 0 97.4 75 125 9.688 0.553 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-001

**Client Sample ID:** C-CON-D-Q318  
**Collection Date:** 9/13/2018 10:05:00 AM  
**Matrix:** GROUNDWATER

**Analyses Result MDL PQL Qual Units DF Date Analyzed**

**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: **NV00922-WC\_180921D** QC Batch: **R127753** PrepDate Analyst: **QBM**  
Nitrate/Nitrite as N 0.41 0.032 0.050 mg/L 1 9/21/2018

- Qualifiers:**
- B Analyte detected in the associated Method Blank
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
  - DO Surrogate Diluted Out
  - E Value above quantitation range
  - ND Not Detected at the Reporting Limit
  - Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	C-CON-S-Q318
<b>Lab Order:</b>	N032084	<b>Collection Date:</b>	9/13/2018 10:20:00 AM
<b>Project:</b>	PG&E Topock - RMP, RC000753.0801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032084-002		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.52	0.032	0.050	mg/L	1		9/21/2018

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-003

**Client Sample ID:** MW-909-Q318  
**Collection Date:** 9/13/2018 10:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.38	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-004

**Client Sample ID:** C-MAR-D-Q318  
**Collection Date:** 9/13/2018 8:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.34	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-005

**Client Sample ID:** C-MAR-S-Q318  
**Collection Date:** 9/13/2018 9:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.52	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-006

**Client Sample ID:** C-NR1-D-Q318  
**Collection Date:** 9/13/2018 11:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.36	0.032	0.050	mg/L	1		9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	C-NR1-S-Q318
<b>Lab Order:</b>	N032084	<b>Collection Date:</b>	9/13/2018 11:35:00 AM
<b>Project:</b>	PG&E Topock - RMP, RC000753.0801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032084-007		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.37	0.032	0.050	mg/L	1		9/21/2018

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-008

**Client Sample ID:** C-NR3-D-Q318  
**Collection Date:** 9/13/2018 12:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.36	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-009

**Client Sample ID:** C-NR3-S-Q318  
**Collection Date:** 9/13/2018 12:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.35	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-010

**Client Sample ID:** MW-910-Q318  
**Collection Date:** 9/13/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.38	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-011

**Client Sample ID:** C-NR4-D-Q318  
**Collection Date:** 9/13/2018 1:05:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.35	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-012

**Client Sample ID:** C-NR4-S-Q318  
**Collection Date:** 9/13/2018 1:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.42	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-013

**Client Sample ID:** MW-911-Q318  
**Collection Date:** 9/13/2018 1:30:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.42	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-014

**Client Sample ID:** R-19-Q318  
**Collection Date:** 9/13/2018 9:25:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.39	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-015

**Client Sample ID:** MW-912-Q318  
**Collection Date:** 9/13/2018 9:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_180921D</b>	QC Batch: <b>R127753</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.44	0.032	0.050		mg/L	1	9/21/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R127753</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>
Client ID: <b>PBW</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147334</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R127753</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147335</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.537	0.050	0.5000	0	107 85 115

Sample ID <b>N032084-003EDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147339</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.396	0.050			0.3788 4.44 20

Sample ID <b>N032084-004EMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147341</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.862	0.050	0.5000	0.3357	105 75 125

Sample ID <b>N032084-004EMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147342</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.947	0.050	0.5000	0.3357	122 75 125 0.8624 9.31 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-001

**Client Sample ID:** C-CON-D-Q318  
**Collection Date:** 9/13/2018 10:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 12:46 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	34	18	20		ug/L	1	9/25/2018 03:15 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-002

**Client Sample ID:** C-CON-S-Q318  
**Collection Date:** 9/13/2018 10:20:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 01:39 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	31	18	20		ug/L	1	9/25/2018 03:54 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-003

**Client Sample ID:** MW-909-Q318  
**Collection Date:** 9/13/2018 10:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925A	QC Batch: 70687				PrepDate	9/18/2018	Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 01:45 PM

**TOTAL METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925B	QC Batch: 70686				PrepDate	9/18/2018	Analyst: CEI
Iron	29	18	20		ug/L	1	9/25/2018 04:00 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-004

**Client Sample ID:** C-MAR-D-Q318  
**Collection Date:** 9/13/2018 8:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	39	18	20	ug/L	1		9/25/2018 01:50 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	1100	18	20	ug/L	1		9/25/2018 04:05 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-005

**Client Sample ID:** C-MAR-S-Q318  
**Collection Date:** 9/13/2018 9:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925A	QC Batch: 70687				PrepDate	9/18/2018	Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 01:56 PM

**TOTAL METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925B	QC Batch: 70686				PrepDate	9/18/2018	Analyst: CEI
Iron	360	18	20		ug/L	1	9/25/2018 04:11 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-006

**Client Sample ID:** C-NR1-D-Q318  
**Collection Date:** 9/13/2018 11:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:01 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	32	18	20		ug/L	1	9/25/2018 04:16 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-007

**Client Sample ID:** C-NR1-S-Q318  
**Collection Date:** 9/13/2018 11:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:06 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	33	18	20		ug/L	1	9/25/2018 04:21 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-008

**Client Sample ID:** C-NR3-D-Q318  
**Collection Date:** 9/13/2018 12:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:12 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	30	18	20		ug/L	1	9/25/2018 04:27 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-009

**Client Sample ID:** C-NR3-S-Q318  
**Collection Date:** 9/13/2018 12:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018	Analyst: CEI	
Iron	ND	18	20	ug/L	1	9/25/2018 02:17 PM	
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018	Analyst: CEI	
Iron	37	18	20	ug/L	1	9/25/2018 04:32 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-010

**Client Sample ID:** MW-910-Q318  
**Collection Date:** 9/13/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018	Analyst: CEI	
Iron	ND	18	20		ug/L	1	9/25/2018 02:22 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018	Analyst: CEI	
Iron	41	18	20		ug/L	1	9/25/2018 04:50 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-011

**Client Sample ID:** C-NR4-D-Q318  
**Collection Date:** 9/13/2018 1:05:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:38 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	28	18	20		ug/L	1	9/25/2018 04:55 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-012

**Client Sample ID:** C-NR4-S-Q318  
**Collection Date:** 9/13/2018 1:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018	Analyst: CEI	
Iron	ND	18	20		ug/L	1	9/25/2018 02:43 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018	Analyst: CEI	
Iron	24	18	20		ug/L	1	9/25/2018 05:00 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-013

**Client Sample ID:** MW-911-Q318  
**Collection Date:** 9/13/2018 1:30:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925A	QC Batch: 70687				PrepDate	9/18/2018	Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:49 PM

**TOTAL METALS BY ICP**

**EPA 3010A**

**EPA 6010B**

RunID: NV00922-ICP2_180925B	QC Batch: 70686				PrepDate	9/18/2018	Analyst: CEI
Iron	27	18	20		ug/L	1	9/25/2018 05:06 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-014

**Client Sample ID:** R-19-Q318  
**Collection Date:** 9/13/2018 9:25:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:54 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	58	18	20		ug/L	1	9/25/2018 05:11 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-015

**Client Sample ID:** MW-912-Q318  
**Collection Date:** 9/13/2018 9:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>DISSOLVED METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925A	QC Batch: 70687			PrepDate	9/18/2018		Analyst: CEI
Iron	ND	18	20		ug/L	1	9/25/2018 02:59 PM
<b>TOTAL METALS BY ICP</b>							
	<b>EPA 3010A</b>			<b>EPA 6010B</b>			
RunID: NV00922-ICP2_180925B	QC Batch: 70686			PrepDate	9/18/2018		Analyst: CEI
Iron	32	18	20		ug/L	1	9/25/2018 05:17 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WDPGEPB**

Sample ID <b>MB-70687</b>	SampType: <b>MBLK</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128807</b>
Client ID: <b>PBW</b>	Batch ID: <b>70687</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151727</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Iron	ND	20			

Sample ID <b>LCS-70687</b>	SampType: <b>LCS</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128807</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70687</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151728</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Iron	102.627	20	100.0	0	103 85 115

Sample ID <b>N032084-001B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128807</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70687</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151732</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Iron	108.085	20	100.0	0	108 75 125

Sample ID <b>N032084-001B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128807</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70687</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151737</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Iron	112.606	20	100.0	0	113 75 125 108.1 4.10 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010\_WPGEPB**

Sample ID <b>MB-70686</b>	SampType: <b>MBLK</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128810</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70686</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152137</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron ND 20

Sample ID <b>LCS-70686</b>	SampType: <b>LCS</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128810</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70686</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152138</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 103.728 20 100.0 0 104 85 115

Sample ID <b>N032084-001C-MS</b>	SampType: <b>MS</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128810</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70686</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152144</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 135.364 20 100.0 34.43 101 75 125

Sample ID <b>N032084-001C-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128810</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70686</b>	TestNo: <b>EPA 6010B EPA 3010A</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152145</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 139.127 20 100.0 34.43 105 75 125 135.4 2.74 20

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-001

**Client Sample ID:** C-CON-D-Q318  
**Collection Date:** 9/13/2018 10:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 03:22 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 03:22 AM
Manganese	1.7	0.26	0.50	µg/L	1	9/19/2018 03:22 AM
Molybdenum	4.5	0.21	0.50	µg/L	1	9/19/2018 03:22 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 02:18 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-002

**Client Sample ID:** C-CON-S-Q318  
**Collection Date:** 9/13/2018 10:20:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.8	0.081	0.10	µg/L	1	9/19/2018 03:49 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 03:49 AM
Manganese	1.8	0.26	0.50	µg/L	1	9/19/2018 03:49 AM
Molybdenum	4.8	0.21	0.50	µg/L	1	9/19/2018 03:49 AM
Selenium	1.4	0.36	0.50	µg/L	1	9/26/2018 02:46 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-003

**Client Sample ID:** MW-909-Q318  
**Collection Date:** 9/13/2018 10:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 03:55 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 03:55 AM
Manganese	1.8	0.26	0.50	µg/L	1	9/19/2018 03:55 AM
Molybdenum	4.6	0.21	0.50	µg/L	1	9/19/2018 03:55 AM
Selenium	1.4	0.36	0.50	µg/L	1	9/26/2018 02:51 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-004

**Client Sample ID:** C-MAR-D-Q318  
**Collection Date:** 9/13/2018 8:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.7	0.081	0.10	µg/L	1	9/19/2018 04:00 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:00 AM
Manganese	14	0.26	0.50	µg/L	1	9/19/2018 04:00 AM
Molybdenum	4.6	0.21	0.50	µg/L	1	9/19/2018 04:00 AM
Selenium	1.6	0.36	0.50	µg/L	1	9/26/2018 02:57 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-005

**Client Sample ID:** C-MAR-S-Q318  
**Collection Date:** 9/13/2018 9:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>			PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Arsenic	2.5	0.081	0.10	µg/L	1	9/19/2018 04:05 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:05 AM
Manganese	11	0.26	0.50	µg/L	1	9/19/2018 04:05 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 04:05 AM
Selenium	1.4	0.36	0.50	µg/L	1	9/26/2018 03:02 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-006

**Client Sample ID:** C-NR1-D-Q318  
**Collection Date:** 9/13/2018 11:05:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 04:23 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:23 AM
Manganese	1.8	0.26	0.50	µg/L	1	9/19/2018 04:23 AM
Molybdenum	4.6	0.21	0.50	µg/L	1	9/19/2018 04:23 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 04:15 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-007

**Client Sample ID:** C-NR1-S-Q318  
**Collection Date:** 9/13/2018 11:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_180918B</b>	QC Batch: <b>70685</b>			PrepDate	<b>9/18/2018</b>	Analyst: <b>CEI</b>
Arsenic	2.5	0.081	0.10	µg/L	1	9/19/2018 04:30 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:30 AM
Manganese	2.1	0.26	0.50	µg/L	1	9/19/2018 04:30 AM
Molybdenum	4.4	0.21	0.50	µg/L	1	9/19/2018 04:30 AM
Selenium	1.7	0.36	0.50	µg/L	1	9/26/2018 03:25 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-008

**Client Sample ID:** C-NR3-D-Q318  
**Collection Date:** 9/13/2018 12:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.7	0.081	0.10	µg/L	1	9/19/2018 04:34 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:34 AM
Manganese	2.1	0.26	0.50	µg/L	1	9/19/2018 04:34 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 04:34 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 03:30 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-009

**Client Sample ID:** C-NR3-S-Q318  
**Collection Date:** 9/13/2018 12:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.7	0.081	0.10	µg/L	1	9/19/2018 04:40 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:40 AM
Manganese	2.0	0.26	0.50	µg/L	1	9/19/2018 04:40 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 04:40 AM
Selenium	1.7	0.36	0.50	µg/L	1	9/26/2018 04:32 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-010

**Client Sample ID:** MW-910-Q318  
**Collection Date:** 9/13/2018 11:15:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 04:45 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:45 AM
Manganese	1.8	0.26	0.50	µg/L	1	9/19/2018 04:45 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 04:45 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 04:37 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-011

**Client Sample ID:** C-NR4-D-Q318  
**Collection Date:** 9/13/2018 1:05:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.7	0.081	0.10	µg/L	1	9/19/2018 04:51 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:51 AM
Manganese	2.9	0.26	0.50	µg/L	1	9/19/2018 04:51 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 04:51 AM
Selenium	1.4	0.36	0.50	µg/L	1	9/26/2018 04:43 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-012

**Client Sample ID:** C-NR4-S-Q318  
**Collection Date:** 9/13/2018 1:20:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 04:56 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 04:56 AM
Manganese	2.4	0.26	0.50	µg/L	1	9/19/2018 04:56 AM
Molybdenum	4.4	0.21	0.50	µg/L	1	9/19/2018 04:56 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 03:53 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-013

**Client Sample ID:** MW-911-Q318  
**Collection Date:** 9/13/2018 1:30:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.6	0.081	0.10	µg/L	1	9/19/2018 05:02 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 05:02 AM
Manganese	2.2	0.26	0.50	µg/L	1	9/19/2018 05:02 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 05:02 AM
Selenium	1.7	0.36	0.50	µg/L	1	9/26/2018 03:58 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-014

**Client Sample ID:** R-19-Q318  
**Collection Date:** 9/13/2018 9:25:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.4	0.081	0.10	µg/L	1	9/19/2018 05:07 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 05:07 AM
Manganese	1.5	0.26	0.50	µg/L	1	9/19/2018 05:07 AM
Molybdenum	4.3	0.21	0.50	µg/L	1	9/19/2018 05:07 AM
Selenium	1.5	0.36	0.50	µg/L	1	9/26/2018 04:04 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 27-Sep-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D  
**Lab ID:** N032084-015

**Client Sample ID:** MW-912-Q318  
**Collection Date:** 9/13/2018 9:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_180918B	QC Batch: 70685			PrepDate	9/18/2018	Analyst: CEI
Arsenic	2.7	0.081	0.10	µg/L	1	9/19/2018 05:13 AM
Barium	110	0.15	1.0	µg/L	1	9/19/2018 05:13 AM
Manganese	1.7	0.26	0.50	µg/L	1	9/19/2018 05:13 AM
Molybdenum	4.7	0.21	0.50	µg/L	1	9/19/2018 05:13 AM
Selenium	1.7	0.36	0.50	µg/L	1	9/26/2018 05:05 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>MB-70685</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>
Client ID: <b>PBW</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145741</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Arsenic	ND	0.10			
Barium	ND	1.0			
Manganese	ND	0.50			
Molybdenum	ND	0.50			

Sample ID <b>LCS-70685</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145744</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Arsenic	9.913	0.10	10.00	0	99.1	85	115
Barium	10.090	1.0	10.00	0	101	85	115
Manganese	105.691	0.50	100.0	0	106	85	115
Molybdenum	9.904	0.50	10.00	0	99.0	85	115

Sample ID <b>N032084-001B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145748</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Arsenic	12.548	0.10	10.00	2.607	99.4	75	125
Barium	118.714	1.0	10.00	108.0	107	75	125
Manganese	104.994	0.50	100.0	1.653	103	75	125
Molybdenum	15.624	0.50	10.00	4.534	111	75	125

Sample ID <b>N032084-001B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145749</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Arsenic	12.760	0.10	10.00	2.607	102	75	125	12.55	1.67	20
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>N032084-001B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145749</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	119.613	1.0	10.00	108.0	116	75	125	118.7	0.754	20	
Manganese	103.210	0.50	100.0	1.653	102	75	125	105.0	1.71	20	
Molybdenum	15.894	0.50	10.00	4.534	114	75	125	15.62	1.72	20	

Sample ID <b>MB-70685</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128842</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152604</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	ND	0.50									

Sample ID <b>LCS-70685</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128842</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152605</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	10.444	0.50	10.00	0	104	85	115				

Sample ID <b>N032084-001B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128842</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152944</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	11.107	0.50	10.00	1.516	95.9	75	125				

Sample ID <b>N032084-001B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/18/2018</b>	RunNo: <b>128842</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70685</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152945</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	11.186	0.50	10.00	1.516	96.7	75	125	11.11	0.715	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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# SAMPLE RECEIVING ITEMS



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California: 11060 Artesia Blvd., Ste C, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436  
www.assetlaboratories.com

Client: Arcadia		Report to: Dan Bush		Bill to: Marty Bloes		EDD Requirement		QA/QC		Sample Receipt Condition	
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadia		Address:		Excol EDD		RTNE		Y N	
Address: Roseville, CA 95661		Email: dan.bush@arcadis.com daniel.moore@pivox.com		Address:		Geotracker		RWQCB		1. Chilled	
Phone: 916-786-3302		Address: 1410 Rocky Ridge Dr # 330		Email to: mbloes@pivox.com		Labspec		CaITrans		2. Headspace	
Fax:		Roseville, CA 95661		P.O.#		Others		LEVEL III		3. Container Intact	
Submitted By: <i>Nana Tep</i>		Phone: 916-786-3302		Phone: 949-727-1400, ext 200		Specify:		LEVEL IV		4. Seal Present	
Title: <i>sample test</i>		Fax:		Fax:		RWQCB		Regulatory		5. IR number	
Signature: <i>[Signature]</i> Date: <i>9/13/18</i>		Sampled By: <i>Nana Tep</i>		Matrix		Global ID:		Specify State:		6. Method of Cooling:	
I hereby authorize ASSET Labs to perform the tests indicated below.		I attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for		Ground		125 mL poly				<i>160</i>	
Project Name: PG&E Topock - RMP		Signature: <i>[Signature]</i> Date: <i>9/13/18</i>		x Sediment		3x250 mL poly				Sample Temp: <i>29C/31C/35/41C</i>	
Project Number: RC000753.801D				Potable		3x500mL poly				Courier:	
				Soil		3x500mL poly				Tracking No.:	
				Other Solid		3x500mL poly				Remarks:	
				NPDES		500 mL poly					
				Surface		1 liter poly					
				Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH		1 liter poly					
				Field QC Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH		1 liter poly					
				Dissolved metals (SW8010B)(SW8020Adis) FF: HNO3		1 liter poly					
				Dissolved metals (SW8010B)(SW8020Adis) FF: HNO3		1 liter poly					
				Dissolved metals (SW8010B)(SW8020Adis) FF: HNO3		1 liter poly					
				As, Mn, Fe, Se, Mo, Ba		1 liter poly					
				Total metals (SW8010B); HNO3		1 liter poly					
				Fe		1 liter poly					
				Anions (E300.0); Br, Cl, SO4		1 liter poly					
				Specific Conductance (E120.1)		1 liter poly					
				pH (SM4500HB)		1 liter poly					
				TDS (SM2540C)		1 liter poly					
				Alkalinity (Total, reported as CaCO3) (SM2320B)		1 liter poly					
				TSS (SM2540)		1 liter poly					
				Nitrate/Nitrite (SM4500NO3) Nitrogen; H2SO4		1 liter poly					
Item No.		Laboratory Work Order No.		Sample ID/Location		Sample Date		Sample Time		Others	
1		C-BNS-Q318				9/13/18		10:05		X	
2		N032084-01		C-CON-D-Q318		9/13/18		10:20		X	
3		-02		C-CON-S-Q318		9/13/18		10:20		X	
4		-03		C-I-3-D-Q318		9/13/18		10:30		X	
5		-04		MW-909-Q318		9/13/18		08:30		X	
6		-05		C-I-3-S-Q318		9/13/18		09:00		X	
7		-06		C-MAR-D-Q318		9/13/18		11:05		X	
8		-07		C-MAR-S-Q318		9/13/18		11:25		X	
9		-08		C-NR1-D-Q318		9/13/18		12:20		X	
10		-09		C-NR1-S-Q318		9/13/18		12:40		X	
11		-10		C-NR3-D-Q318		9/13/18		11:15		X	
12		-11		C-NR3-S-Q318		9/13/18		13:25		X	
13				MW-910-Q318							
14				C-NR4-D-Q318							
Relinquished by (Signature and Printed Name): <i>Nana Tep</i> Date/Time: <i>9/13/18 1535</i>		Relinquished by (Signature and Printed Name): <i>[Signature]</i> Date/Time: <i>9/13/18 1535</i>		Turn Around Time (TAT)		Special Instruction:					
Relinquished by (Signature and Printed Name): <i>[Signature]</i> Date/Time: <i>9/13/18 1740</i>		Relinquished by (Signature and Printed Name): <i>[Signature]</i> Date/Time: <i>9/13/18 1740</i>		<input type="checkbox"/> A < 24 Hrs or Same Day TAT <input type="checkbox"/> B = Next Workday <input type="checkbox"/> C = 2 Workdays <input type="checkbox"/> D = 3 Workdays <input checked="" type="checkbox"/> E = Routine 5-7 Workdays							
Relinquished by (Signature and Printed Name):		Relinquished by (Signature and Printed Name):		TAT Starts at 8 AM the following day if samples received after 3:00PM.							
Terms		5. Trip Blanks and Equipment Blanks are billable samples.		Preservatives:		Container Type:					
1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report.		6. Asset Laboratories is not responsible for samples collected using incorrect methodology.		H=HCL		T=Tube					
2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis		7. Terms are net 30 days.		N=HNO3		V=VOA					
Less than 24 Hrs.=200% Next Day=100% 2 Workdays=50% 3 Workdays=35% 4 Workdays=20%		8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed.		Z=Zn(AC)2		B=Tedlar					
3. Custom EDD formats will be an additional 3% of the total project price.		9. For subcontract analysis, TAT and Surcharges will vary.		O=NaOH		M=Metal					
4. Add 10% surcharge for Level III Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.				Others/Specify: B (NH4)2SO4/NH4OH		C=Can					

White=Laboratory Copy

Yellow=Customer's Copy



# ASSET LABORATORIES

ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

## CHAIN OF CUSTODY RECORD

Page 1 of 1

Contact us:  
 Nevada: 3151 W. Post Road, Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
 California: 11060 Artesia Blvd., Ste C, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 www.assetlaboratories.com

Client: Arcadis		Report to: Dan Bush		Bill to: Marty Bloes		EDD Requirement		QA/QC		Sample Receipt Condition															
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis		Address:		Excel EDD		RTNE		Y N															
Address: Roseville, CA 95661		Email: dan.bush@arcadis.com		Address:		Geotracker		RWQCB		1. Chilled															
Phone: 916-786-3302		Email: daniel.moore@critigen.com		Address:		Labspec		CalTrans		2. Headspace															
Fax:		Address: 1410 Rocky Ridge Dr # 330		Email to: mbloes@pivox.com		Others		LEVEL III		3. Container Intact															
Submitted By: <i>Nana Toy</i>		Address: Roseville, CA 95661		P.O.#		Specify:		LEVEL IV		4. Seal Present															
Title: <i>sample tech</i>		Phone: 916-786-3302		Phone: 949-727-1400, ext 200		Global ID:		RWQCB		5. IR number															
Signature: <i>Nana Toy</i>		Date: <i>9/13/18</i>		Fax:		Specify State:				6. Method of Cooling:															
I hereby authorize ASSET Labs to perform the tests indicated below.		Sampled By: <i>Nana Toy</i>		Matrix						Sample Temp: <i>3.10</i>															
Project Name: PG&E Topock - RMP		Signature: <i>Nana Toy</i>		Date: <i>9/13/18</i>		Ground				Courier:															
Project Number: RC000753.0801						x Sediment				Tracking No.:															
						Potable				Remarks															
						NPDES																			
						Surface																			
						3x250 mL poly																			
						3x500mL poly																			
						3x500mL poly																			
						3x500mL poly																			
						500 mL poly																			
						1 liter poly																			
						1 liter poly																			
						1 liter poly																			
						1 liter poly																			
						1 liter poly																			
						125 mL poly																			
						1 250 mL poly																			
						Field QC Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH																			
						Dissolved metals (SW6010B/SW6020Adis) FF;																			
						Dissolved metals (SW6010B/SW6020Adis) FF;																			
						Dissolved metals (SW6010B/SW6020Adis) FF;																			
						Total metals (SW6010B); HNO3																			
						Antons (E300.0); Br, Cl, SO4																			
						Specific Conductance (E120.1)																			
						pH (SM4500HB)																			
						TDS (SM2540C)																			
						Alkalinity (Total, reported as CaCO3) (SM2320B)																			
						TSS (SM2540)																			
						Nitrate/Nitrite (SM4600NO3) Nitrogen; H2SO4																			
						Oxygen and deuterium stable isotopes (CFIRM)																			
Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH	Field QC Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH	Dissolved metals (SW6010B/SW6020Adis) FF; HNO3	Dissolved metals (SW6010B/SW6020Adis) FF; HNO3	Dissolved metals (SW6010B/SW6020Adis) FF; HNO3	Total metals (SW6010B); HNO3	Antons (E300.0); Br, Cl, SO4	Specific Conductance (E120.1)	pH (SM4500HB)	TDS (SM2540C)	Alkalinity (Total, reported as CaCO3) (SM2320B)	TSS (SM2540)	Nitrate/Nitrite (SM4600NO3) Nitrogen; H2SO4	Oxygen and deuterium stable isotopes (CFIRM)	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks	
1	N032084-12	C-NR4-S-Q318	9/13/18	12:20		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	m	5	P	BNS	
2		C-R22A-D-Q318				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	m	5	P	BNS	
3		C-R22A-S-Q318				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	m	5	P	BNS	
4		C-R27-D-Q318				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	m	5	P	BNS	
5		C-R27-S-Q318				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	m	5	P	BNS	
7		C-TAZ-D-Q318				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	m	5	P	BNS	
8	-13	MW-911-Q318	9/13/18	13:30		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	m	5	P	BNS	
9	-14	R-19-Q318	9/13/18	09:25		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	m	5	P	BNS	
10		R-28-Q318				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	m	5	P	BNS	
11		R63-Q318				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	m	5	P	BNS	
12		RRB-Q318				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	m	5	P	BNS	
13		SW1-Q318				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	m	3	P	BNS	
14		SW2-Q318				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	m	3	P	BNS	
Relinquished by (Signature and Printed Name): <i>Nana Toy</i>		Date/Time: <i>9/13/18 1535</i>		Relinquished by (Signature and Printed Name): <i>Marty Bloes</i>		Date/Time: <i>9/13/18 1535</i>		Turn Around Time (TAT)		Special Instruction:															
Relinquished by (Signature and Printed Name): <i>Marty Bloes</i>		Date/Time: <i>9/13/18 1740</i>		Relinquished by (Signature and Printed Name): <i>Marty Bloes</i>		Date/Time: <i>9/13/18 1740</i>		A < 24 Hrs or Same Day TAT																	
Relinquished by (Signature and Printed Name): <i>Marty Bloes</i>		Date/Time: <i>9/13/18 1740</i>		Relinquished by (Signature and Printed Name): <i>Marty Bloes</i>		Date/Time: <i>9/13/18 1740</i>		B = Next Workday																	
Relinquished by (Signature and Printed Name): <i>Marty Bloes</i>		Date/Time: <i>9/13/18 1740</i>		Relinquished by (Signature and Printed Name): <i>Marty Bloes</i>		Date/Time: <i>9/13/18 1740</i>		C = 2 Workdays																	
Relinquished by (Signature and Printed Name): <i>Marty Bloes</i>		Date/Time: <i>9/13/18 1740</i>		Relinquished by (Signature and Printed Name): <i>Marty Bloes</i>		Date/Time: <i>9/13/18 1740</i>		D = 3 Workdays																	
Relinquished by (Signature and Printed Name): <i>Marty Bloes</i>		Date/Time: <i>9/13/18 1740</i>		Relinquished by (Signature and Printed Name): <i>Marty Bloes</i>		Date/Time: <i>9/13/18 1740</i>		E = Routine 5-7 Workdays																	
TAT Starts at 8 AM the following day if samples received after 3:00PM.																									
Terms:		5. Trip Blank and Equipment Blank are billable samples.		6. Asset Laboratories is not responsible for samples collected using incorrect methodology.		7. Terms are net 30 days.		Preservatives:		Container Type:															
1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report.		2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis.		3. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed.		4. Add 10% surcharge for Level II Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.		8. For subcontract analysis, TAT and Surcharges will vary.		H=HCL N=HNO3 S=H2SO4 C=4°C		T=Tube V=VOA P=Pint													
								Z=Zn(AC)2 O=NaOH T=Na2S2O3		J=Jar B=Tedlar G=Glass															
								Others/Specify: B (NH4)2SO4/NH4OH		M=Metal		M=Metal C=Can													

White=Laboratory Copy

Yellow=Customer's Copy



<b>Client:</b> Arcadis Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661 Phone: 916-788-3302 Submitted By: <i>Nana Tee</i>		<b>Report to:</b> Dan Bush Company: Arcadis Email: dan.bush@arcadis.com Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661 Phone: 916-788-3302		<b>Bill to:</b> Marty Bloes Address: Email: mbloes@pivox.com P.O.# Phone: 949-727-1400, ext 200 Fax:		<b>EDD Requirement</b> Excel EDD Geotracker Labspec Others Specify: Global ID:		<b>QA/QC</b> RTNE RWQCB CalTrans LEVEL III LEVEL IV Regulatory Specify State:		<b>Sample Receipt Condition</b> Y N 1. Chilled 2. Headspace 3. Container Intact 4. Seal Present 5. IR number 6. Method of Cooling:			
Signature: <i>[Signature]</i> Date: 9/13/16 I hereby authorize ASSET Labs to perform the tests indicated below.		Signature: <i>[Signature]</i> Date: 9/13/16 I attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for		<b>Matrix</b>						Sample Temp: 8.12			
<b>Project Name:</b> PG&E Topock - RMP <b>Project Number:</b> RC000753.0801		<b>Signature:</b> <i>[Signature]</i> <b>Date:</b> 9/13/16		<b>Ground</b> x <b>Sediment</b> <b>Potable</b> Soil <b>NPDES</b> Other Solid <b>Surface</b>		3x250 mL poly 250 ml Poly 3x500mL poly 3x500mL poly 3x500mL poly 500 mL poly 1 liter poly 1 liter poly 1 liter poly 1 liter poly 1 liter poly 125 mL poly		C(VI) FF (E218.6) (NH4)2, SO4, NH4, OH Field QC Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH Dissolved metals (SW6010B/SW6020A) FF: HNO3 Cr Dissolved metals (SW6010B/SW6020A) FF: HNO3 Ca, Mg, K, Na, B Dissolved metals (SW6010B/SW6020A) FF: HNO3 As, Mn, Fe, Se, Mo, Ba Total metals (SW6010B): HNO3 Fe Antons (E300.0); Br, Cl, SO4 Specific Conductance (E120.1) pH (SM4500-HB) TDS (SM2540C) Alkalinity (Total, reported as CaCO3) (SM2320B) TSS (SM2540) Nitrate/Nitrite (SM4600ND3) Nitrate; H2SO4		Courier: Tracking No.:			
<b>Item No.</b>	<b>Laboratory Work Order No.</b>	<b>Sample ID/Location</b>	<b>Sample Date</b>	<b>Sample Time</b>	<b>Others</b>					<b>Turn Around Time</b>	<b>No. of Container</b>	<b>Container Type</b>	<b>REMARKS</b>
	N032084-15	MW-912-Q318	9/13/16	09:35		X	X	X	X	X	X	X	
		AB1-Q318				X							Hold
		AB2-Q318				X							Hold
	-16	AB3-Q318	9/13/16	13:45		X							Hold
<b>Relinquished by (Signature and Printed Name):</b> <i>Nana Tee</i> <b>Date/Time:</b> 9/13/16 1535			<b>Relinquished by (Signature and Printed Name):</b> <i>Marty Bloes</i> <b>Date/Time:</b> 9/13/16 1535			<b>Turn Around Time (TAT)</b>			<b>Special Instruction:</b>				
<b>Relinquished by (Signature and Printed Name):</b> <i>[Signature]</i> <b>Date/Time:</b> 9/13/16 1740			<b>Relinquished by (Signature and Printed Name):</b> <i>[Signature]</i> <b>Date/Time:</b> 9/13/16 1740			<input type="checkbox"/> A < 24 Hrs or Same Day TAT <input type="checkbox"/> B = Next Workday <input type="checkbox"/> C = 2 Workdays <input type="checkbox"/> D = 3 Workdays <input checked="" type="checkbox"/> E = Routine 5-7 Workdays			TAT Starts at 8 AM the following day if samples received after 3:00PM.				
<b>Relinquished by (Signature and Printed Name):</b> <i>[Signature]</i> <b>Date/Time:</b> 9/13/16 1740			<b>Relinquished by (Signature and Printed Name):</b> <i>[Signature]</i> <b>Date/Time:</b> 9/13/16 1740			<b>Preservatives:</b>			<b>Container Type:</b>				
						H=HCL N=HNO3 S=H2SO4 C=4°C Z=Zn(AC)2 O=NaOH T=Na2S2O3 Others/Specify: B ((NH4)2SO4/NH4OH)			T=Tube V=VOA P=Pint J=Jar B=Tealjar G=Glass M=Metal M=Metal C=Can				

White=Laboratory Copy

Yellow=Customer's Copy

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.


Cooler Received/Opened On: 9/13/2018 Workorder: N032084  
 Rep sample Temp (Deg C): 2.9/3.1/3.5/4.1 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |  |  |  |
|---|--|--|--|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>                       |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>            |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>            |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 7. Chain of custody agrees with sample labels?  | Yes <input type="checkbox"/>   | No <input checked="" type="checkbox"/>                     |  |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                |  |
| 11. All samples received within holding time?   | Yes <input type="checkbox"/>   | No <input checked="" type="checkbox"/>                     |  |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>   | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>                     |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input type="checkbox"/>                                |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input checked="" type="checkbox"/><br>Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input type="checkbox"/><br>NA <input type="checkbox"/> |

Comments: 

Samples for pH were past holding time upon receipt.  
 See Correspondence.

Checklist Completed By: YR  9/17/2018

Reviewed By:  LG 091818



**Subject:** RE: PG&E Topock - RMP, RC000753.0801 (Asset Labs No. N032084)  
**From:** "Madsen, Laura" <Laura.Madsen@arcadis.com>  
**Date:** 9/17/2018 2:25 PM  
**To:** Yoandra Rodriguez <yoandra@assetlaboratories.com>  
**CC:** "maryann.balilu@assetlaboratoriesph.com" <maryann.balilu@assetlaboratoriesph.com>, "Andreafe. Gallardo" <andrea.gallardo@assetlaboratories.com>, "Sonny. Lorenzo" <sonny.lorenzo@assetlaboratories.com>

I confirm those changes to be consistent with previous instructions.

Laura

---

**From:** Yoandra Rodriguez <yoandra@assetlaboratories.com>  
**Sent:** Monday, September 17, 2018 4:22 PM  
**To:** Madsen, Laura <Laura.Madsen@arcadis.com>  
**Cc:** maryann.balilu@assetlaboratoriesph.com; 'Andreafe. Gallardo' <andrea.gallardo@assetlaboratories.com>; 'Sonny. Lorenzo' <sonny.lorenzo@assetlaboratories.com>  
**Subject:** PG&E Topock - RMP, RC000753.0801 (Asset Labs No. N032084)

Hi Laura,

Based on your instructions below regarding previous WO N032065, same issues were solved as follow:

- Used PN ".0801D"
- The dissolved metals on page 2 same as listed on pages 1 and 3.
- Sample 16: ID is AB3-Q318 on COC and AmbientBlank-3-Q318 on label, followed ID on label.

Please confirm.

Thanks,

----- Forwarded Message -----

**Subject:** RE: PG&E Topock - RMP, RC000753.0801 (Asset Labs No. N032065)  
**Date:** Mon, 17 Sep 2018 15:22:17 +0000  
**From:** Madsen, Laura <Laura.Madsen@arcadis.com>  
**To:** Yoandra Rodriguez <yoandra@assetlaboratories.com>  
**CC:** 'Andreafe. Gallardo' <andrea.gallardo@assetlaboratories.com>, 'Sonny. Lorenzo' <sonny.lorenzo@assetlaboratories.com>, maryann.balilu@assetlaboratoriesph.com <maryann.balilu@assetlaboratoriesph.com>

Hi Yoandra,

Please use PN ".0801D"

Please use "AmbientBlank-1-Q318", "AmbientBlank-2-Q318"

-----Original Message-----

From: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
Sent: Friday, September 14, 2018 6:27 PM  
To: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
Cc: 'Andreafe. Gallardo' <[andrea.gallardo@assetlaboratories.com](mailto:andrea.gallardo@assetlaboratories.com)>; 'Sonny. Lorenzo' <[sonny](mailto:sonny)>  
Subject: Re: PG&E Topock - RMP, RC000753.0801 (Asset Labs No. N032065)

Hi Laura,

Please also advise on the following issues:

- Which Project number to use: RC000753.0801 (pages 1 and 2) or RC000753.0801D (page 3).
- Sample 1 and 2: ID is "AB1-Q318", "AB2-Q318" on COC while "AmbientBlank-1-Q318", "Ambi

Thanks,

On 9/13/2018 1:03 PM, Madsen, Laura wrote:

> HI,  
> That is correct. The dissolved metals on page 3 are the same as listed on page 2.  
>  
> Thanks,  
> Laura

> -----Original Message-----

> From: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
> Sent: Thursday, September 13, 2018 2:59 PM  
> To: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
> Cc: 'Marlon B. Cartin' <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>; 'Andreafe.  
> Gallardo' <[andrea.gallardo@assetlaboratories.com](mailto:andrea.gallardo@assetlaboratories.com)>; 'Sonny. Lorenzo'  
> <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>;  
> <[maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com)>  
> Subject: PG&E Topock - RMP, RC000753.0801 (Asset Labs No. N032065)

> Hi Laura,

> Please kindly inform list of dissolved metals needed for the samples on page 2 of the a  
>  
> Thanks,

> --

> Yoandra Rodriguez  
> Sample Control Officer  
> Asset Laboratories

> This email and any files transmitted with it are the property of Arcadis and its affili

--

Yoandra Rodriguez  
Sample Control Officer  
Asset Laboratories

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# ASSET Laboratories

## WORK ORDER Summary

18-Sep-18

WorkOrder: N032084

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/13/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032084-001A	C-CON-D-Q318	9/13/2018 10:05:00 AM	9/27/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-001B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-001C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-001D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-001E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-002A	C-CON-S-Q318	9/13/2018 10:20:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-002B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-002C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-002D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR

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N032084-002D	C-CON-S-Q318	9/13/2018 10:20:00 AM	9/27/2018	Groundwater	SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-002E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-003A	MW-909-Q318	9/13/2018 10:30:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-003B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-003C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-003D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-003E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-004A	C-MAR-D-Q318	9/13/2018 8:30:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-004B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

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N032084-004B	C-MAR-D-Q318	9/13/2018 8:30:00 AM	9/27/2018	Groundwater	EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-004C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-004D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-004E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-005A	C-MAR-S-Q318	9/13/2018 9:00:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-005B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-005C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-005D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR

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N032084-005E	C-MAR-S-Q318	9/13/2018 9:00:00 AM	9/27/2018	Groundwater	SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-006A	C-NR1-D-Q318	9/13/2018 11:05:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-006B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-006C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-006D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-006E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-007A	C-NR1-S-Q318	9/13/2018 11:35:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-007B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-007C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

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N032084-007C	C-NR1-S-Q318	9/13/2018 11:35:00 AM	9/27/2018	Groundwater	EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-007D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-007E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-008A	C-NR3-D-Q318	9/13/2018 12:20:00 PM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-008B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-008C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-008D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-008E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-009A	C-NR3-S-Q318	9/13/2018 12:40:00 PM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-009B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

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N032084-009B	C-NR3-S-Q318	9/13/2018 12:40:00 PM	9/27/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-009C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-009D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-009E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-010A	MW-910-Q318	9/13/2018 11:15:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-010B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-010C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-010D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR



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N032084-010D	MW-910-Q318	9/13/2018 11:15:00 AM	9/27/2018	Groundwater		Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-010E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-011A	C-NR4-D-Q318	9/13/2018 1:05:00 PM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-011B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-011C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-011D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-011E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-012A	C-NR4-S-Q318	9/13/2018 1:20:00 PM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-012B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

18-Sep-18

WorkOrder: N032084

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/13/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032084-012C	C-NR4-S-Q318	9/13/2018 1:20:00 PM	9/27/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-012D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-012E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-013A	MW-911-Q318	9/13/2018 1:30:00 PM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-013B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-013C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-013D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-013E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-014A	R-19-Q318	9/13/2018 9:25:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

18-Sep-18

WorkOrder: N032084

Client ID: ARCUS02

Project: PG&E Topock - RMP, RC000753.0801D

QC Level: Level IV

Date Received: 9/13/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032084-014B	R-19-Q318	9/13/2018 9:25:00 AM	9/27/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-014C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-014D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-014E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-015A	MW-912-Q318	9/13/2018 9:35:00 AM	9/27/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-015B			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-015C			9/27/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			9/27/2018		EPA 6010B	TOTAL METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-015D			9/27/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR

**ASSET Laboratories**

**WORK ORDER Summary**

18-Sep-18

**WorkOrder:** N032084

**Client ID:** ARCUS02

**Project:** PG&E Topock - RMP, RC000753.0801D

**QC Level:** Level IV

**Date Received:** 9/13/2018

**Comments:**

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032084-015D	MW-912-Q318	9/13/2018 9:35:00 AM	9/27/2018	Groundwater	SM2540D	TOTAL NON-FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
			9/27/2018			Total Suspended Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LSR
N032084-015E			9/27/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-016A	AmbientBlank-3-Q318	9/13/2018 1:45:00 PM					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032084-017A	FOLDER	9/27/2018	9/27/2018		EDD	RWQCB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			9/27/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			9/27/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

## List of Analysts

### ASSET Laboratories Work Order: N032084

NAME	TEST METHOD
Quennie Manimtim	SM 4500-NO3F
Claire Ignacio	EPA 6010B_Dissolved, EPA 6010B, EPA 6020_Dissolved
Ria Abes	EPA 218.6
Lilia Ramit	EPA 120.1, SM 4500-H+B, SM 2540D



# EPA 120.1



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R127615

Analyst: LSR

ASSET #: N032084

Date Analyzed: 14-Sep

Method: EPA 120.1

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
<b>Sample Information</b>						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X			✓		
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.			X			
11. LCS compounds within control limits.			X			
12. MS/MSD, RPD's are within control limits	X			✓		
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X			✓		
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X			✓		
18. Are analytical results correct?	X			✓		
19. Is the QC summary report present and complete?	X			✓		

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct	✓		
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Julia Ramit

Date: 9/18/2018

2nd Level Reviewer Manny 9/26/2018

Date:

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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# Conductivity Logbook

Date: 9/13/18 1040

Analyst: LSR

CONTD

Standard	Std ID	Reading	Comments
9.91 <sup>us/cm</sup>	CNV-180731G	9.89 @ 22.8°C	% Rec: (90-110%)
1413	180515C	1421 @ 24.2°C	
9988	180731H	10080 @ 24.2°C	
9993	180515D	10060 @ 24.3°C	
Sample ID	Matrix	Reading	Comments
1 NO32065-013D	H <sub>2</sub> O	884 @ 22.8°C	
2   13DDUP		889 @ 22.7°C	
3   14D		885 @ 22.5°C	
4   15D		887 @ 22.3°C	
5			
6			
7			
8 1413 <sup>us/cm</sup>	CNV-180417B	1440 @ 24.2°C	
9 10000	180516A	1040 @ 24.4°C	
10 99601	180521B	10140 @ 24.6°C	
Dup			Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Date: 9/14/18 1020

Analyst: LR

Julia Ramit 9/18/2018

Standard	Std ID	Reading	Comments
9.91 <sup>us/cm</sup>	CNV-180731G	9.88 @ 23.5°C	% Rec: (90-110%)
1413	180515C	1400 @ 23.8°C	
9988	180731H	10100 @ 23.8°C	
9993	180515D	99900 @ 24.0°C	
Sample ID	Matrix	Reading	Comments
1 NO32084-001D	H <sub>2</sub> O	850 @ 23.6°C	STANDARD: 1413 CNV-180417B
2   2D		864 @ 23.5°C	= 1324 @ 24.1°C
3   3D		862 @ 23.5°C	10000 CNV-180516A
4   4D		853 @ 23.4°C	= 10130 @ 24.2°C
5   5D		858 @ 23.2°C	868 99601 CNV-180521B
6   5DDUP		870 @ 23.0°C	= 99600 @ 24.0°C
7   6D		858 @ 23.0°C	
8   7D		852 @ 23.2°C	
9   8D		859 @ 23.3°C	
10   9D		865 @ 23.3°C	865
Dup	10D	854 @ 23.3°C	Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Logbook # 6



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NEVADA | P: 702.307.2659 F: 702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118  
ELAP Cert 2676 | NV Cert 150222

# Conductivity Logbook

Date: 9/14/18  
 Analyst: LSR

CONTD

Standard	Std ID	Reading	Comments
9.91 <sup>us/cm</sup>	CMW-180731G	9.58 @ 23.5°C	% Rec: (90-110%)
1413	180575C	1406 @ 23.8°C	
9988	180731H	10100 @ 23.8°C	
9999	180575D	9990 @ 24.0°C	

Sample ID	Matrix	Reading	Comments
1 N032084-011D	H <sub>2</sub> O	873 @ 23.3°C	
2 110 Dup		875 @ 23.2°C	
3 120		865 @ 23.3°C	
4 130		863 @ 23.4°C	
5 140		858 @ 23.2°C	
6 150		874 @ 23.5°C	
7			
8			
9 1413 <sup>us/cm</sup>	CMW-180417B	1401 @ 24.2°C	
10 10000	180575A	10970 @ 24.5°C	
Dup 99601	180521A	97300 @ 24.0°C	Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Date: \_\_\_\_\_  
 Analyst: \_\_\_\_\_

Julia Ramit 9/18/2018

Standard	Std ID	Reading	Comments
			% Rec: (90-110%)

Sample ID	Matrix	Reading	Comments
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Dup			Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Logbook # 6



**ASSET LABORATORIES**  
 ANALYTICAL & TESTING FOR ENVIRONMENTAL TECHNOLOGIES

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# SM 4500-H+B



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**pH Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

pH ARCUS  
 REV 0  
 101215

**FIRST LEVEL REVIEW:**

QC Batch Number: R127614

Instrument ID: pH meter

ASSET #: N032084

Analyst: LSR

Date Analyzed: 14-Sep

Method: EPA 150.1

pH Meter Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Was the meter calibrated using 3 buffers (4,7 and 10)?			X			
2. Was a closing buffer used at the end of analysis?			X			
3. Was the meter checked every 10 samples?			X			
<b>Sample Information</b>						
4. Are all samples analyzed within hold time.		X				
<b>QC Items</b>						
5. Was a duplicate sample analyzed?	X					
<b>Raw Data and Miscellaneous Information</b>						
6. Are Non-Conformances documented			X			
7. Runlog complete and included in package.	X					
<b>Preliminary Report</b>						
8. Does the raw data match the preliminary report?	X					
9. Are analytical results correct?	X					
10. Is the QC summary report present and complete?	X					

Comments:

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Julia Ramit

Date: 9/18/2018

2nd Level Reviewer Henry 9/26/2018

Date: \_\_\_\_\_

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



# pH Logbook

Date: 9/13/18 1530

Analyst: L&R

Standard	Std ID	pH	Comments
Buffer 7	CIN-180515B	7.01 @ 25.0C	
Buffer 4	180515A	4.02 @ 25.0C	
Buffer 10	180131B	10.01 @ 25.0C	
Slope		98.8%	Acceptance Criteria: 95%-105%

Sample ID	Matrix	pH	Comments
1 NB32078-001C	H <sub>2</sub> O	7.25 @ 25.0C	
2   2C		6.96 @ 25.0C	
3   2CAP		6.97 @ 25.0C	
4   3C		7.29 @ 25.0C	
5			
6			
7			
8			
9			
10			
Dup			Accept: 10% water, 20% soil
Buffer 7, 4, 10	CIN-180320C	6.99 @ 25.0C	Accept: +/-0.05 pH units from expected value

Date: 9/14/18 1000

Analyst: L&R

Standard	Std ID	pH	Comments
Buffer 7	CIN-180515B	7.00 @ 25.0C	
Buffer 4	180515A	4.03 @ 25.0C	
Buffer 10	180131B	10.02 @ 25.0C	
Slope		98.1%	Acceptance Criteria: 95%-105%

Sample ID	Matrix	pH	Comments
1 NB32084-001D	H <sub>2</sub> O	7.79 @ 25.0C	
2   2D		7.78 @ 25.0C	
3   3D		7.81 @ 25.0C	
4   4D		7.92 @ 25.0C	
5   5D		7.96 @ 25.0C	Julia Ramit
6   5D DUP		7.96 @ 25.0C	9/18/2018
7   6D		7.84 @ 25.0C	
8   7D		7.82 @ 25.0C	Buffer 7 CIN180320C
9   8D		7.83 @ 25.0C	= 6.96 at 25°C
10   9D		7.81 @ 25.0C	
Dup			Accept: 10% water, 20% soil

**pH Logbook**

Date: 9/14/18 1000

Analyst: KA CONT'D

Standard	Std ID	pH	Comments
Buffer 7	CNV-180575B	7.00 @ 25.0C	
Buffer 4	180575A	4.03 @ 25.0C	
Buffer 10	180131B	10.02 @ 25.0C	
Slope		08.1%	Acceptance Criteria: 95%-105%

Sample ID	Matrix	pH	Comments
1 NOB2084-011D	H <sub>2</sub> O	7.84 @ 25.0C	
2   11D DVP		7.82 @ 25.0C	
3   12D		7.80 @ 25.0C	
4   13D		7.80 @ 25.0C	
5   14D		7.91 @ 25.0C	
6   15D		7.93 @ 25.0C	
7			
8			
9			Julia Ramit 9/18/2018
10			Accept: 10% water, 20% soil
Dup Buffer 7, 4, 10	CNV-180020C	6.96 @ 25.0C	Accept: +/-0.05 pH units from expected value

Date: 9/14/18 1410

Analyst: LR

Standard	Std ID	pH	Comments
Buffer 7	CNV-180575B	7.00 @ 25.0C	
Buffer 4	180575A	4.03 @ 25.0C	
Buffer 10	180131B	10.02 @ 25.0C	
Slope		08.1%	Acceptance Criteria: 95%-105%

Sample ID	Matrix	pH	Comments
1 NOB2076-001A	Liquid	8.05 @ 25.0C	
2   1A DVP		7.98 @ 25.0C	
3   2A		7.61 @ 25.0C	
4   3A		7.72 @ 25.0C	
5   4A		7.44 @ 25.0C	
6   5A		7.54 @ 25.0C	
7   6A		7.29 @ 25.0C	
8   7A		4.99 @ 25.0C	Buffer 7 CNV 180020C
9   8A		7.05 @ 25.0C	= 6.95 @ 25.0C
10   9A	Solid	7.31 @ 25.0C	
Dup   10A		7.53 @ 25.0C	Accept: 10% water, 20% soil

# SM 2540D



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: 70639/70670

Analyst: LSR

ASSET #: N032084

Date Analyzed: 9/14,9/17/18

Method: **EPA 160.2**

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
<b>Sample Information</b>						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Julia Ramit

Date: 9/21/2018

2nd Level Reviewer Nancy 9/26/2018

Date: \_\_\_\_\_

# SAMPLE CALCULATION



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## SAMPLE CALCULATION

METHOD: SM 2540D

TEST NAME: Total Non-Filterable Residue

MATRIX: Water

FORMULA:

Calculate TSS concentration in mg/L, in the original sample as follows:

$$\text{TSS, mg/L} = \frac{(A-B) * 1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For N032084-001D, TSS concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{TSS, mg/L} &= \frac{(1.3826 - 1.3823) * 1000000}{100} \\ &= 3 \text{ mg/L} \end{aligned}$$

Since reporting limit is 10 mg/L, therefore:

$$\text{TSS} = \text{ND}$$

*Lilia Ramit*

9/21/2018

# SAMPLE PREPARATION LOG



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PREP BATCH REPORT

Prep Start Date: 9/14/2018 8:09:21 A

Reviewed/ Date: *Manny* 9/26/2018

Page: 1 of 1

Prep End Date: 9/14/2018 2:30:00 P

Initials/ Date: *Lilia Ramit* 9/21/2018

Prep Factor Units Temp. (°C):

Prep Batch 70639 Prep Code: 160.2\_W\_PRE

Technician: Lilia Ramit

mL / mL

105

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70639	Water		100	<input type="checkbox"/>	0	0	100	1.000		
MB-70639	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-015D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-001D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-001D-DU	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-002D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-003D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-004D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-005D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-006D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-007D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-008D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-009D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name	Spk ID	Spike Name	SampType	AmtAdd
10187	Glass Fiber Filter, 47mm	IWST180910A	1000 ppm Talc	LCS	100

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 9/14/2018 8:09:21 A  
 Prep End Date:

Reviewed/ Date: Julia Ramit 9/21/2018  
 Initials/ Date:

Page: 1 of 1

Prep Batch 70639 Prep Code: 160.2\_W\_PRE

Technician: Lilia Ramit  
 Prep Factor Units  
 mL / mL

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70639	Water	10.5180910A	100	<input type="checkbox"/>	0	0	100	1.000		
MB-70639	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N032065-015D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-001D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-001D-DU	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-002D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-003D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-004D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-005D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-006D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-007D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-008D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-009D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

10187

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PREP BATCH REPORT

Prep Start Date: **9/17/2018 10:35:53**  
 Prep End Date: **9/17/2018 3:45:00 P**

Reviewed/ Date: *Nancy* **9/26/2018**

Page: 1 of 1

Initials/ Date: *Lilia Ramit* **9/21/2018** Prep Factor Units Temp. (°C):  
 Technician: **Lilia Ramit** mL / mL **105**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70670	Water		100	<input type="checkbox"/>	0	0	100	1.000		
MB-70670	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-010D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-010D-DU	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-011D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-012D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-013D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-014D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-015D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032100-001A	Surface Water		100	<input type="checkbox"/>	0	0	100	1.000		
N032100-002A	Surface Water		100	<input type="checkbox"/>	0	0	100	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name	Spk ID	Spike Name	SampType	AmtAdd
10187	Glass Fiber Filter, 47mm	IWST180910A	1000 ppm Talc	LCS	100

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PREP BATCH REPORT

Page: 1 of 1

Prep Start Date: 9/17/2018 10:35:53

Reviewed/ Date:

Prep End Date:

*Lilia Ramit* 9/21/2018

Prep Batch 70670

Prep Code: 160.2 W\_PRE

Initials/ Date:

Technician: Lilia Ramit

Prep Factor Units

mL / mL

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70670	Water	<i>WS1809107</i>	100	<input type="checkbox"/>	0	0	100	1.000		
MB-70670	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-010D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-010D-DU	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-011D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-012D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-013D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-014D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032084-015D	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032100-001A	Surface Water		100	<input type="checkbox"/>	0	0	100	1.000		
N032100-002A	Surface Water		100	<input type="checkbox"/>	0	0	100	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

*10187*



# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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SOLIDS RAW DATA

TEST: TSS/TDS/TS

Date	Sample ID	Sample Vol. (ml)	Crucible + Filter (TSS) Crucible (TDS, TS) Tare Wt.(g)	Crucible + Filter+Sample (TSS) Crucible + Sample (TDS, TS) Tare Wt.(g)	Comments
9/14/18 809 40	NB 70639	100	1.3801 1.3798	1.3796 1.3796	
	LC8 70639	100	1.3999 1.3996	1.4959 1.4958	
11	N032065-01SD	100	1.4076 1.4075	1.4078 1.4077	
12	N032084-001D	100	1.3826 1.3823	1.3827 1.3826	
D2	10 AIP	100	1.3732 1.3730	1.3734 1.3732	
13	20	100	1.3973 1.3971	1.3971 1.3972	
14	30	100	1.3880 1.3880	1.3883 1.3882	
15	40	100	1.3950 1.3952	1.3986 1.3988	
16	50	100	1.3920 1.3918	1.3939 1.3939	
17	60	100	1.3916 1.3915	1.3916 1.3916	

Silvia Ramit

9/21/2018

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Logbook#12





# TOTAL SUSPENDED SOLIDS, TSS

$$\text{TSS, mg/L} = (\text{A}-\text{B}) * 10000 * \text{PF}$$

where:           A =       weight in g of aluminum dish + filter disc + residue after drying  
                   B =       weight in g of aluminum dish + filter disc  
                   PF =      100/volume of sample used in mL

	vol of sample (mL)	weight in g of aluminum dish + filter disc (B)	weight in g of aluminum dish + filter disc + residue after drying (A)	A-B*10000	Prep Fact (PF)	TSS, mg/L	Sample Type
Date:							
9/14/2018							
MB-70639	100	1.3798	1.3796	-2.0000	1.00	-2	MBLK
LCS-70639	100	1.3996	1.4958	962.0000	1.00	962	LCS
N032065-015D	100	1.4075	1.4077	2.0000	1.00	2	SAMP
N032084-001D	100	1.3823	1.3826	3.0000	1.00	3	SAMP
N032084-001DDUP	100	1.373	1.3732	2.0000	1.00	2	DUP
N032084-002D	100	1.3971	1.3972	1.0000	1.00	1	SAMP
N032084-003D	100	1.388	1.3882	2.0000	1.00	2	SAMP
N032084-004D	100	1.3952	1.3988	36.0000	1.00	36	SAMP
N032084-005D	100	1.3918	1.3939	21.0000	1.00	21	SAMP
N032084-006D	100	1.3915	1.3916	1.0000	1.00	1	SAMP
N032084-007D	100	1.3868	1.3871	3.0000	1.00	3	SAMP
N032084-008D	100	1.4006	1.4009	3.0000	1.00	3	SAMP
N032084-009D	100	1.3973	1.3976	3.0000	1.00	3	SAMP

*Julia Ramit*

9/21/2018

SOLIDS RAW DATA

TEST (TSS) TDS/TS

Date	Sample ID	Sample Vol. (ml)	Crucible + Filter (TSS) Crucible (TDS, TS) Tare Wt.(g)	Crucible + Filter+Sample (TSS) Crucible + Sample (TDS, TS) Tare Wt.(g)	Comments
9/17/18 1035 21	MB 70670	100	1.3926 1.3927	1.3926 1.3926	
10	KS 70670	100	1.4118 1.4115	1.5081 1.5078	
1	N032684-010D	100	1.3807 1.3809	1.3809 1.3808	
2	100 DUP	100	1.4047 1.4050	1.4049 1.4048	
3	110	100	1.3959 1.3956	1.3956 1.3957	
4	120	100	1.4066 1.4066	1.4064 1.4066	
5	130	100	1.4088 1.4085	1.4083 1.4084	
6	140	100	1.4009 1.4011	1.4010 1.4010	
7	150	100	1.3818 1.3815	1.3813 1.3815	
8	N032100-001A	100	1.3855 1.3856	1.3870 1.3871	

Silia Ramit

9/21/2018

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Logbook#12



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SOLIDS RAW DATA

TEST : TSS/TDS/TS

Date	Sample ID	Sample Vol. (ml)	Crucible + Filter (TSS) Crucible (TDS, TS) Tare Wt.(g)	Crucible + Filter+Sample (TSS) Crucible + Sample (TDS, TS) Tare Wt.(g)	Comments
9/17/18 9	N032100-002A	100	1.3971 1.3968	1.3989 1.3988	
	Lilia Ramit	9/21/2018			
	Cleaning ref: 0-9998 @ 1845	9/17/18			



# TOTAL SUSPENDED SOLIDS, TSS

$$\text{TSS, mg/L} = (\text{A-B}) * 10000 * \text{PF}$$

where:            A =        weight in g of aluminum dish + filter disc + residue after drying  
                       B =        weight in g of aluminum dish + filter disc  
                       PF =        100/volume of sample used in mL

	vol of sample (mL)	weight in g of aluminum dish + filter disc (B)	weight in g of aluminum dish + filter disc + residue after drying (A)	A-B*10000	Prep Fact (PF)	TSS, mg/L	Sample Type
Date:							
9/17/2018							
MB-70670	100	1.3927	1.3926	-1.0000	1.00	-1	MBLK
LCS-70670	100	1.4115	1.5078	963.0000	1.00	963	LCS
N032084-010D	100	1.3809	1.3808	-1.0000	1.00	-1	SAMP
N032084-010DDUP	100	1.405	1.4048	-2.0000	1.00	-2	DUP
N032084-011D	100	1.3956	1.3957	1.0000	1.00	1	SAMP
N032084-012D	100	1.4066	1.4066	0.0000	1.00	0	SAMP
N032084-013D	100	1.4085	1.4084	-1.0000	1.00	-1	SAMP
N032084-014D	100	1.4011	1.401	-1.0000	1.00	-1	SAMP
N032084-015D	100	1.3815	1.3815	0.0000	1.00	0	SAMP
N032100-001A	100	1.3856	1.3871	15.0000	1.00	15	SAMP
N032100-002A	100	1.3968	1.3988	20.0000	1.00	20	SAMP

*Julia Ramit*

9/21/2018

# EPA 218.6



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IC Technical Batch Review Checklist (ARCUS02)  
ASSET LABORATORIES - LAS VEGAS

IC ARCUS  
REV 2.0  
011416

QC Batch Number: R127666  
ASSET #: N032084

Instrument ID: IC-07  
Analyst: RBA  
Date Analyzed: 9/14/2018

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)	X					
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?	X					
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?	X					
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)	X					
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X					
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)	X					
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X					
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments:

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer RBA

Date: 9/20/2018

2nd Level Reviewer Theresa 9/26/2018

Date: \_\_\_\_\_



IC Technical Batch Review Checklist (ARCUS02)  
**ASSET LABORATORIES - LAS VEGAS**

IC ARCUS  
 REV 2.0  
 011416

QC Batch Number: R127668  
 ASSET #: N032084

Instrument ID: IC-07  
 Analyst: RBA  
 Date Analyzed: 9/17/2018

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)	X					
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?	X					
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?	X					
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)	X					
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X					
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)	X					
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X					
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments:

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer RBA

Date: 9/20/2018

2nd Level Reviewer Nancy 9/26/2018

Date: —

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## Sample Calculation

**METHOD:** EPA 218.6  
**TEST NAME:** HEXAVALENT CHROMIUM BY IC  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Hexavalent Chromium concentration, in  $\mu\text{g/L}$ , in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

A =  $\mu\text{g/L}$ , IC Cr+6 calculated concentration  
DF = dilution factor

For Sample **N032084-004A**, the concentration in  $\mu\text{g/L}$  is calculated as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = 0.0849 * 1$$

$$\text{Cr}^{+6}, \mu\text{g/L} = 0.0849$$

Since PQL is  $0.2 \mu\text{g/L}$ ,

$$\text{Cr}^{+6}, \mu\text{g/L} = \text{ND}$$

*rba* 9/20/2018

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**INJECTION LOG: 180827A**

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:10 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:21 AM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:30 AM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/27/18 11:08 AM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:20 AM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:29 AM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:38 AM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:48 AM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:57 AM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 12:07 PM	Reported
11	ICV	ICV	1	Hexavalent Chromium	08/27/18 12:41 PM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	08/27/18 12:53 PM	Reported
13	ICB	ICB	1	Hexavalent Chromium	08/27/18 1:02 PM	Reported

*rba* 9/5/2018

### Injection Log Summary

**Sequence Details**

Name:	IC-07_180827A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	27/Aug/18 14:07:57
No. of Injections:	16	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/27/2018 10:10	Finished	BLANK
2	BLANK	2	1000	Unknown		08/27/2018 10:21	Finished	BLANK
3	BLANK	3	1000	Unknown		08/27/2018 10:30	Finished	BLANK
4	iBLANK	5	1000	Unknown		08/27/2018 11:08	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	6	1000	Calibration Standard	01	08/27/2018 11:20	Finished	0.2 ppb, IWST-180622A
6	STD2-1.0 ppb	7	1000	Calibration Standard	02	08/27/2018 11:29	Finished	1.0 ppb, IWST-180622A
7	STD3-5.0 ppb	8	1000	Calibration Standard	03	08/27/2018 11:38	Finished	5.0 ppb, IWST-180622A
8	STD4-10.0 ppb	9	1000	Calibration Standard	04	08/27/2018 11:48	Finished	10 ppb, IWST-180622A
9	STD5-15.0 ppb	10	1000	Calibration Standard	05	08/27/2018 11:57	Finished	15 ppb, IWST-180622A
10	STD6-20.0 ppb	11	1000	Calibration Standard	06	08/27/2018 12:07	Finished	20 ppb, IWST-180622A
11	ICV,ICV,1,	13	1000	Unknown		08/27/2018 12:41	Finished	ICV @5ppb, IWST-180622B
12	PQL@0.2ppb.CCV2,	14	1000	Unknown		08/27/2018 12:53	Finished	PQL @ 0.2ppb
13	ICB,ICB,1,	15	1000	Unknown		08/27/2018 13:02	Finished	ICB R180806A
14	SHUTDOWN	17	1000	Unknown		08/27/2018 13:45	Finished	
15	Eluent: R180824A	18	1000	Unknown		n.a.	Finished	Eluent
16	PCR: R180824B	19	1000	Unknown		n.a.	Finished	Post-Column Reagent

*rba* 9/5/2018

**INJECTION LOG: 180914A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:10 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:21 AM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:30 AM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/27/18 11:08 AM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:20 AM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:29 AM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:38 AM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:48 AM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:57 AM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 12:07 PM	Reported
11	BLANK	BLANK	1	Hexavalent Chromium	09/14/18 9:25 AM	Not Reported
12	BLANK	BLANK	1	Hexavalent Chromium	09/14/18 9:36 AM	Not Reported
13	CCV-1	CCV	1	Hexavalent Chromium	09/14/18 9:46 AM	Reported
14	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/14/18 9:55 AM	Reported
15	CCB-1	CCB	1	Hexavalent Chromium	09/14/18 10:05 AM	Reported
16	MB-R127666	MBLK	1	Hexavalent Chromium	09/14/18 10:14 AM	Reported
17	LCS-R127666	LCS	1	Hexavalent Chromium	09/14/18 10:24 AM	Reported
18	N032084-001A	SAMP	1	Hexavalent Chromium	09/14/18 10:56 AM	Reported
19	N032084-001AMS	MS	1	Hexavalent Chromium	09/14/18 11:08 AM	Reported
20	N032084-002A	SAMP	1	Hexavalent Chromium	09/14/18 11:17 AM	Not Reported
21	N032084-002AMS	MS	1	Hexavalent Chromium	09/14/18 11:27 AM	Not Reported
22	N032084-003A	SAMP	1	Hexavalent Chromium	09/14/18 11:36 AM	Reported
23	N032084-003AMS	MS	1	Hexavalent Chromium	09/14/18 11:46 AM	Reported
24	N032084-004A	SAMP	1	Hexavalent Chromium	09/14/18 11:55 AM	Reported
25	N032084-004AMS	MS	1	Hexavalent Chromium	09/14/18 12:04 PM	Reported
26	CCV-2	CCV1	1	Hexavalent Chromium	09/14/18 12:14 PM	Reported
27	CCB-2	CCB	1	Hexavalent Chromium	09/14/18 12:23 PM	Reported
28	N032084-005A	SAMP	1	Hexavalent Chromium	09/14/18 12:33 PM	Reported
29	N032084-005AMS	MS	1	Hexavalent Chromium	09/14/18 12:43 PM	Reported
30	N032084-006A	SAMP	1	Hexavalent Chromium	09/14/18 12:52 PM	Reported
31	N032084-006AMS	MS	1	Hexavalent Chromium	09/14/18 1:01 PM	Reported
32	N032084-007A	SAMP	1	Hexavalent Chromium	09/14/18 1:11 PM	Reported
33	N032084-007AMS	MS	1	Hexavalent Chromium	09/14/18 1:20 PM	Reported
34	N032084-007ADUP	DUP	1	Hexavalent Chromium	09/14/18 1:30 PM	Reported
35	N032084-001AMSD	MSD	1	Hexavalent Chromium	09/14/18 1:39 PM	Reported
36	N032084-008A	SAMP	1	Hexavalent Chromium	09/14/18 1:49 PM	Reported
37	N032084-008AMS	MS	1	Hexavalent Chromium	09/14/18 1:58 PM	Reported
38	CCV-3	CCV	1	Hexavalent Chromium	09/14/18 2:07 PM	Reported
39	CCB-3	CCB	1	Hexavalent Chromium	09/14/18 2:17 PM	Reported
40	N032084-009A	SAMP	1	Hexavalent Chromium	09/14/18 2:26 PM	Not Reported
41	N032084-009AMS	MS	1	Hexavalent Chromium	09/14/18 2:36 PM	Not Reported
42	N032084-010A	SAMP	1	Hexavalent Chromium	09/14/18 2:45 PM	Not Reported



**INJECTION LOG: 180914A**

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N032084-010AMS	MS	1	Hexavalent Chromium	09/14/18 2:55 PM	Not Reported
44	N032084-011A	SAMP	1	Hexavalent Chromium	09/14/18 3:04 PM	Not Reported
45	N032084-011AMS	MS	1	Hexavalent Chromium	09/14/18 3:14 PM	Not Reported
46	N032084-011AMS	MS	1	Hexavalent Chromium	09/14/18 3:30 PM	Not Reported
47	N032084-002AMS	MS	1	Hexavalent Chromium	09/14/18 3:41 PM	Not Reported
48	N032084-012A	SAMP	1	Hexavalent Chromium	09/14/18 3:50 PM	Not Reported
49	N032084-012AMS	MS	1	Hexavalent Chromium	09/14/18 4:52 PM	Not Reported
50	CCV-4	CCV1	1	Hexavalent Chromium	09/14/18 5:59 PM	Not Reported
51	CCB-4	CCB	1	Hexavalent Chromium	09/14/18 6:10 PM	Not Reported

### Injection Log Summary

**Sequence Details**

Name:	IC-07_180914A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	14/Sep/18 18:43:14
No. of Injections:	54	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/27/2018 10:10	Finished	BLANK
2	BLANK	2	1000	Unknown		08/27/2018 10:21	Finished	BLANK
3	BLANK	3	1000	Unknown		08/27/2018 10:30	Finished	BLANK
4	iBLANK	5	1000	Unknown		08/27/2018 11:08	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	6	1000	Calibration Standard	01	08/27/2018 11:20	Finished	0.2 ppb, IWST-180622A
6	STD2-1.0 ppb	7	1000	Calibration Standard	02	08/27/2018 11:29	Finished	1.0 ppb, IWST-180622A
7	STD3-5.0 ppb	8	1000	Calibration Standard	03	08/27/2018 11:38	Finished	5.0 ppb, IWST-180622A
8	STD4-10.0 ppb	9	1000	Calibration Standard	04	08/27/2018 11:48	Finished	10 ppb, IWST-180622A
9	STD5-15.0 ppb	10	1000	Calibration Standard	05	08/27/2018 11:57	Finished	15 ppb, IWST-180622A
10	STD6-20.0 ppb	11	1000	Calibration Standard	06	08/27/2018 12:07	Finished	20 ppb, IWST-180622A
11	BLANK	1	1000	Unknown		09/14/2018 09:25	Finished	BLANK
12	BLANK	2	1000	Unknown		09/14/2018 09:36	Finished	BLANK
13	CCV-1.CCV,1,	3	1000	Unknown		09/14/2018 09:46	Finished	CCV @5ppb, IWST-180622A
14	PQL@0.2ppb.CCV2,	4	1000	Unknown		09/14/2018 09:55	Finished	PQL @ 0.2ppb
15	CCB-1.CCB,1,	5	1000	Unknown		09/14/2018 10:05	Finished	CCB R180806A
16	MB-H2O.MBLK,1,	6	1000	Unknown		09/14/2018 10:14	Finished	MBLK R180913A
17	LCS-H2O.LCS,1,	7	1000	Unknown		09/14/2018 10:24	Finished	LCS @5ppb, IWST-180622B
18	N032084-001A,SAMP	9	1000	Unknown		09/14/2018 10:56	Finished	SAMP, 10mL
19	N032084-001AMS,MS	10	1000	Unknown		09/14/2018 11:08	Finished	MS (1ppb), IWST-180622B,10
20	N032084-002A,SAMP	11	1000	Unknown		09/14/2018 11:17	Finished	SAMP, 10mL
21	N032084-002AMS,MS	12	1000	Unknown		09/14/2018 11:27	Finished	MS (1ppb), IWST-180622B,10
22	N032084-003A,SAMP	13	1000	Unknown		09/14/2018 11:36	Finished	SAMP, 10mL
23	N032084-003AMS,MS	14	1000	Unknown		09/14/2018 11:46	Finished	MS (1ppb), IWST-180622B,10
24	N032084-004A,SAMP	15	1000	Unknown		09/14/2018 11:55	Finished	SAMP, 10mL
25	N032084-004AMS,MS	16	1000	Unknown		09/14/2018 12:04	Finished	MS (1ppb), IWST-180622B,10
26	CCV-2.CCV1,1,	17	1000	Unknown		09/14/2018 12:14	Finished	CCV @10ppb, IWST-180622A
27	CCB-2.CCB,1,	18	1000	Unknown		09/14/2018 12:23	Finished	CCB R180913A
28	N032084-005A,SAMP	19	1000	Unknown		09/14/2018 12:33	Finished	SAMP, 10mL
29	N032084-005AMS,MS	20	1000	Unknown		09/14/2018 12:43	Finished	MS (1ppb), IWST-180622B,10
30	N032084-006A,SAMP	21	1000	Unknown		09/14/2018 12:52	Finished	SAMP, 10mL
31	N032084-006AMS,MS	22	1000	Unknown		09/14/2018 13:01	Finished	MS (1ppb), IWST-180622B,10
32	N032084-007A,SAMP	23	1000	Unknown		09/14/2018 13:11	Finished	SAMP, 10mL
33	N032084-007AMS,MS	24	1000	Unknown		09/14/2018 13:20	Finished	MS (1ppb), IWST-180622B,10
34	N032084-007ADUP,D	25	1000	Unknown		09/14/2018 13:30	Finished	DUP, 10mL
35	N032084-001AMSD,N	26	1000	Unknown		09/14/2018 13:39	Finished	MS (1ppb), IWST-180622B,10
36	N032084-008A,SAMP	27	1000	Unknown		09/14/2018 13:49	Finished	SAMP, 10mL
37	N032084-008AMS,MS	28	1000	Unknown		09/14/2018 13:58	Finished	MS (1ppb), IWST-180622B,10
38	CCV-3.CCV,1,	29	1000	Unknown		09/14/2018 14:07	Finished	CCV @5ppb, IWST-180622A
39	CCB-3.CCB,1,	30	1000	Unknown		09/14/2018 14:17	Finished	CCB R180913A
40	N032084-009A,SAMP	31	1000	Unknown		09/14/2018 14:26	Finished	SAMP, 10mL
41	N032084-009AMS,MS	32	1000	Unknown		09/14/2018 14:36	Finished	MS (1ppb), IWST-180622B,10
42	N032084-010A,SAMP	33	1000	Unknown		09/14/2018 14:45	Finished	SAMP, 10mL
43	N032084-010AMS,MS	34	1000	Unknown		09/14/2018 14:55	Finished	MS (1ppb), IWST-180622B,10
44	N032084-011A,SAMP	35	1000	Unknown		09/14/2018 15:04	Finished	SAMP, 10mL
45	N032084-011AMS,MS	36	1000	Unknown		09/14/2018 15:14	Finished	MS (1ppb), IWST-180622B,10
46	N032084-011AMS,MS	1	1000	Unknown		09/14/2018 15:30	Finished	MS (1ppb), IWST-180622B,10
47	N032084-002AMS,MS	2	1000	Unknown		09/14/2018 15:41	Finished	MS (1ppb), IWST-180622B,10
48	N032084-012A,SAMP	3	1000	Unknown		09/14/2018 15:50	Interrupted	SAMP, 10mL
49	N032084-012AMS,MS	4	1000	Unknown		09/14/2018 16:52	Finished	MS (1ppb), IWST-180622B,10
50	CCV-4.CCV1,1,	5	1000	Unknown		09/14/2018 17:59	Finished	CCV @10ppb, IWST-180622A
51	CCB-4.CCB,1,	6	1000	Unknown		09/14/2018 18:10	Finished	CCB R180913A
52	SHUTDOWN	15	1000	Unknown		09/14/2018 18:22	Finished	
53	Eluent: R180914A	16	1000	Unknown		n.a.	Finished	Eluent
54	PCR: R180912C	17	1000	Unknown		n.a.	Finished	Post-Column Reagent

**INJECTION LOG: 180917A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:10 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:21 AM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:30 AM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/27/18 11:08 AM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:20 AM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:29 AM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:38 AM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:48 AM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:57 AM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 12:07 PM	Reported
11	BLANK	BLANK	1	Hexavalent Chromium	09/17/18 10:58 AM	Not Reported
12	BLANK	BLANK	1	Hexavalent Chromium	09/17/18 11:09 AM	Not Reported
13	BLANK	BLANK	1	Hexavalent Chromium	09/17/18 11:25 AM	Not Reported
14	BLANK	BLANK	1	Hexavalent Chromium	09/17/18 11:36 AM	Not Reported
15	CCV-1	CCV	1	Hexavalent Chromium	09/17/18 11:45 AM	Reported
16	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/17/18 12:02 PM	Reported
17	CCB-1	CCB	1	Hexavalent Chromium	09/17/18 12:14 PM	Reported
18	MB-R127668	MBLK	1	Hexavalent Chromium	09/17/18 12:23 PM	Reported
19	LCS-R127668	LCS	1	Hexavalent Chromium	09/17/18 12:33 PM	Reported
20	N032084-002A	SAMP	1	Hexavalent Chromium	09/17/18 1:06 PM	Reported
21	N032084-002AMS	MS	1	Hexavalent Chromium	09/17/18 1:17 PM	Reported
22	N032084-009A	SAMP	1	Hexavalent Chromium	09/17/18 1:26 PM	Reported
23	N032084-009AMS	MS	1	Hexavalent Chromium	09/17/18 1:35 PM	Reported
24	N032084-010A	SAMP	1	Hexavalent Chromium	09/17/18 1:45 PM	Reported
25	N032084-010AMS	MS	1	Hexavalent Chromium	09/17/18 1:54 PM	Reported
26	N032084-011A	SAMP	1	Hexavalent Chromium	09/17/18 2:04 PM	Reported
27	N032084-011AMS	MS	1	Hexavalent Chromium	09/17/18 2:14 PM	Reported
28	CCV-2	CCV1	1	Hexavalent Chromium	09/17/18 2:23 PM	Reported
29	CCB-2	CCB	1	Hexavalent Chromium	09/17/18 2:32 PM	Reported
30	N032084-012A	SAMP	1	Hexavalent Chromium	09/17/18 2:42 PM	Reported
31	N032084-012AMS	MS	1	Hexavalent Chromium	09/17/18 2:51 PM	Reported
32	N032084-013A	SAMP	1	Hexavalent Chromium	09/17/18 3:01 PM	Reported
33	N032084-013AMS	MS	1	Hexavalent Chromium	09/17/18 3:10 PM	Reported
34	N032084-014A	SAMP	1	Hexavalent Chromium	09/17/18 3:20 PM	Reported
35	N032084-014AMS	MS	1	Hexavalent Chromium	09/17/18 3:29 PM	Reported
36	N032084-015A	SAMP	1	Hexavalent Chromium	09/17/18 3:38 PM	Reported
37	N032084-015AMS	MS	1	Hexavalent Chromium	09/17/18 3:48 PM	Reported
38	N032084-002ADUP	DUP	1	Hexavalent Chromium	09/17/18 3:57 PM	Reported
39	N032084-009AMSD	MSD	1	Hexavalent Chromium	09/17/18 4:07 PM	Reported
40	CCV-3	CCV	1	Hexavalent Chromium	09/17/18 4:16 PM	Reported
41	CCB-3	CCB	1	Hexavalent Chromium	09/17/18 4:26 PM	Reported

## Injection Log Summary

## Sequence Details

Name:	IC-07_180917A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	18/Sep/18 09:55:45
No. of Injections:	44	Updated By:	ics 5000

## Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/27/2018 10:10	Finished	BLANK
2	BLANK	2	1000	Unknown		08/27/2018 10:21	Finished	BLANK
3	BLANK	3	1000	Unknown		08/27/2018 10:30	Finished	BLANK
4	iBLANK	5	1000	Unknown		08/27/2018 11:08	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	6	1000	Calibration Standard	01	08/27/2018 11:20	Finished	0.2 ppb, IWST-180622A
6	STD2-1.0 ppb	7	1000	Calibration Standard	02	08/27/2018 11:29	Finished	1.0 ppb, IWST-180622A
7	STD3-5.0 ppb	8	1000	Calibration Standard	03	08/27/2018 11:38	Finished	5.0 ppb, IWST-180622A
8	STD4-10.0 ppb	9	1000	Calibration Standard	04	08/27/2018 11:48	Finished	10 ppb, IWST-180622A
9	STD5-15.0 ppb	10	1000	Calibration Standard	05	08/27/2018 11:57	Finished	15 ppb, IWST-180622A
10	STD6-20.0 ppb	11	1000	Calibration Standard	06	08/27/2018 12:07	Finished	20 ppb, IWST-180622A
11	BLANK	1	1000	Unknown		09/17/2018 10:58	Finished	BLANK
12	BLANK	2	1000	Unknown		09/17/2018 11:09	Finished	BLANK
13	BLANK	4	1000	Unknown		09/17/2018 11:25	Finished	BLANK
14	BLANK	5	1000	Unknown		09/17/2018 11:36	Finished	BLANK
15	CCV-1.CCV,1,	6	1000	Unknown		09/17/2018 11:45	Finished	CCV @5ppb, IWST-180622A
16	PQL@0.2ppb.CCV2,	8	1000	Unknown		09/17/2018 12:02	Finished	PQL @ 0.2ppb
17	CCB-1.CCB,1,	9	1000	Unknown		09/17/2018 12:14	Finished	CCB R180806A
18	MB-H2O.MBLK,1,	10	1000	Unknown		09/17/2018 12:23	Finished	MBLK R180913A
19	LCS-H2O.LCS,1,	11	1000	Unknown		09/17/2018 12:33	Finished	LCS @5ppb, IWST-180622B
20	N032084-002A.SAMP	1	1000	Unknown		09/17/2018 13:06	Finished	SAMP, 10mL
21	N032084-002AMS,MS	2	1000	Unknown		09/17/2018 13:17	Finished	MS (1ppb), IWST-180622B,10
22	N032084-009A.SAMP	3	1000	Unknown		09/17/2018 13:26	Finished	SAMP, 10mL
23	N032084-009AMS,MS	4	1000	Unknown		09/17/2018 13:35	Finished	MS (1ppb), IWST-180622B,10
24	N032084-010A.SAMP	5	1000	Unknown		09/17/2018 13:45	Finished	SAMP, 10mL
25	N032084-010AMS,MS	6	1000	Unknown		09/17/2018 13:54	Finished	MS (1ppb), IWST-180622B,10
26	N032084-011A.SAMP	7	1000	Unknown		09/17/2018 14:04	Finished	SAMP, 10mL
27	N032084-011AMS,MS	8	1000	Unknown		09/17/2018 14:14	Finished	MS (1ppb), IWST-180622B,10
28	CCV-2.CCV,1,1,	9	1000	Unknown		09/17/2018 14:23	Finished	CCV @10ppb, IWST-180622A
29	CCB-2.CCB,1,	10	1000	Unknown		09/17/2018 14:32	Finished	CCB R180806A
30	N032084-012A.SAMP	11	1000	Unknown		09/17/2018 14:42	Finished	SAMP, 10mL
31	N032084-012AMS,MS	12	1000	Unknown		09/17/2018 14:51	Finished	MS (1ppb), IWST-180622B,10
32	N032084-013A.SAMP	13	1000	Unknown		09/17/2018 15:01	Finished	SAMP, 10mL
33	N032084-013AMS,MS	14	1000	Unknown		09/17/2018 15:10	Finished	MS (1ppb), IWST-180622B,10
34	N032084-014A.SAMP	15	1000	Unknown		09/17/2018 15:20	Finished	SAMP, 10mL
35	N032084-014AMS,MS	16	1000	Unknown		09/17/2018 15:29	Finished	MS (1ppb), IWST-180622B,10
36	N032084-015A.SAMP	17	1000	Unknown		09/17/2018 15:38	Finished	SAMP, 10mL
37	N032084-015AMS,MS	18	1000	Unknown		09/17/2018 15:48	Finished	MS (1ppb), IWST-180622B,10
38	N032084-002ADUP,1	19	1000	Unknown		09/17/2018 15:57	Finished	DUP, 10mL
39	N032084-009AMSD,N	20	1000	Unknown		09/17/2018 16:07	Finished	MSD (1ppb), IWST-180622B,10
40	CCV-3.CCV,1,	21	1000	Unknown		09/17/2018 16:16	Finished	CCV @5ppb, IWST-180622A
41	CCB-3.CCB,1,	22	1000	Unknown		09/17/2018 16:26	Finished	CCB R180913A
42	SHUTDOWN	23	1000	Unknown		09/17/2018 16:35	Finished	
43	Eluent: R180917A	24	1000	Unknown		n.a.	Finished	Eluent
44	PCR: R180917B	25	1000	Unknown		n.a.	Finished	Post-Column Reagent

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

## Hexavalent Chromium Preparation and Runlog

### Sample Preparation

Date Prepared: 9/12/18  
 Time Prepared: 10:34 AM  
 Prepared By: NBA

Reagent ID:  
 Sulfuric Acid: 10125  
 Diphenylcarbazide: CINV-180516B  
 NH4OH + NH4SO4 eluent: NB0912A  
 NH4OH + NH4SO4 buffer: NB0806A

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N072065-17A	9.40	-	~250μl	~250μl		1/3
2)	17A	9.39	-				2/3
3)	17A	9.39	-				3/3
4)	N072062-001A	7.37	8.00	-150μl	50μl		
5)	N072065-14A	9.36	-	~250μl	~250μl		1/3
6)	14A	9.33	-				2/3
7)	14A	9.34	-				3/3
8)	15A	9.38	-				1/3
9)	15A	9.35	-				2/3
10)	15A	9.37	-				3/3
11)							
12)							
13)							
14)							
15)							

### Sample Preparation

Date Prepared: 9/14/18  
 Time Prepared: 10:16 AM  
 Prepared By: NBA

Slope: 98.12  
 pH 4: 4.0300 at 0.0  
 7: 7.0000 at 0.0  
 10: 10.0000 at 0.0  
 15: 15.0000 at 0.0

Reagent ID:  
 Sulfuric Acid: 10125  
 Diphenylcarbazide: CINV-180516B  
 NH4OH + NH4SO4 eluent: NB0914A / NB0913A  
 NH4OH + NH4SO4 buffer: NB0806A / NB0913A

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N072084-001A	9.32	-	~250μl	~250μl		1/3
2)	1A	9.34	-				2/3
3)	1A	9.32	-				3/3
4)	2A	9.30	-				1/3
5)	2A	9.30	-				2/3
6)	2A	9.31	-				3/3
7)	3A	9.26	-				1/3
8)	3A	9.25	-				2/3
9)	3A	9.34	-				3/3
10)	4A	9.20	-				1/3
11)	4A	9.31	-				2/3
12)	4A	9.31	-				3/3
13)	5A	9.21	-				1/3
14)	5A	9.32	-				2/3
15)	5A	9.34	-				3/3
	6A	9.33	-				1/3

Logbook No. 15



**nba** 9/20/2018

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CALIFORNIA | P: 562.219.7435 F: 562.219.7436  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 ELAP Cert 2921

7 of 100 ID CA01638

NEVADA | P: 702.307.2659 F: 702.307.2691  
 3151 W. Post Rd., Las Vegas, NV 89118  
 ELAP Cert 2676 | NV Cert 000922  
 ORELAP/NELAP Cert 4046

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### Hexavalent Chromium Preparation and Runlog

#### Sample Preparation

Date Prepared: 9/14/18 stopper Reagent ID:  
 Time Prepared: 15:16H Sulfuric Acid: 10125  
 Prepared By: NBA Diphenylcarbazide: CNU-180516A  
NH4OH + NH4SO4 eluent: M80914A / M80917A  
NH4OH + NH4SO4 buffer: M80806A / M8093A

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N032084-6A	9.37	-	~250ul	~250ul		2/3
2)	6A	9.37	-				3/3
3)	7A	9.20	-				4/3
4)	7A	9.20	-				2/3
5)	7A	9.32	-				3/3
6)	8A	9.32	-				1/3
7)	8A	9.33	-				2/3
8)	8A	9.34	-				3/3
9)	9A	9.32	-				1/3
10)	9A	9.33	-				2/3
11)	9A	9.31	-				3/3
12)	10A	9.31	-				1/3
13)	10A	9.34	-				2/3
14)	10A	9.30	-				3/3
15)	11A	9.32	-				1/3
	11A	9.32	-				2/3

#### Sample Preparation

Date Prepared: 9/14/18 Reagent ID:  
 Time Prepared: 15:16H Sulfuric Acid: 10125  
 Prepared By: NBA Diphenylcarbazide: CNU-180516A  
NH4OH + NH4SO4 eluent: M80914A / M80917A  
NH4OH + NH4SO4 buffer: M80806A / M8093A

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N032084-11A	9.32	-	~250ul	~250ul		3/3
2)	12A	9.32	-				1/3
3)	12A	9.35	-				2/3
4)	12A	9.33	-				3/3
5)	13A	9.31	-				1/3
6)	13A	9.30	-				2/3
7)	13A	9.32	-				3/3
8)	14A	9.33	-				1/3
9)	14A	9.35	-				2/3
10)	14A	9.36	-				3/3
11)	15A	9.32	-				1/3
12)	15A	9.31	-				2/3
13)	15A	9.32	-				3/3
14)	16A	9.44	-				1/1

Logbook No. 15

*nba* 9/20/2018



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CALIFORNIA | P: 562.219.7435 F: 562.219.7436  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
ELAP Cert 2921  
8 of 100 ID CA01638

NEVADA | P: 702.307.2659 F: 702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118  
ELAP Cert 2675 | NV Cert 188922  
ORELAP/NELAP Cert 4046

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR CONSTRUCTION AND INFRASTRUCTURE

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07  
Date Calibrated: 8/27/2018

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R <sup>2</sup>
Area,mAU*min	0.0542	0.2463	1.2679	2.5360	3.7695	5.0211	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST-170814H	IWST-180622A

Calibration Acceptance Criteria: > 0.999 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/27/2018</b>	SeqNo: <b>3141575</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.148	0.20	5.000	0	103	90	110				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/27/2018</b>	SeqNo: <b>3141576</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.219	0.20	0.2000	0	110	80	120				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141578</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.168	0.20	5.000	0	103	95	105				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141579</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.224	0.20	0.2000	0	112	80	120				

Sample ID <b>CCV-2</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141589</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.349	0.20	10.00	0	103	95	105				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141601</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.212	0.20	5.000	0	104	95	105				

**Qualifiers:**

- |    |   |   |                                      |   |  |
|----|---|---|--------------------------------------|---|--|
| B  | Analyte detected in the associated Method Blank | E | Value above quantitation range       | H | Holding times for preparation or analysis exceeded           |
| ND | Not Detected at the Reporting Limit             | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>
Client ID: <b>ICV</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/27/2018</b>	SeqNo: <b>3141637</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.148	0.20	5.000	0	103 90 110

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/27/2018</b>	SeqNo: <b>3141638</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	0.219	0.20	0.2000	0	110 80 120

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>
Client ID: <b>CCV</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141640</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.109	0.20	5.000	0	102 95 105

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141641</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	0.220	0.20	0.2000	0	110 80 120

Sample ID <b>CCV-2</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141653</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	10.246	0.20	10.00	0	102 95 105

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141665</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.120	0.20	5.000	0	102	95	105				

**Qualifiers:**

- |    |   |   |                                      |   |  |
|----|---|---|--------------------------------------|---|--|
| B  | Analyte detected in the associated Method Blank | E | Value above quantitation range       | H | Holding times for preparation or analysis exceeded           |
| ND | Not Detected at the Reporting Limit             | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/27/2018</b>	SeqNo: <b>3141577</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141580</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141590</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127666</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127666</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/14/2018</b>	SeqNo: <b>3141602</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>
Client ID: <b>ICB</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>8/27/2018</b>	SeqNo: <b>3141639</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium

ND 0.20

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141642</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium

ND 0.20

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141654</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium

ND 0.20

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127668</b>
Client ID: <b>CCB</b>	Batch ID: <b>R127668</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/17/2018</b>	SeqNo: <b>3141666</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium

ND 0.20

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
MULTI-PHASE CHEMISTRY FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 9/14/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.131	
CCV-1	4.115	
CCV-2	4.098	
CCV-3	4.115	

**Average** 4.109  
**Actual RT Window** 4.029 - 4.189  
**Applied RT Window** 3.909 - 4.309

MB-R127666	N.A.	N.A.
LCS-R127666	4.115	PASS
N032084-001A	N.A.	N.A.
N032084-001AMS	4.115	PASS
N032084-002A	N.A.	N.A.
N032084-002AMS	4.106	PASS
N032084-003A	N.A.	N.A.
N032084-003AMS	4.106	PASS
N032084-004A	4.106	PASS
N032084-004AMS	4.106	PASS
N032084-005A	N.A.	N.A.
N032084-005AMS	4.106	PASS
N032084-006A	4.098	PASS
N032084-006AMS	4.106	PASS
N032084-007A	4.098	PASS
N032084-007AMS	4.106	PASS
N032084-007ADUP	4.098	PASS
N032084-001AMSD	4.106	PASS
N032084-008A	N.A.	N.A.
N032084-008AMS	4.106	PASS

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 9/17/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.131	
CCV-1	4.131	
CCV-2	4.115	
CCV-3	4.115	

**Average** 4.120

**Actual RT Window** 4.040 - 4.200

**Applied RT Window** 3.920 - 4.320

MB-R127668	N.A.	N.A.
LCS-R127668	4.115	PASS
N032084-002A	N.A.	N.A.
N032084-002AMS	4.106	PASS
N032084-009A	N.A.	N.A.
N032084-009AMS	4.106	PASS
N032084-010A	N.A.	N.A.
N032084-010AMS	4.106	PASS
N032084-011A	4.098	PASS
N032084-011AMS	4.106	PASS
N032084-012A	4.081	PASS
N032084-012AMS	4.106	PASS
N032084-013A	4.098	PASS
N032084-013AMS	4.106	PASS
N032084-014A	4.090	PASS
N032084-014AMS	4.106	PASS
N032084-015A	N.A.	N.A.
N032084-015AMS	4.106	PASS
N032084-002ADUP	N.A.	N.A.
N032084-009AMSD	4.106	PASS

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## METHOD DETECTION LIMIT 2017

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**  
 Method Number: EPA 218.6  
 Analysis Date(s): 5/5/2017, 5/8/2017, 5/9/2017, 5/10/2017, 5/11/2017, 5/12/2017, 5/15/2017  
 Analyst: Ria Abes

Matrix: **WATER**  
 Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

	Datafile	170505	170508	170509	170510	170511	170512	170515						
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	t <sub>(n-1)</sub> value	MDL	PQL	Remarks	
Hexavalent Chromium	0.1949	0.2135	0.1840	0.1828	0.2011	0.1936	0.1911	0.20	0.0105	3.143	<b>0.0331</b>	<b>0.20</b>	OK,meets criteria	

Students' t Values at 99% CL

#	t <sub>(n-1)</sub>
10	2.821
9	2.896
8	2.998
7	3.143



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL MONITORING

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

## LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Hexavalent Chromium by IC**                      Matrix: **WATER**  
 Method Number: EPA Method 218.6/7199                      Unit:  $\mu\text{g/L}$   
 Analysis Date(s): 3/21/2018  
 Analyst: Ria Abes  
  
 Instrument Name: **IC-07**

Compound	MDL	LOD Spike Conc., $\mu\text{g/L}$	LOD actual Conc., $\mu\text{g/L}$
Hexavalent Chromium	0.0331	0.100	0.116

Compound	PQL	PQL Spike Conc., $\mu\text{g/L}$	PQL actual Conc., $\mu\text{g/L}$	% Recovery
Hexavalent Chromium	0.200	0.200	0.201	<u>100</u>



# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691



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# INITIAL CALIBRATION



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INJECTION LOG: 180827A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:10 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:21 AM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:30 AM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/27/18 11:08 AM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:20 AM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:29 AM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:38 AM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:48 AM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:57 AM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 12:07 PM	Reported
11	ICV	ICV	1	Hexavalent Chromium	08/27/18 12:41 PM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	08/27/18 12:53 PM	Reported
13	ICB	ICB	1	Hexavalent Chromium	08/27/18 1:02 PM	Reported

*rba* 9/5/2018

*Nancy* 9/12/2018

IC-07 RBA 8/28/2018 5:31 PM

## Injection Log Summary

## Sequence Details

Name:	IC-07_180827A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	27/Aug/18 14:07:57
No. of Injections:	16	Updated By:	ics 5000

## Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/27/2018 10:10	Finished	BLANK
2	BLANK	2	1000	Unknown		08/27/2018 10:21	Finished	BLANK
3	BLANK	3	1000	Unknown		08/27/2018 10:30	Finished	BLANK
4	iBLANK	5	1000	Unknown		08/27/2018 11:08	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	6	1000	Calibration Standard	01	08/27/2018 11:20	Finished	0.2 ppb, IWST-180622A
6	STD2-1.0 ppb	7	1000	Calibration Standard	02	08/27/2018 11:29	Finished	1.0 ppb, IWST-180622A
7	STD3-5.0 ppb	8	1000	Calibration Standard	03	08/27/2018 11:38	Finished	5.0 ppb, IWST-180622A
8	STD4-10.0 ppb	9	1000	Calibration Standard	04	08/27/2018 11:48	Finished	10 ppb, IWST-180622A
9	STD5-15.0 ppb	10	1000	Calibration Standard	05	08/27/2018 11:57	Finished	15 ppb, IWST-180622A
10	STD6-20.0 ppb	11	1000	Calibration Standard	06	08/27/2018 12:07	Finished	20 ppb, IWST-180622A
11	ICV,ICV,1,	13	1000	Unknown		08/27/2018 12:41	Finished	ICV @5ppb, IWST-180622B
12	PQL@0.2ppb.CCV2,	14	1000	Unknown		08/27/2018 12:53	Finished	PQL @ 0.2ppb
13	ICB,ICB,1,	15	1000	Unknown		08/27/2018 13:02	Finished	ICB R180806A
14	SHUTDOWN	17	1000	Unknown		08/27/2018 13:45	Finished	
15	Eluent: R180824A	18	1000	Unknown		n.a.	Finished	Eluent
16	PCR: R180824B	19	1000	Unknown		n.a.	Finished	Post-Column Reagent

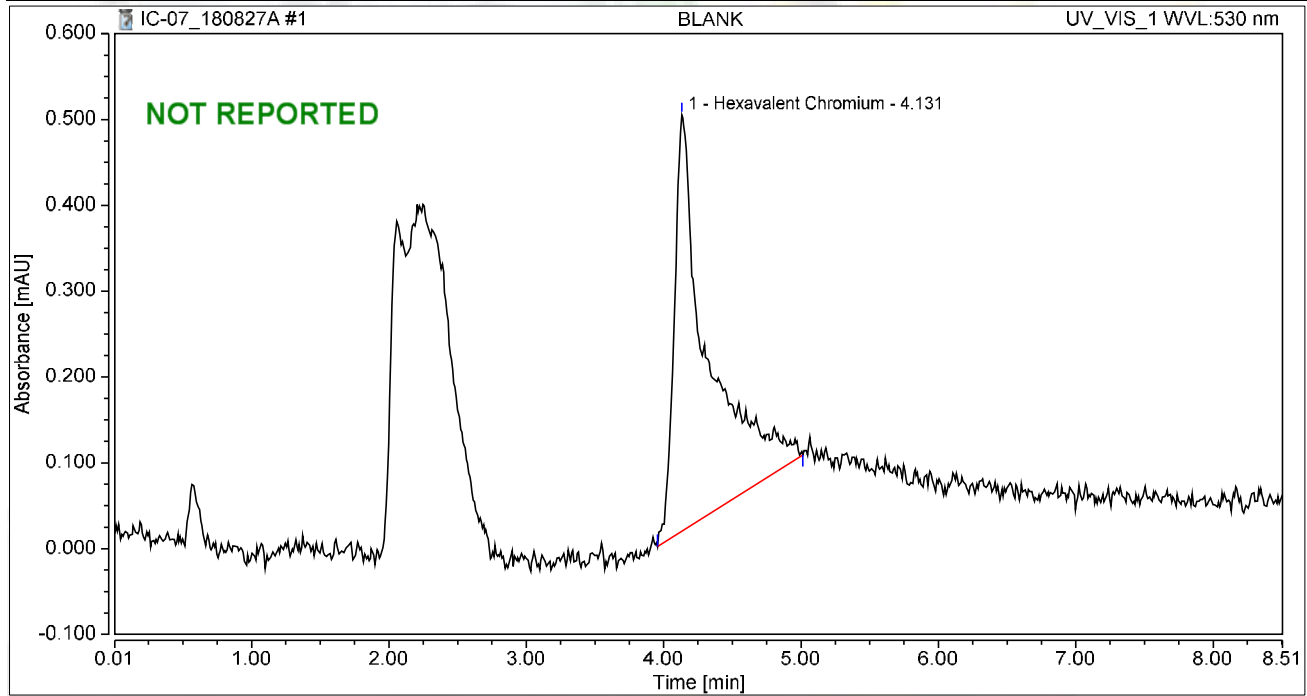
rba 9/5/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 10:10	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

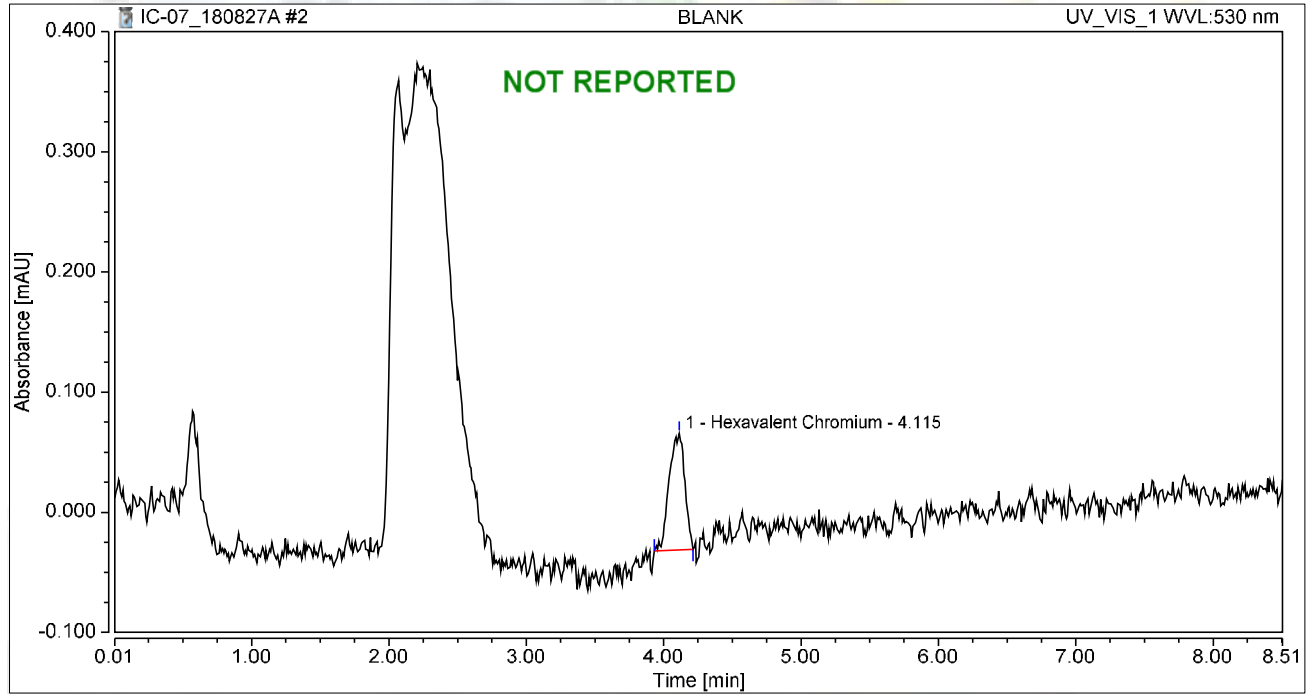
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.139	0.485	100.00	100.00	0.5516
<b>Total:</b>			<b>0.139</b>	<b>0.485</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 10:21	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

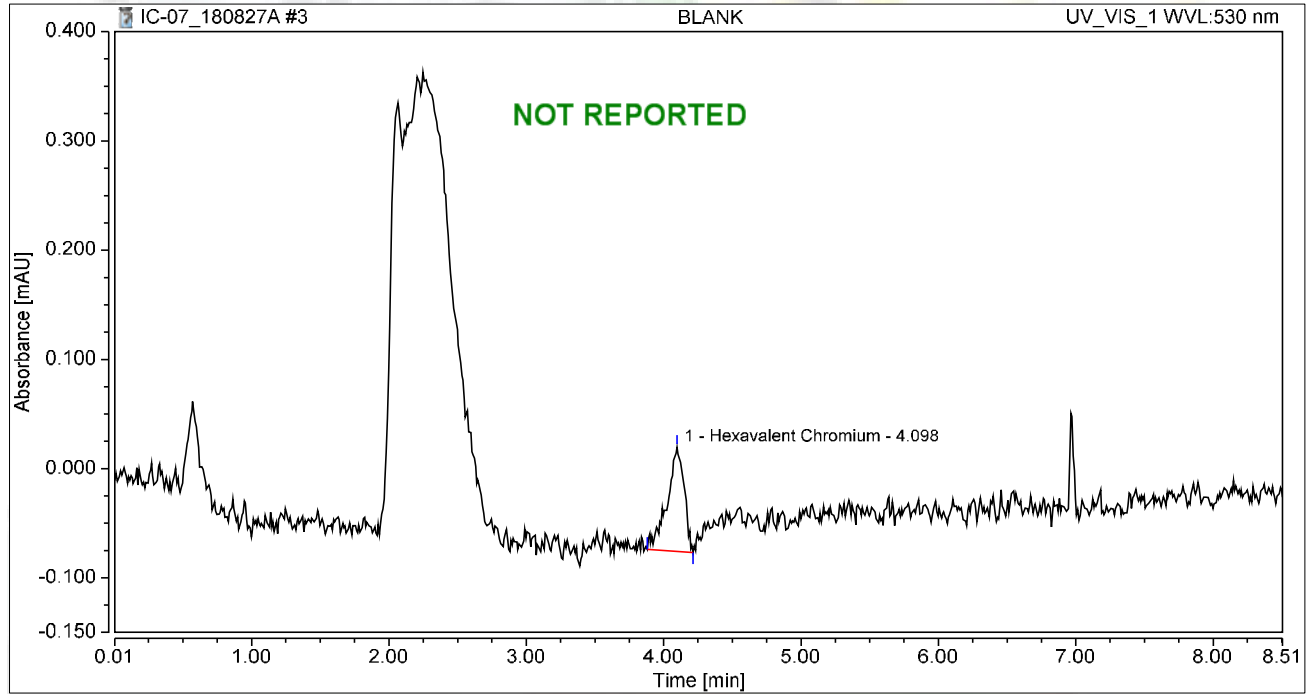
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.013	0.097	100.00	100.00	0.0500
<b>Total:</b>			<b>0.013</b>	<b>0.097</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 10:30	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

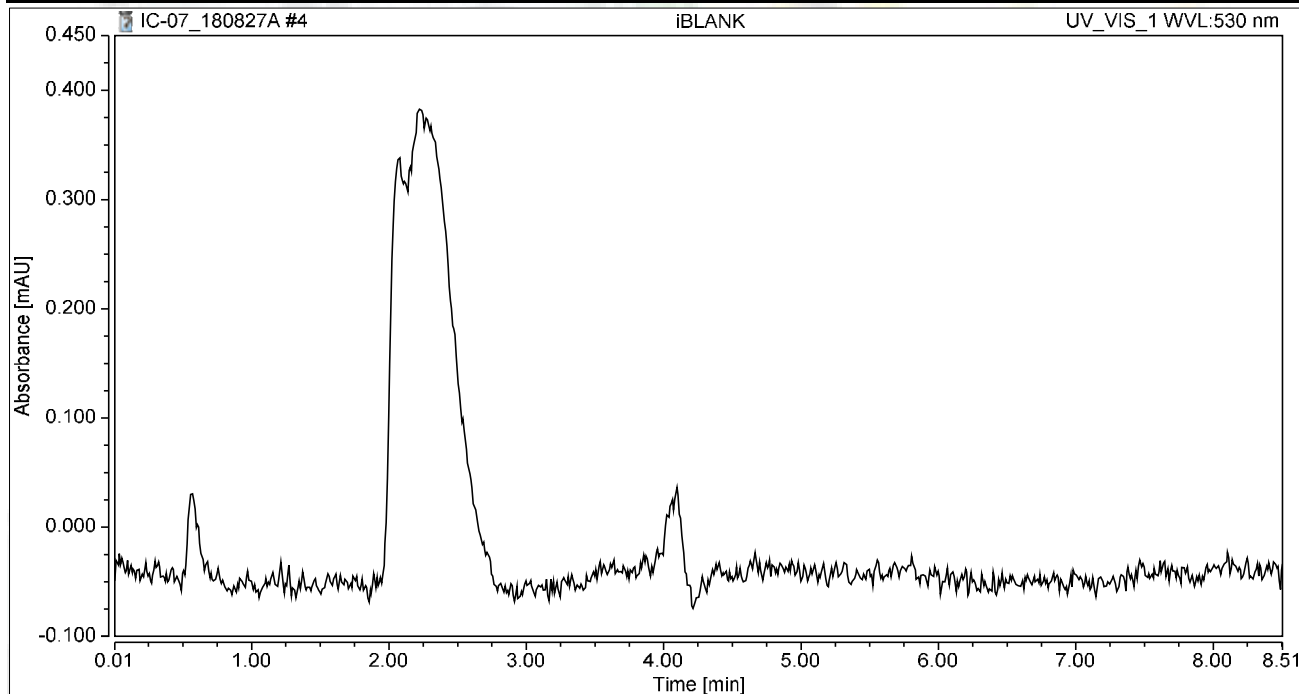
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.014	0.095	100.00	100.00	0.0543
<b>Total:</b>			<b>0.014</b>	<b>0.095</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	iBLANK	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:08	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

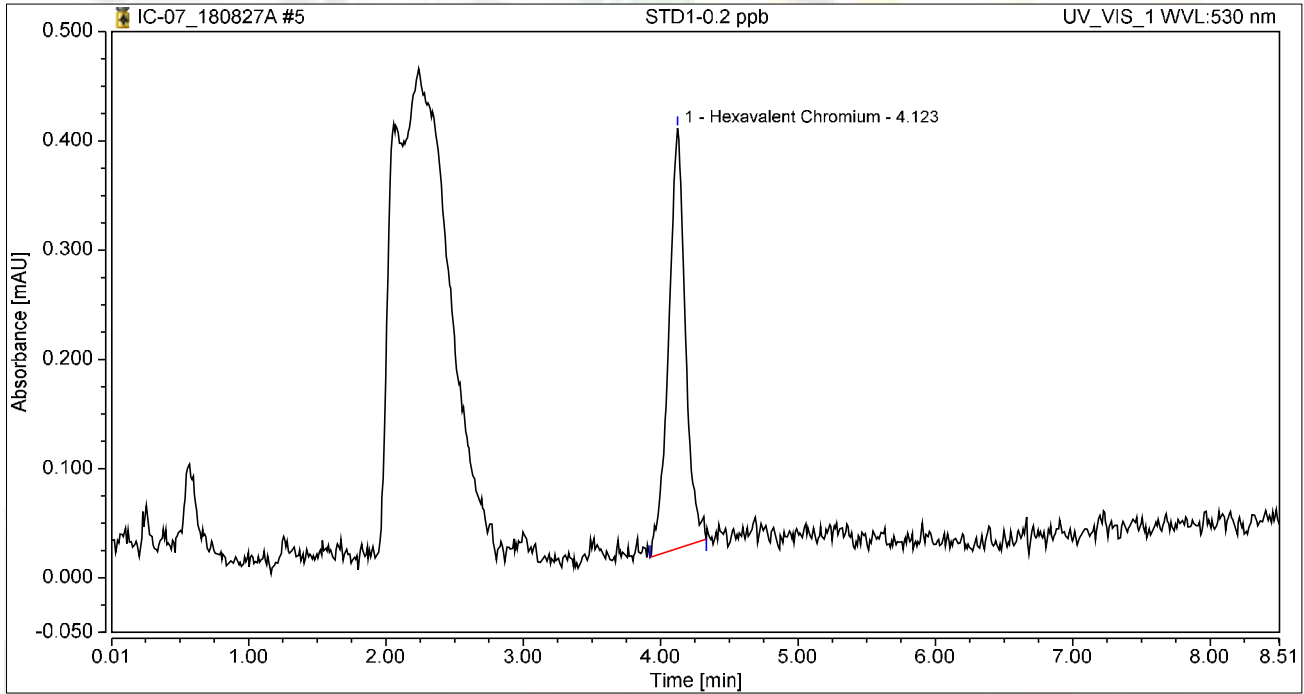
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:20	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.054	0.385	100.00	100.00	0.2156
<b>Total:</b>			<b>0.054</b>	<b>0.385</b>	<b>100.00</b>	<b>100.00</b>	

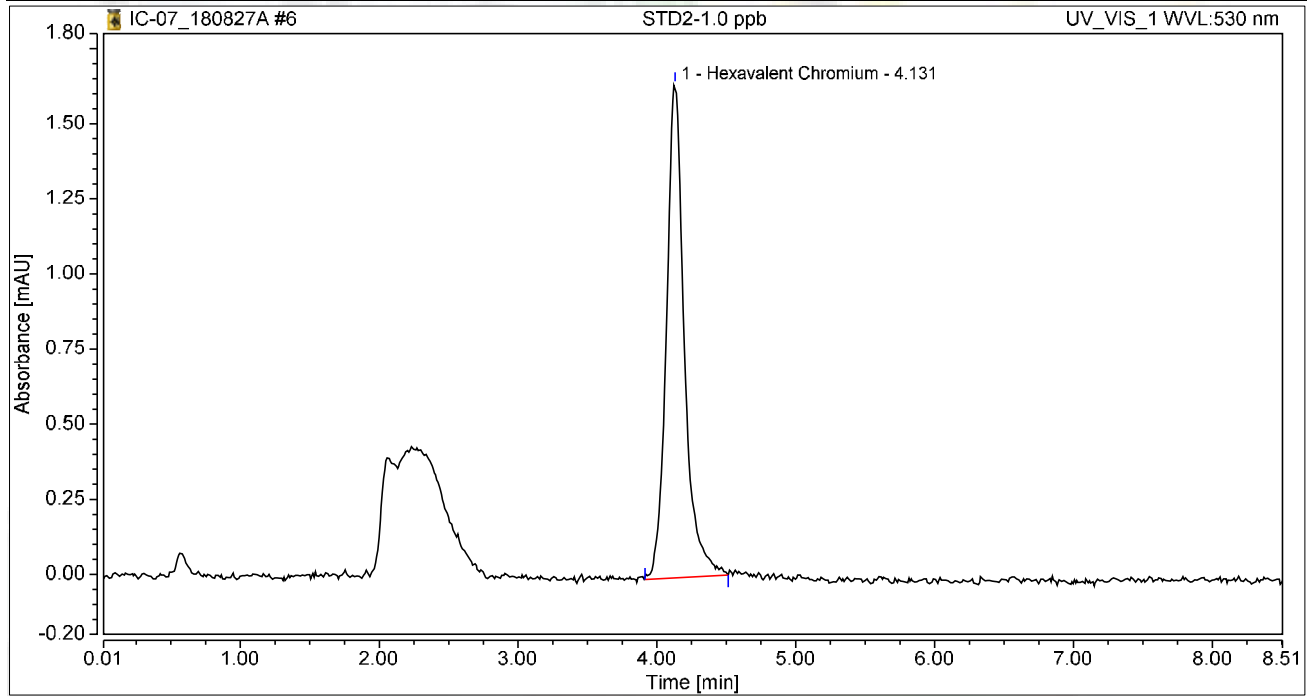


### Chromatogram and Results

**Injection Details**

Injection Name:	STD2-1.0 ppb	Run Time (min):	8.49
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	02	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:29	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

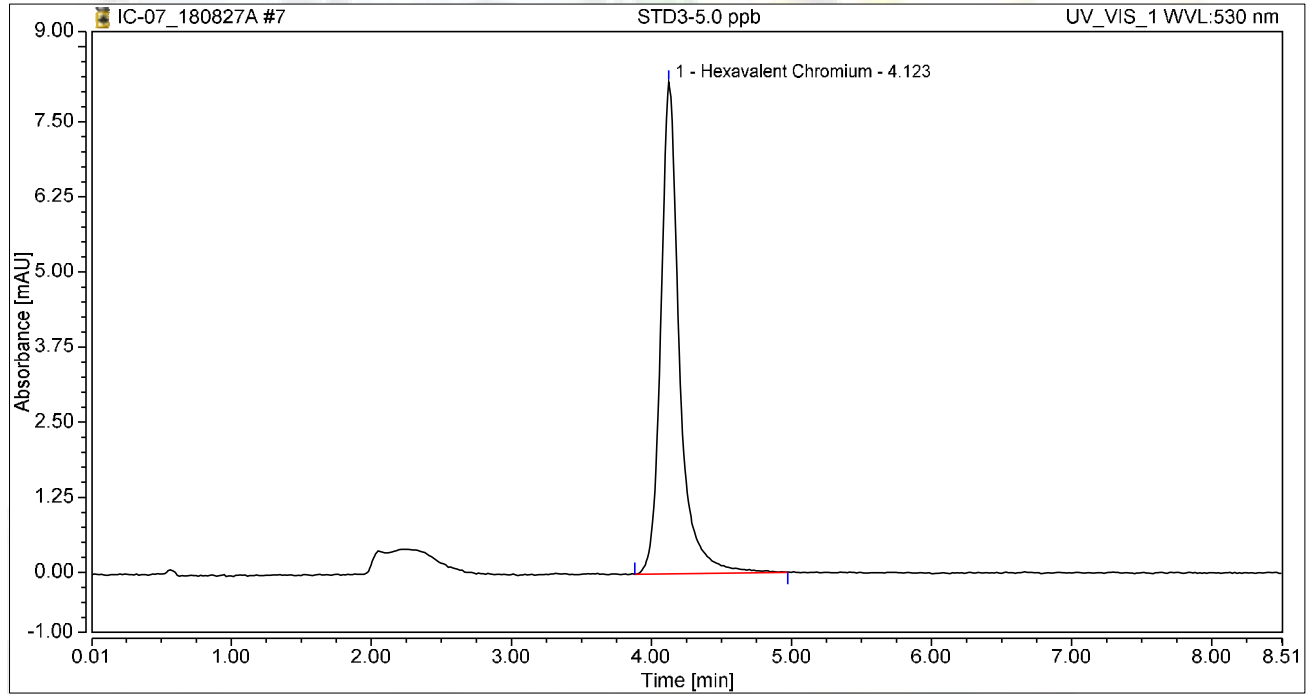
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.246	1.643	100.00	100.00	0.9792
<b>Total:</b>			<b>0.246</b>	<b>1.643</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD3-5.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	03	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

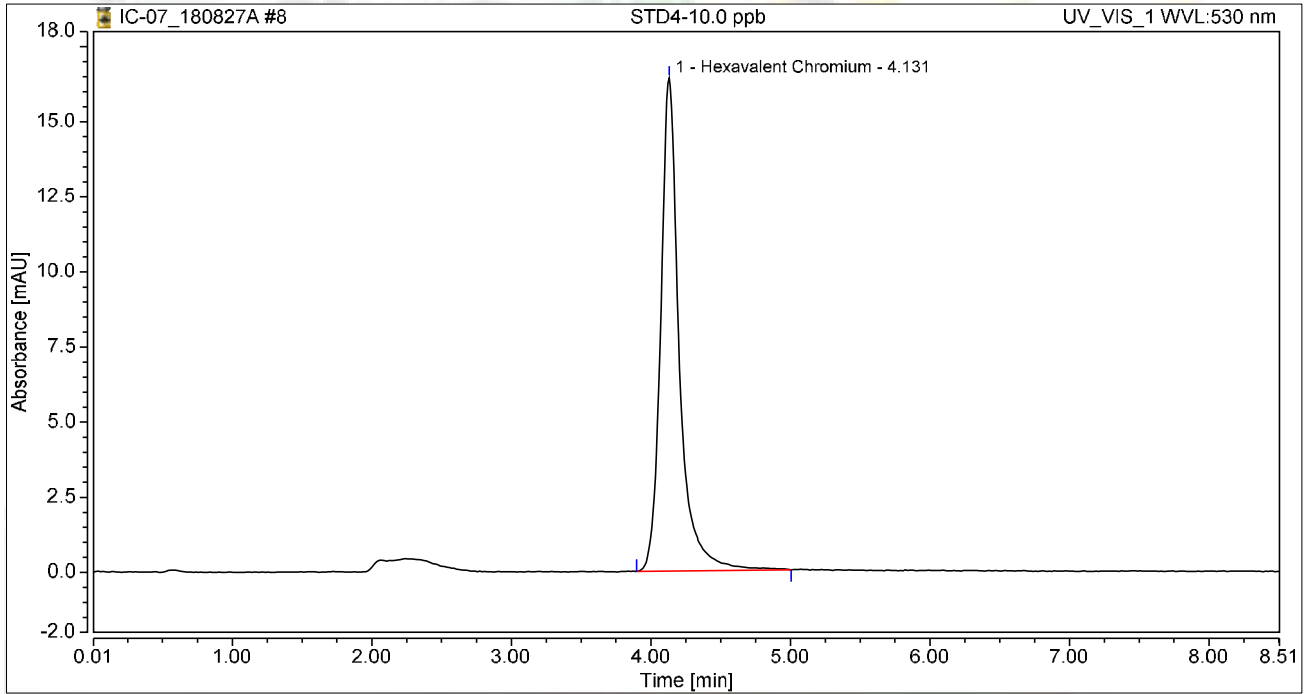
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	1.268	8.180	100.00	100.00	5.0404
<b>Total:</b>			<b>1.268</b>	<b>8.180</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:48	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

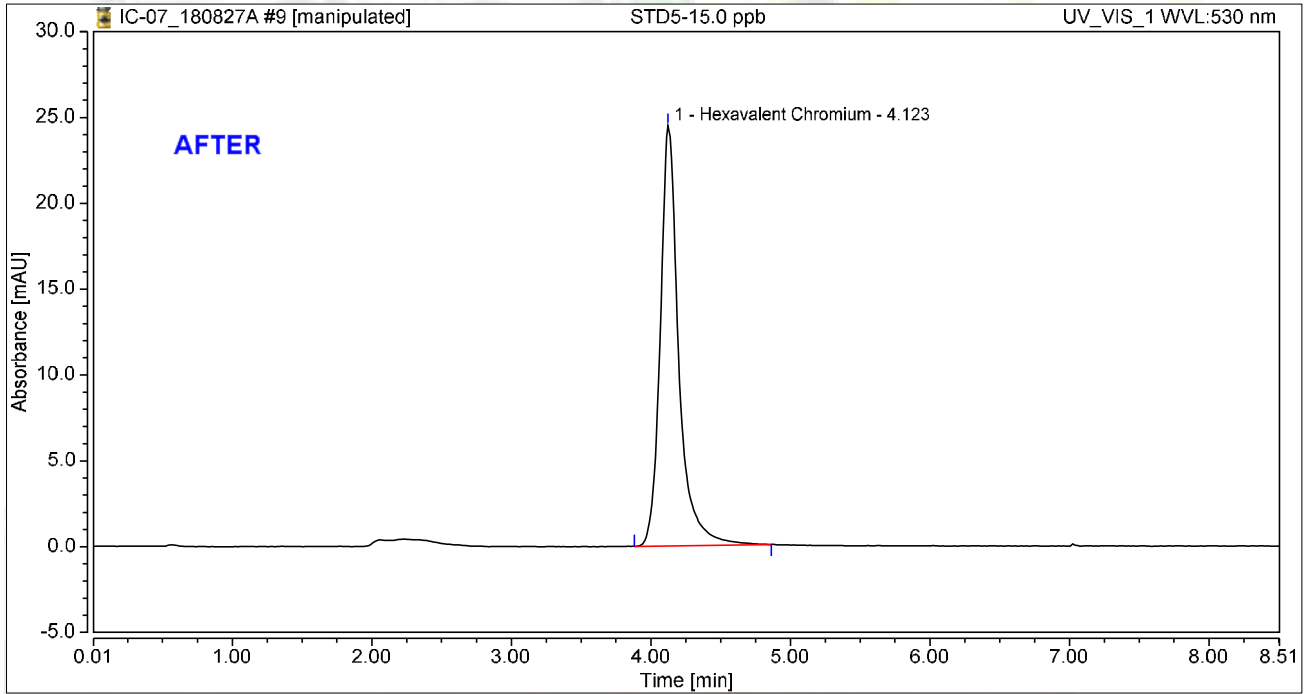
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.536	16.409	100.00	100.00	10.0817
<b>Total:</b>			<b>2.536</b>	<b>16.409</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	3.770	24.491	100.00	100.00	14.9855
<b>Total:</b>			<b>3.770</b>	<b>24.491</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/5/2018

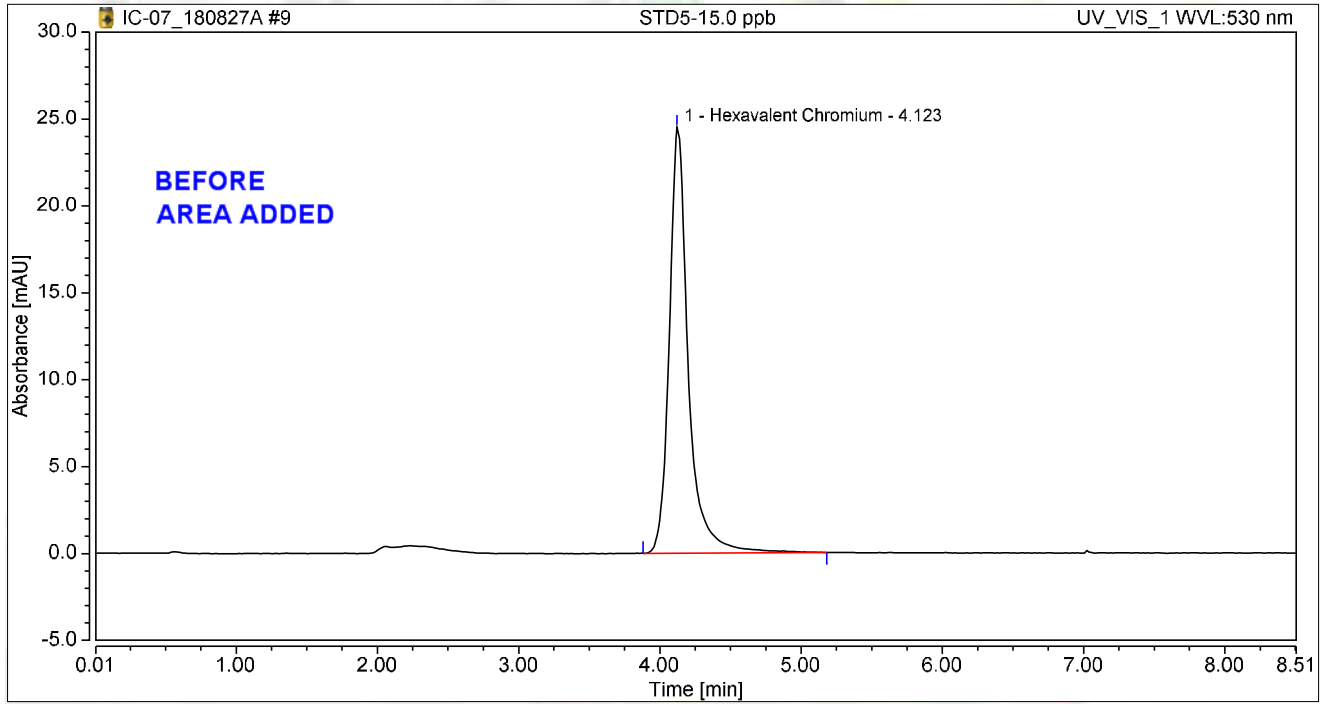
Reviewed by:  
*Nancy* 9/12/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 11:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	3.830	24.514	100.00	100.00	15.0503
<b>Total:</b>			<b>3.830</b>	<b>24.514</b>	<b>100.00</b>	<b>100.00</b>	

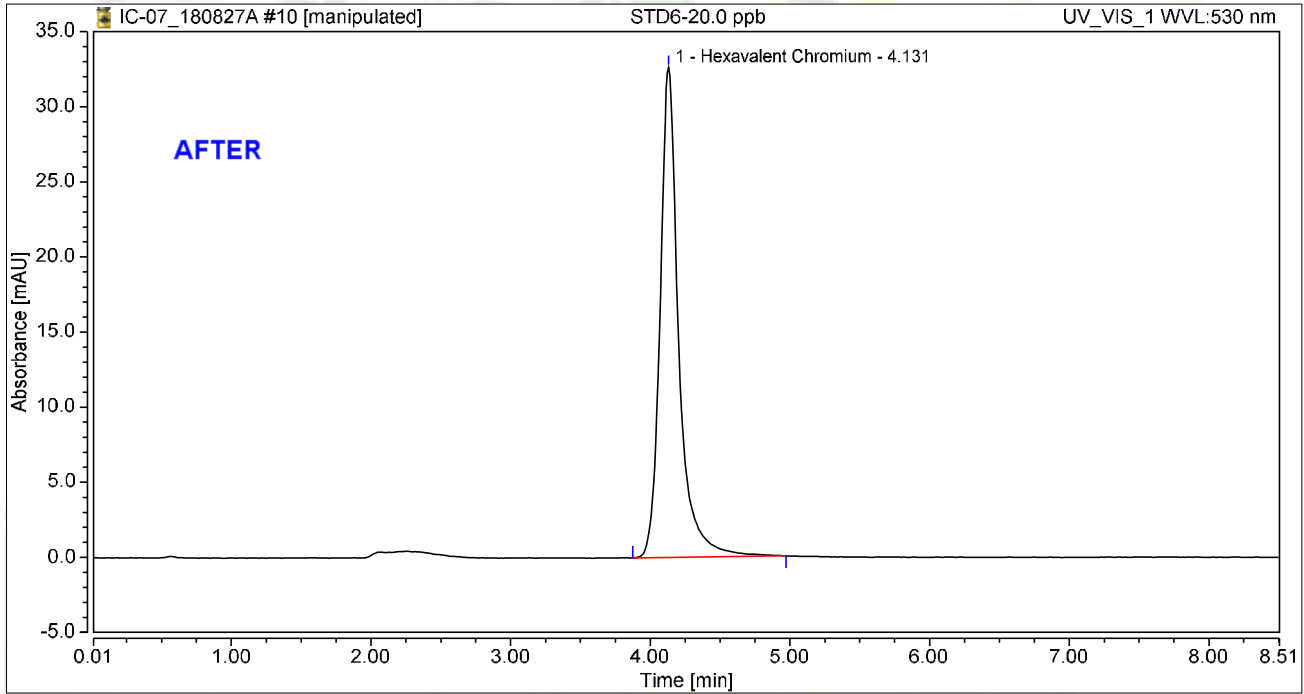
rba 9/5/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 12:07	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	5.021	32.611	100.00	100.00	19.9608
<b>Total:</b>			<b>5.021</b>	<b>32.611</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/5/2018

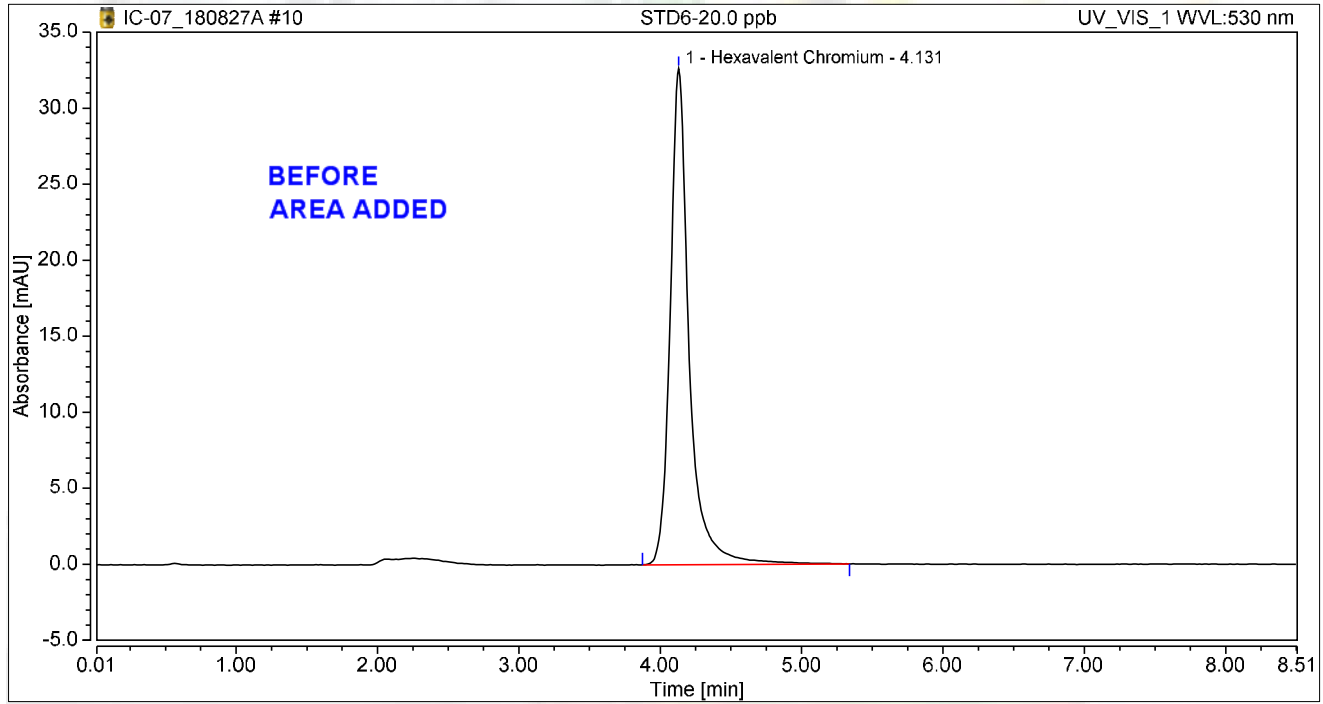
Reviewed by:  
My [Signature] 9/12/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 12:07	Sample Weight:	1.0000

**Chromatogram**

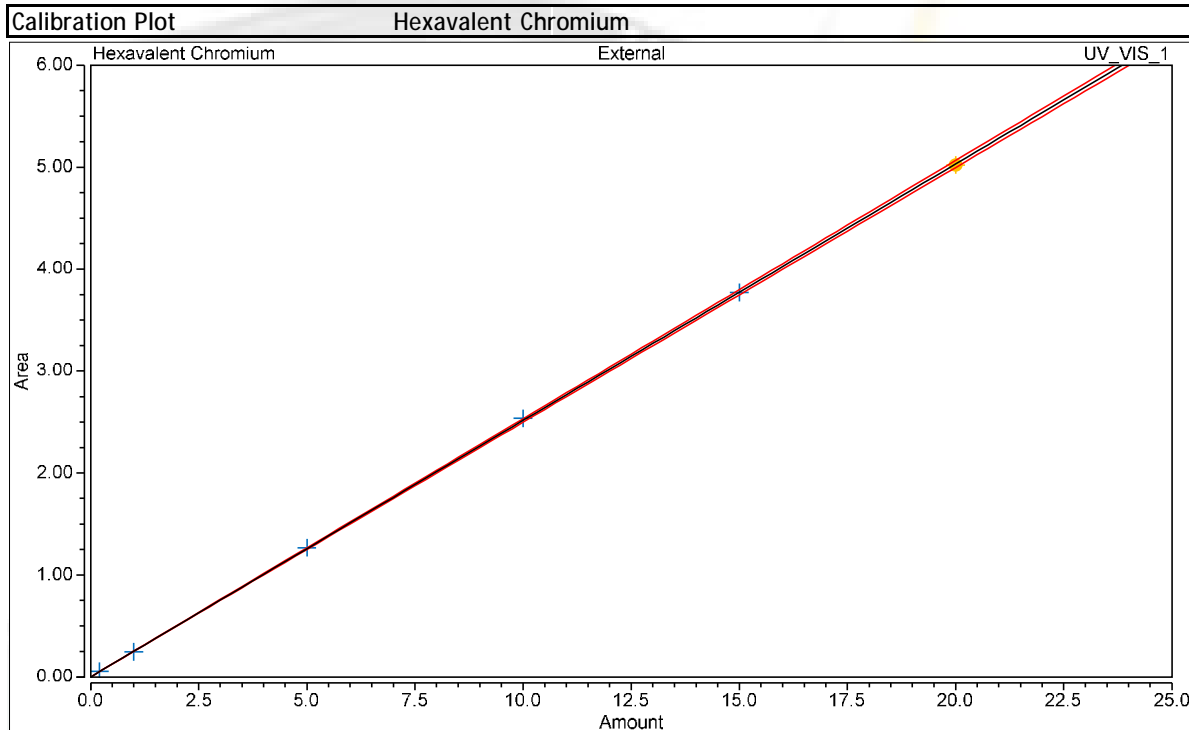


**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	5.085	32.631	100.00	100.00	19.9848
<b>Total:</b>			<b>5.085</b>	<b>32.631</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/5/2018

Initial Calibration Summary			
Calibration Details		Hexavalent Chromium	
Calibration Type	Lin	Offset (C0)	0.0000
Evaluation Type	Area	Slope (C1)	0.2515
Number of Calibration Points	6	Curve (C2)	0.0000
Number of disabled Calibration Points	0	R-Square	0.99997



Calibration Results		Hexavalent Chromium				
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
5	STD1-0.2 ppb	01	0.2000	0.0542	0.054	0.385
6	STD2-1.0 ppb	02	1.0000	0.2463	0.246	1.643
7	STD3-5.0 ppb	03	5.0000	1.2679	1.268	8.180
8	STD4-10.0 ppb	04	10.0000	2.5360	2.536	16.409
9	STD5-15.0 ppb	05	15.0000	3.7695	3.770	24.491
10	STD6-20.0 ppb	06	20.0000	5.0211	5.021	32.611

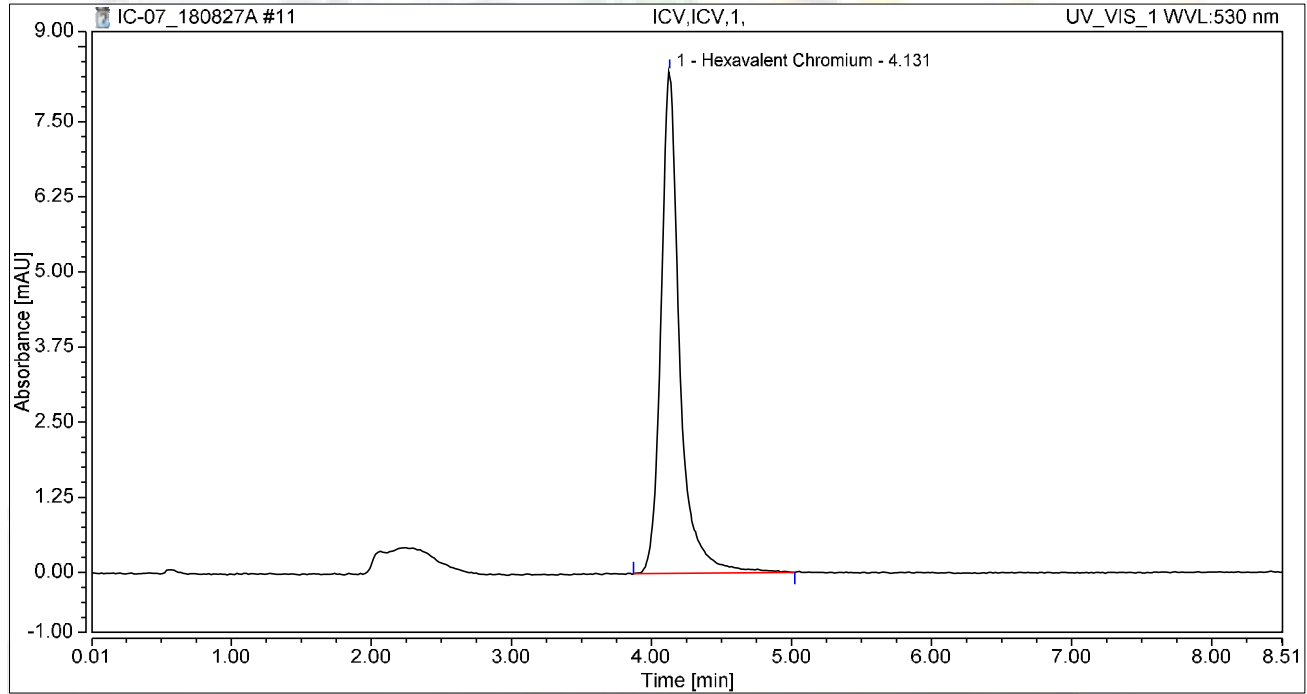


### Chromatogram and Results

**Injection Details**

Injection Name:	ICV,ICV,1,	Run Time (min):	8.50
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 12:41	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

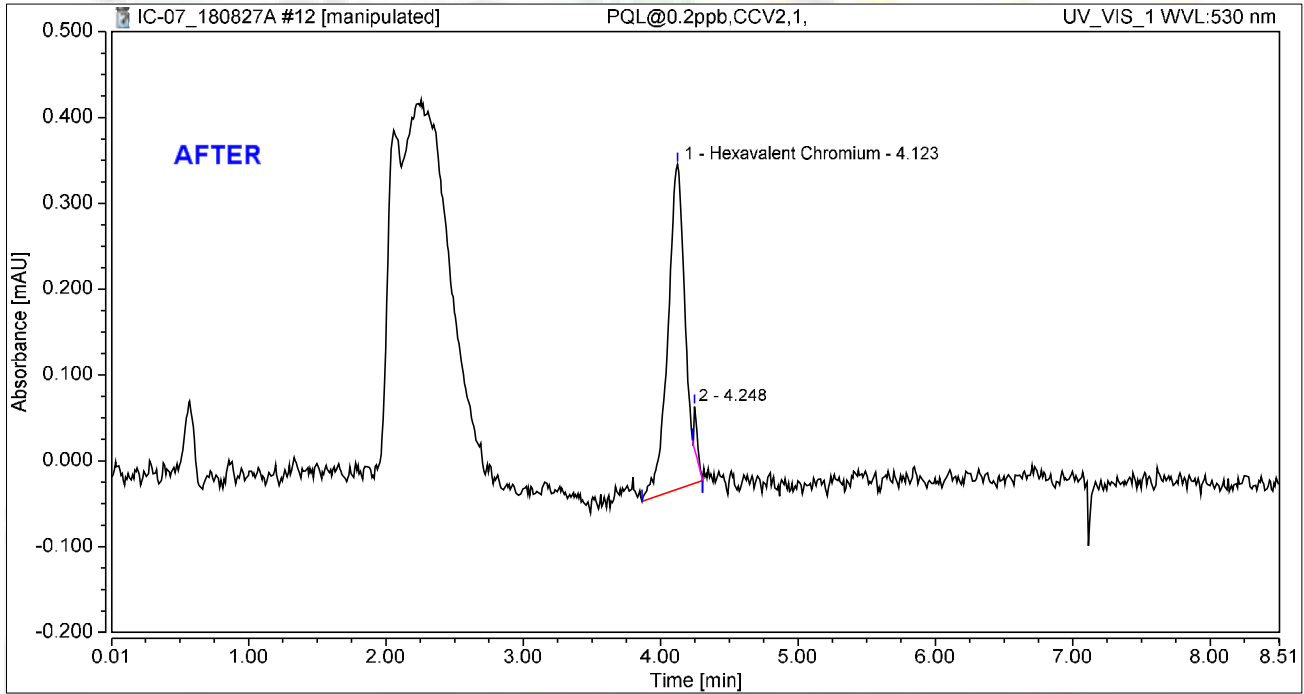
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.295	8.351	100.00	100.00	5.1484
<b>Total:</b>			<b>1.295</b>	<b>8.351</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 12:53	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.055	0.378	97.76	88.34	0.2190
2		4.248	0.001	0.050	2.24	11.66	n.a.
<b>Total:</b>			<b>0.056</b>	<b>0.428</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/5/2018

Reviewed by:

*Moncy* 9/12/2018

My first report/Integration

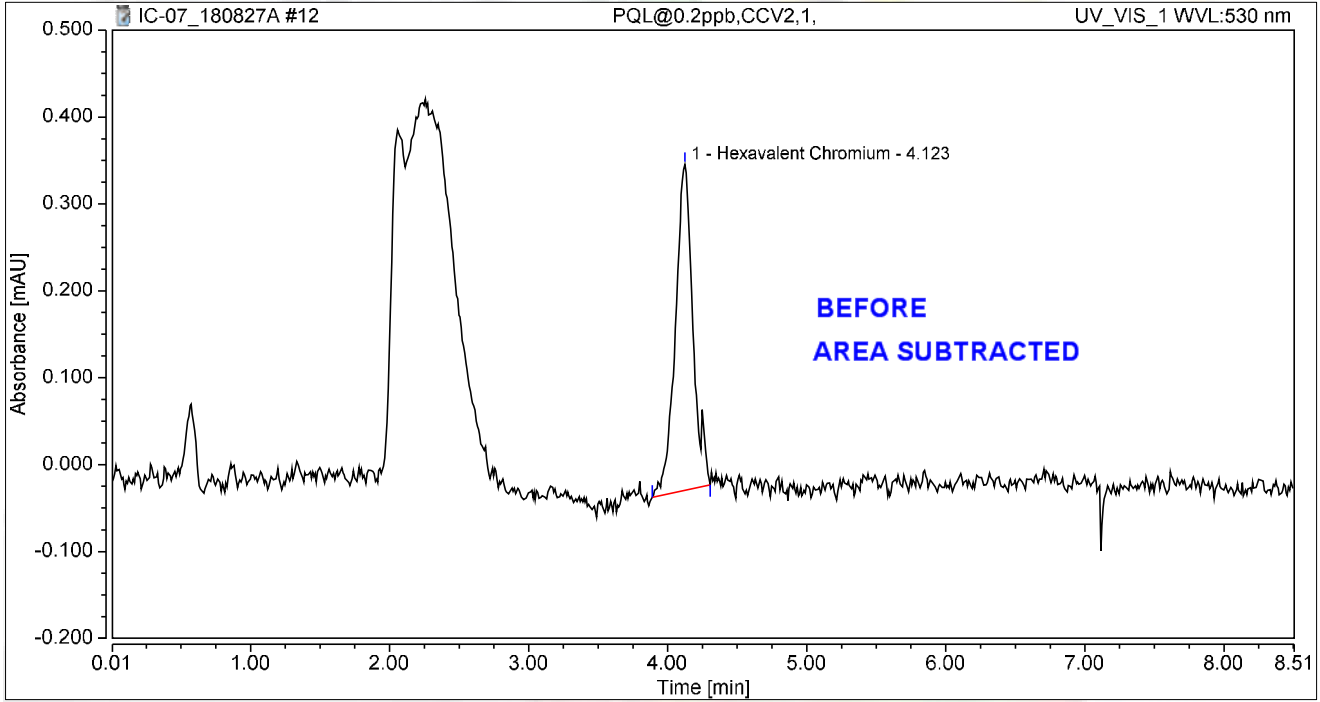
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 12:53	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.055	0.375	100.00	100.00	0.2143
<b>Total:</b>			<b>0.055</b>	<b>0.375</b>	<b>100.00</b>	<b>100.00</b>	

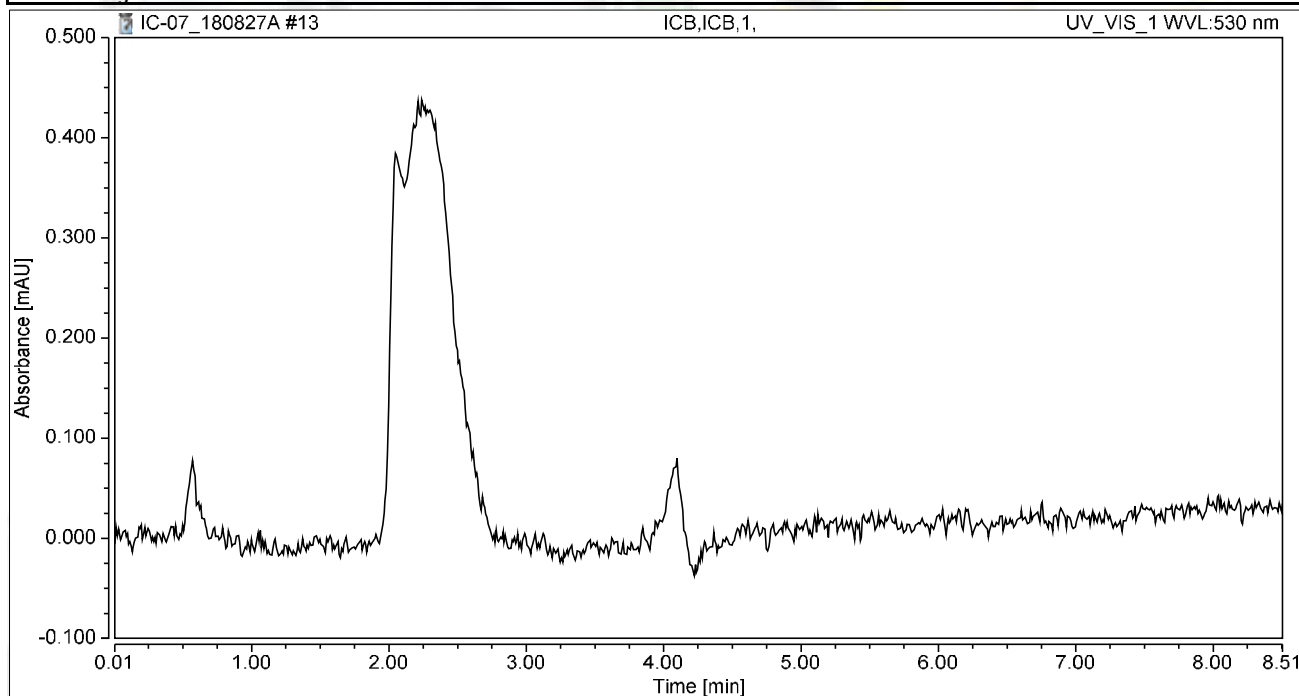
*rba* 9/5/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	ICB,ICB,1,	Run Time (min):	8.50
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Aug/18 13:02	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436



ADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**INJECTION LOG: 180914A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:10 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:21 AM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:30 AM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/27/18 11:08 AM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:20 AM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:29 AM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:38 AM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:48 AM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:57 AM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 12:07 PM	Reported
11	BLANK	BLANK	1	Hexavalent Chromium	09/14/18 9:25 AM	Not Reported
12	BLANK	BLANK	1	Hexavalent Chromium	09/14/18 9:36 AM	Not Reported
13	CCV-1	CCV	1	Hexavalent Chromium	09/14/18 9:46 AM	Reported
14	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/14/18 9:55 AM	Reported
15	CCB-1	CCB	1	Hexavalent Chromium	09/14/18 10:05 AM	Reported
16	MB-R127666	MBLK	1	Hexavalent Chromium	09/14/18 10:14 AM	Reported
17	LCS-R127666	LCS	1	Hexavalent Chromium	09/14/18 10:24 AM	Reported
18	N032084-001A	SAMP	1	Hexavalent Chromium	09/14/18 10:56 AM	Reported
19	N032084-001AMS	MS	1	Hexavalent Chromium	09/14/18 11:08 AM	Reported
20	N032084-002A	SAMP	1	Hexavalent Chromium	09/14/18 11:17 AM	Not Reported
21	N032084-002AMS	MS	1	Hexavalent Chromium	09/14/18 11:27 AM	Not Reported
22	N032084-003A	SAMP	1	Hexavalent Chromium	09/14/18 11:36 AM	Reported
23	N032084-003AMS	MS	1	Hexavalent Chromium	09/14/18 11:46 AM	Reported
24	N032084-004A	SAMP	1	Hexavalent Chromium	09/14/18 11:55 AM	Reported
25	N032084-004AMS	MS	1	Hexavalent Chromium	09/14/18 12:04 PM	Reported
26	CCV-2	CCV1	1	Hexavalent Chromium	09/14/18 12:14 PM	Reported
27	CCB-2	CCB	1	Hexavalent Chromium	09/14/18 12:23 PM	Reported
28	N032084-005A	SAMP	1	Hexavalent Chromium	09/14/18 12:33 PM	Reported
29	N032084-005AMS	MS	1	Hexavalent Chromium	09/14/18 12:43 PM	Reported
30	N032084-006A	SAMP	1	Hexavalent Chromium	09/14/18 12:52 PM	Reported
31	N032084-006AMS	MS	1	Hexavalent Chromium	09/14/18 1:01 PM	Reported
32	N032084-007A	SAMP	1	Hexavalent Chromium	09/14/18 1:11 PM	Reported
33	N032084-007AMS	MS	1	Hexavalent Chromium	09/14/18 1:20 PM	Reported
34	N032084-007ADUP	DUP	1	Hexavalent Chromium	09/14/18 1:30 PM	Reported
35	N032084-001AMSD	MSD	1	Hexavalent Chromium	09/14/18 1:39 PM	Reported
36	N032084-008A	SAMP	1	Hexavalent Chromium	09/14/18 1:49 PM	Reported
37	N032084-008AMS	MS	1	Hexavalent Chromium	09/14/18 1:58 PM	Reported
38	CCV-3	CCV	1	Hexavalent Chromium	09/14/18 2:07 PM	Reported
39	CCB-3	CCB	1	Hexavalent Chromium	09/14/18 2:17 PM	Reported
40	N032084-009A	SAMP	1	Hexavalent Chromium	09/14/18 2:26 PM	Not Reported
41	N032084-009AMS	MS	1	Hexavalent Chromium	09/14/18 2:36 PM	Not Reported
42	N032084-010A	SAMP	1	Hexavalent Chromium	09/14/18 2:45 PM	Not Reported

**INJECTION LOG: 180914A**

**Instrument ID: IC-07**

<b>Sample No</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Peak Name</b>	<b>Injection Date/Time</b>	<b>Comments</b>
43	N032084-010AMS	MS	1	Hexavalent Chromium	09/14/18 2:55 PM	Not Reported
44	N032084-011A	SAMP	1	Hexavalent Chromium	09/14/18 3:04 PM	Not Reported
45	N032084-011AMS	MS	1	Hexavalent Chromium	09/14/18 3:14 PM	Not Reported
46	N032084-011AMS	MS	1	Hexavalent Chromium	09/14/18 3:30 PM	Not Reported
47	N032084-002AMS	MS	1	Hexavalent Chromium	09/14/18 3:41 PM	Not Reported
48	N032084-012A	SAMP	1	Hexavalent Chromium	09/14/18 3:50 PM	Not Reported
49	N032084-012AMS	MS	1	Hexavalent Chromium	09/14/18 4:52 PM	Not Reported
50	CCV-4	CCV1	1	Hexavalent Chromium	09/14/18 5:59 PM	Not Reported
51	CCB-4	CCB	1	Hexavalent Chromium	09/14/18 6:10 PM	Not Reported

*rba* 9/20/2018

## Injection Log Summary

## Sequence Details

Name:	IC-07_180914A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	14/Sep/18 18:43:14
No. of Injections:	54	Updated By:	ics 5000

## Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/27/2018 10:10	Finished	BLANK
2	BLANK	2	1000	Unknown		08/27/2018 10:21	Finished	BLANK
3	BLANK	3	1000	Unknown		08/27/2018 10:30	Finished	BLANK
4	iBLANK	5	1000	Unknown		08/27/2018 11:08	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	6	1000	Calibration Standard	01	08/27/2018 11:20	Finished	0.2 ppb, IWST-180622A
6	STD2-1.0 ppb	7	1000	Calibration Standard	02	08/27/2018 11:29	Finished	1.0 ppb, IWST-180622A
7	STD3-5.0 ppb	8	1000	Calibration Standard	03	08/27/2018 11:38	Finished	5.0 ppb, IWST-180622A
8	STD4-10.0 ppb	9	1000	Calibration Standard	04	08/27/2018 11:48	Finished	10 ppb, IWST-180622A
9	STD5-15.0 ppb	10	1000	Calibration Standard	05	08/27/2018 11:57	Finished	15 ppb, IWST-180622A
10	STD6-20.0 ppb	11	1000	Calibration Standard	06	08/27/2018 12:07	Finished	20 ppb, IWST-180622A
11	BLANK	1	1000	Unknown		09/14/2018 09:25	Finished	BLANK
12	BLANK	2	1000	Unknown		09/14/2018 09:36	Finished	BLANK
13	CCV-1.CCV,1,	3	1000	Unknown		09/14/2018 09:46	Finished	CCV @5ppb, IWST-180622A
14	PQL@0.2ppb.CCV2,	4	1000	Unknown		09/14/2018 09:55	Finished	PQL @ 0.2ppb
15	CCB-1.CCB,1,	5	1000	Unknown		09/14/2018 10:05	Finished	CCB R180806A
16	MB-H2O.MBLK,1,	6	1000	Unknown		09/14/2018 10:14	Finished	MBLK R180913A
17	LCS-H2O.LCS,1,	7	1000	Unknown		09/14/2018 10:24	Finished	LCS @5ppb, IWST-180622B
18	N032084-001A,SAMP	9	1000	Unknown		09/14/2018 10:56	Finished	SAMP, 10mL
19	N032084-001AMS,MS	10	1000	Unknown		09/14/2018 11:08	Finished	MS (1ppb), IWST-180622B,10
20	N032084-002A,SAMP	11	1000	Unknown		09/14/2018 11:17	Finished	SAMP, 10mL
21	N032084-002AMS,MS	12	1000	Unknown		09/14/2018 11:27	Finished	MS (1ppb), IWST-180622B,10
22	N032084-003A,SAMP	13	1000	Unknown		09/14/2018 11:36	Finished	SAMP, 10mL
23	N032084-003AMS,MS	14	1000	Unknown		09/14/2018 11:46	Finished	MS (1ppb), IWST-180622B,10
24	N032084-004A,SAMP	15	1000	Unknown		09/14/2018 11:55	Finished	SAMP, 10mL
25	N032084-004AMS,MS	16	1000	Unknown		09/14/2018 12:04	Finished	MS (1ppb), IWST-180622B,10
26	CCV-2.CCV1,1,	17	1000	Unknown		09/14/2018 12:14	Finished	CCV @10ppb, IWST-180622A
27	CCB-2.CCB,1,	18	1000	Unknown		09/14/2018 12:23	Finished	CCB R180913A
28	N032084-005A,SAMP	19	1000	Unknown		09/14/2018 12:33	Finished	SAMP, 10mL
29	N032084-005AMS,MS	20	1000	Unknown		09/14/2018 12:43	Finished	MS (1ppb), IWST-180622B,10
30	N032084-006A,SAMP	21	1000	Unknown		09/14/2018 12:52	Finished	SAMP, 10mL
31	N032084-006AMS,MS	22	1000	Unknown		09/14/2018 13:01	Finished	MS (1ppb), IWST-180622B,10
32	N032084-007A,SAMP	23	1000	Unknown		09/14/2018 13:11	Finished	SAMP, 10mL
33	N032084-007AMS,MS	24	1000	Unknown		09/14/2018 13:20	Finished	MS (1ppb), IWST-180622B,10
34	N032084-007ADUP,D	25	1000	Unknown		09/14/2018 13:30	Finished	DUP, 10mL
35	N032084-001AMSD,N	26	1000	Unknown		09/14/2018 13:39	Finished	MS (1ppb), IWST-180622B,10
36	N032084-008A,SAMP	27	1000	Unknown		09/14/2018 13:49	Finished	SAMP, 10mL
37	N032084-008AMS,MS	28	1000	Unknown		09/14/2018 13:58	Finished	MS (1ppb), IWST-180622B,10
38	CCV-3.CCV,1,	29	1000	Unknown		09/14/2018 14:07	Finished	CCV @5ppb, IWST-180622A
39	CCB-3.CCB,1,	30	1000	Unknown		09/14/2018 14:17	Finished	CCB R180913A
40	N032084-009A,SAMP	31	1000	Unknown		09/14/2018 14:26	Finished	SAMP, 10mL
41	N032084-009AMS,MS	32	1000	Unknown		09/14/2018 14:36	Finished	MS (1ppb), IWST-180622B,10
42	N032084-010A,SAMP	33	1000	Unknown		09/14/2018 14:45	Finished	SAMP, 10mL
43	N032084-010AMS,MS	34	1000	Unknown		09/14/2018 14:55	Finished	MS (1ppb), IWST-180622B,10
44	N032084-011A,SAMP	35	1000	Unknown		09/14/2018 15:04	Finished	SAMP, 10mL
45	N032084-011AMS,MS	36	1000	Unknown		09/14/2018 15:14	Finished	MS (1ppb), IWST-180622B,10
46	N032084-011AMS,MS	1	1000	Unknown		09/14/2018 15:30	Finished	MS (1ppb), IWST-180622B,10
47	N032084-002AMS,MS	2	1000	Unknown		09/14/2018 15:41	Finished	MS (1ppb), IWST-180622B,10
48	N032084-012A,SAMP	3	1000	Unknown		09/14/2018 15:50	Interrupted	SAMP, 10mL
49	N032084-012AMS,MS	4	1000	Unknown		09/14/2018 16:52	Finished	MS (1ppb), IWST-180622B,10
50	CCV-4.CCV1,1,	5	1000	Unknown		09/14/2018 17:59	Finished	CCV @10ppb, IWST-180622A
51	CCB-4.CCB,1,	6	1000	Unknown		09/14/2018 18:10	Finished	CCB R180913A
52	SHUTDOWN	15	1000	Unknown		09/14/2018 18:22	Finished	
53	Eluent: R180914A	16	1000	Unknown		n.a.	Finished	Eluent
54	PCR: R180912C	17	1000	Unknown		n.a.	Finished	Post-Column Reagent

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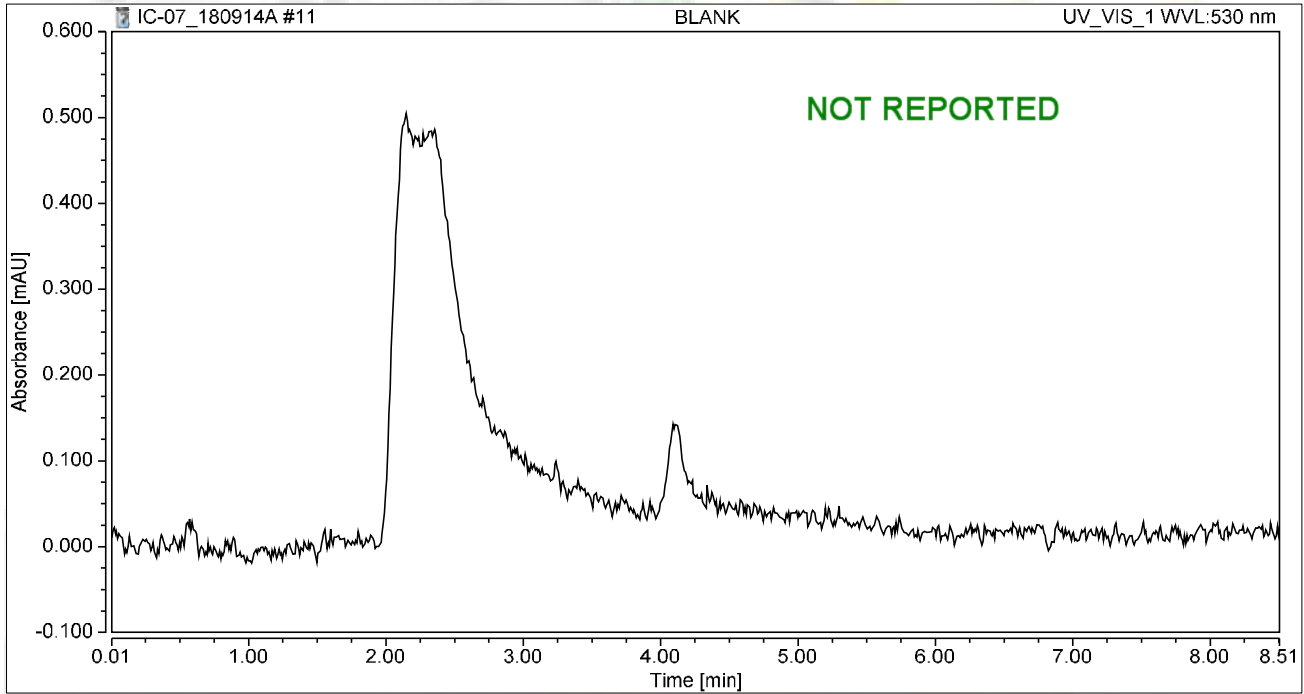


### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 09:25	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

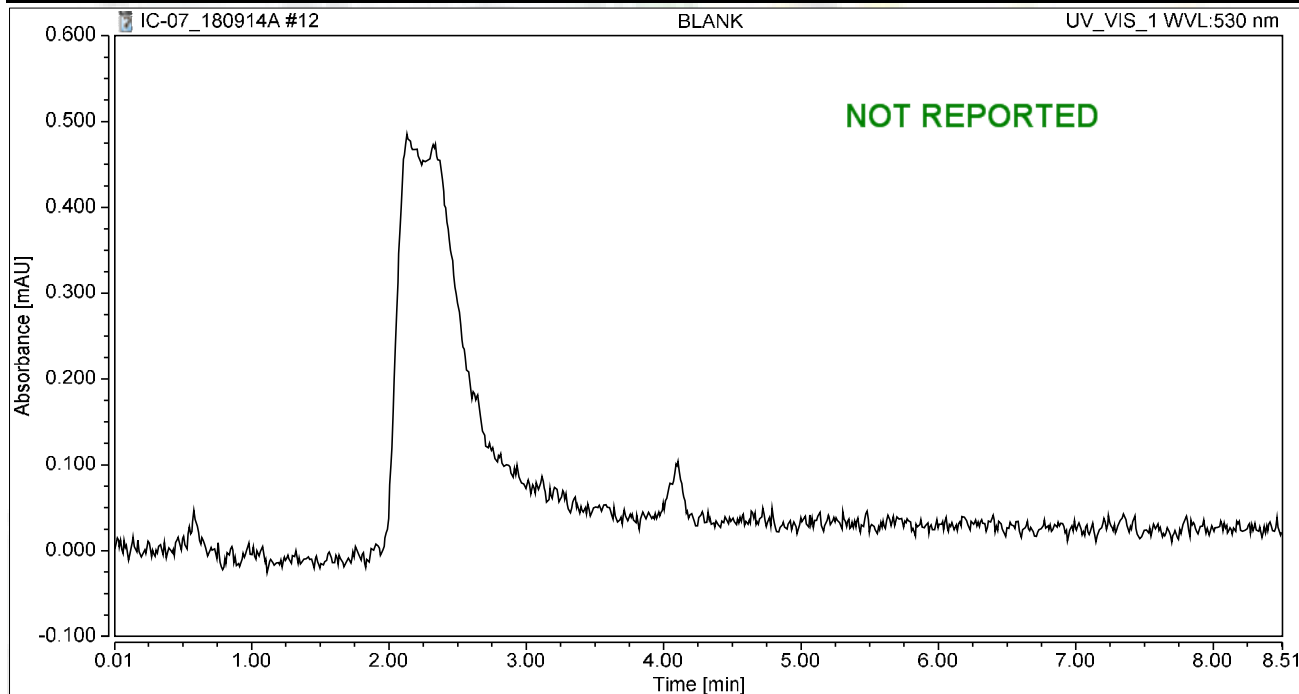
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 09:36	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

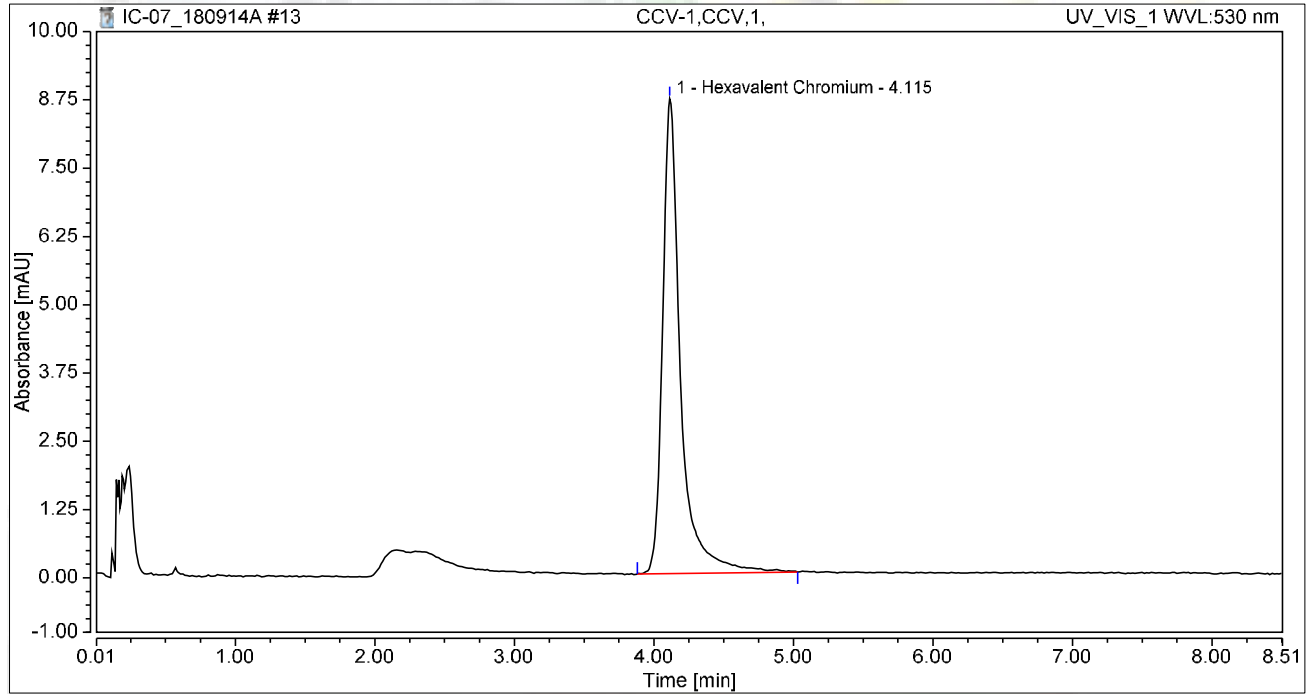
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-1,CCV,1,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 09:46	Sample Weight:	1.0000

**Chromatogram**



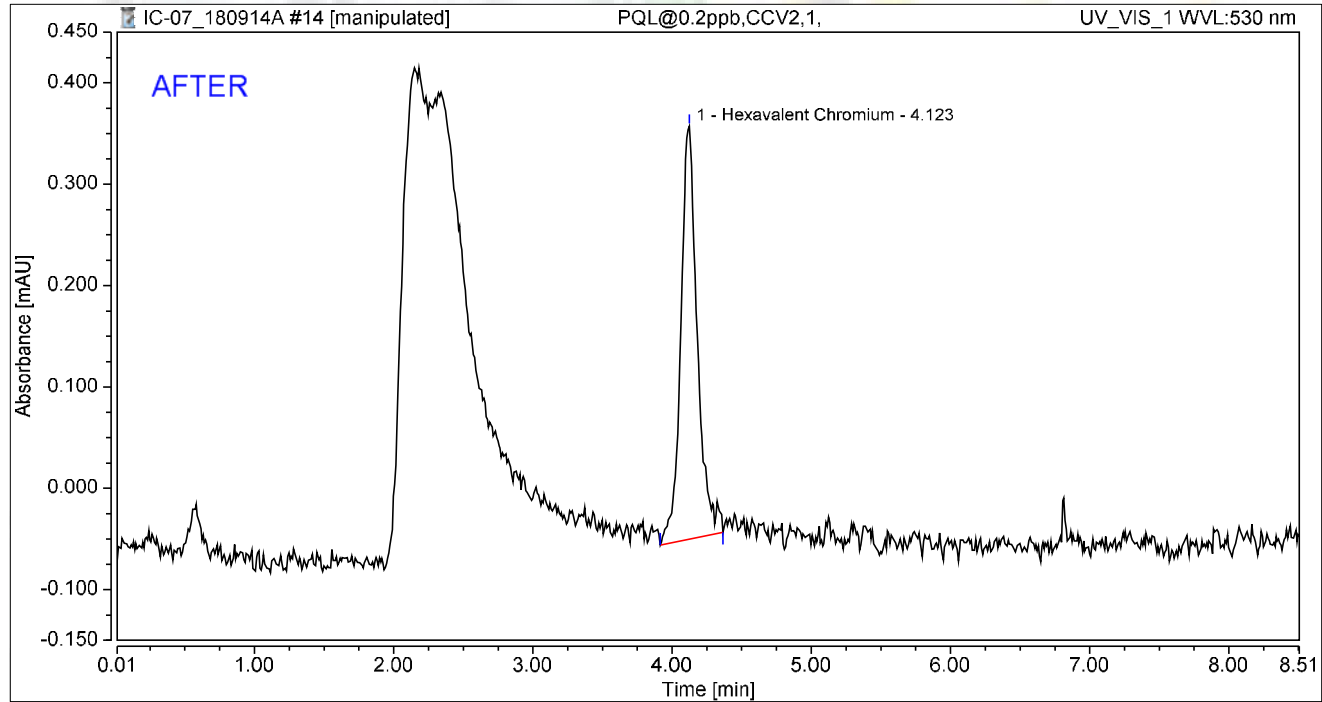
**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.300	8.697	100.00	100.00	5.1680
<b>Total:</b>			<b>1.300</b>	<b>8.697</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

Injection Details		
Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min): 8.49
Vial Number:	4	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	14/Sep/18 09:55	Sample Weight: 1.0000

#### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.056	0.407	100.00	100.00	0.2239
<b>Total:</b>			<b>0.056</b>	<b>0.407</b>	<b>100.00</b>	<b>100.00</b>	

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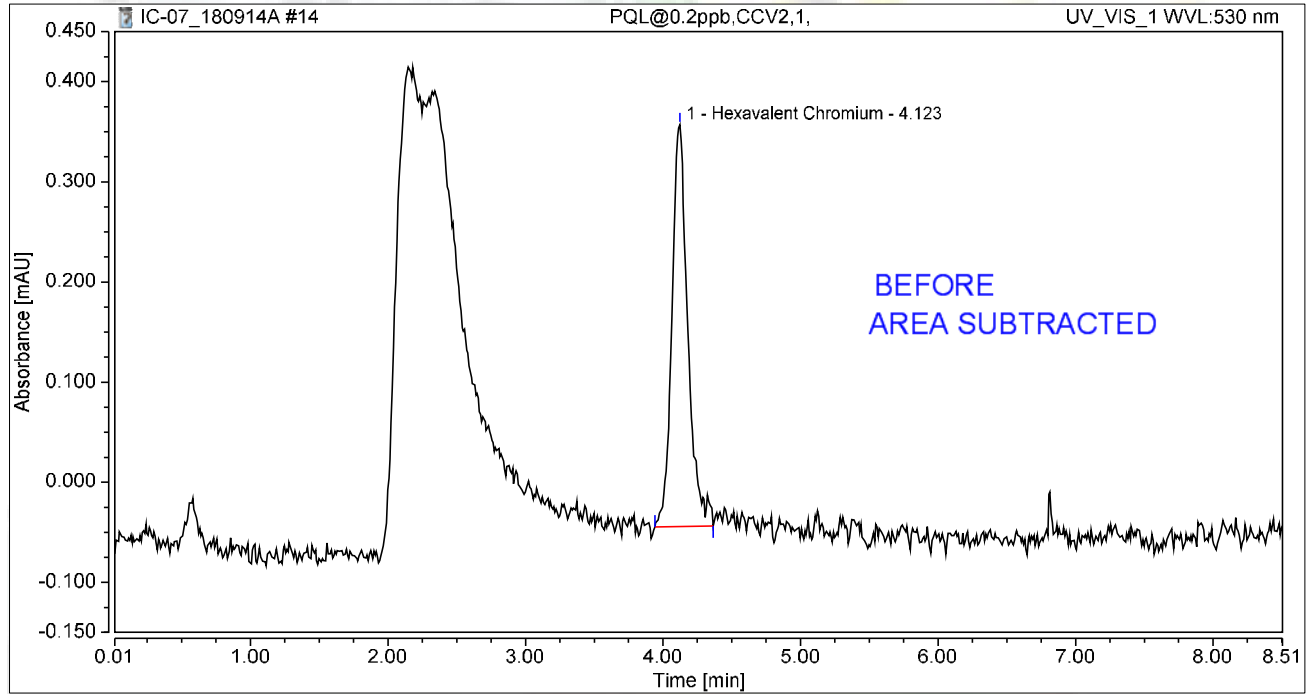
Reviewed by:  
*Donny* 9/26/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.49
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 09:55	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.054	0.401	100.00	100.00	0.2141
<b>Total:</b>			<b>0.054</b>	<b>0.401</b>	<b>100.00</b>	<b>100.00</b>	

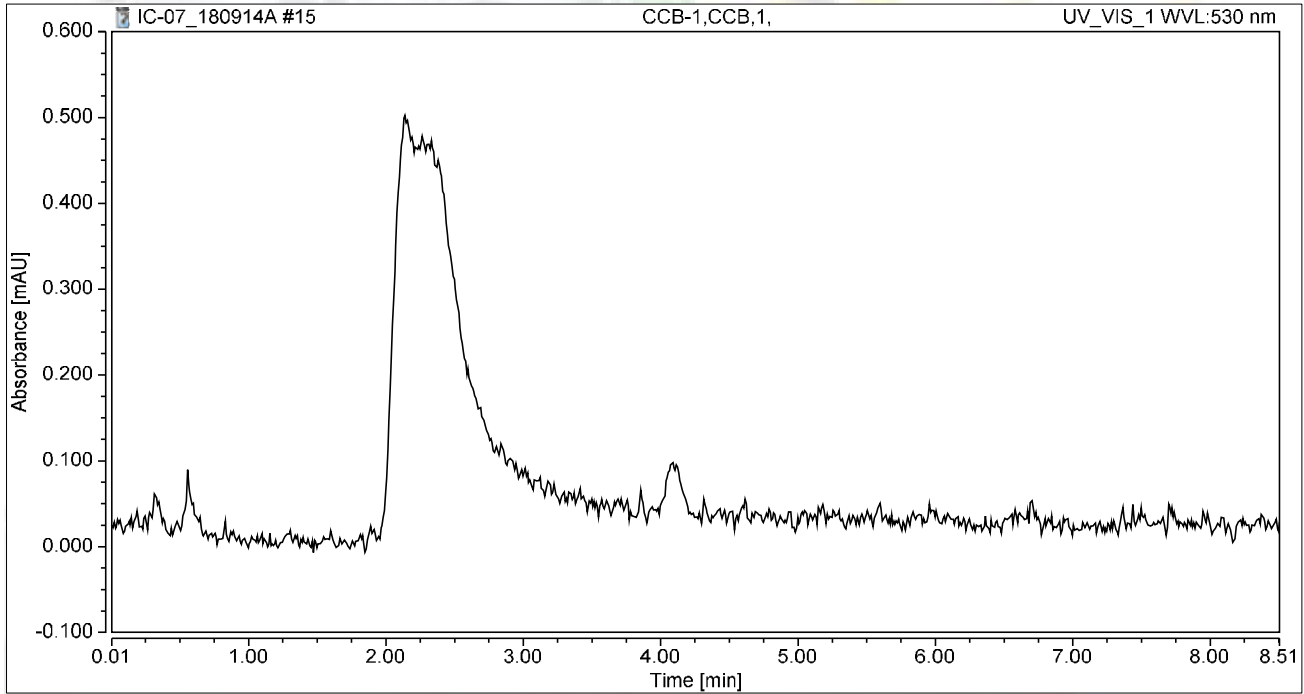
*rba* 9/20/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-1,CCB,1,	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 10:05	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

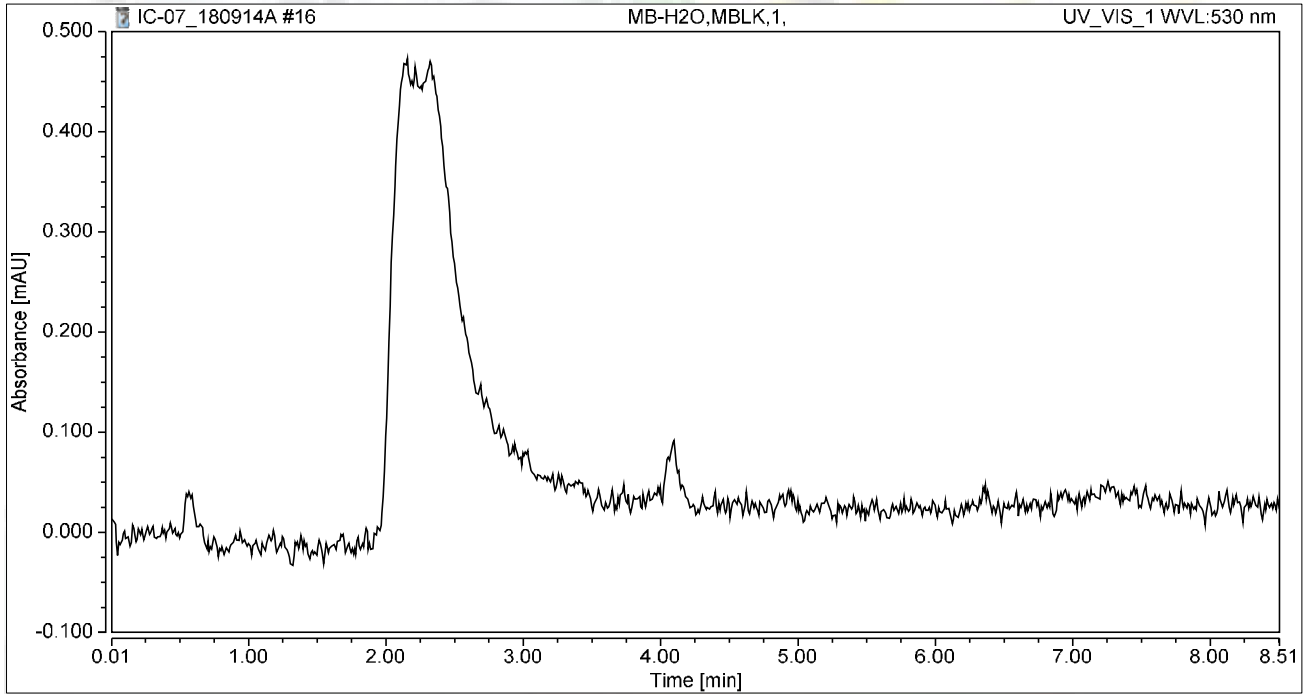
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	MB-H2O,MBLK,1,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 10:14	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

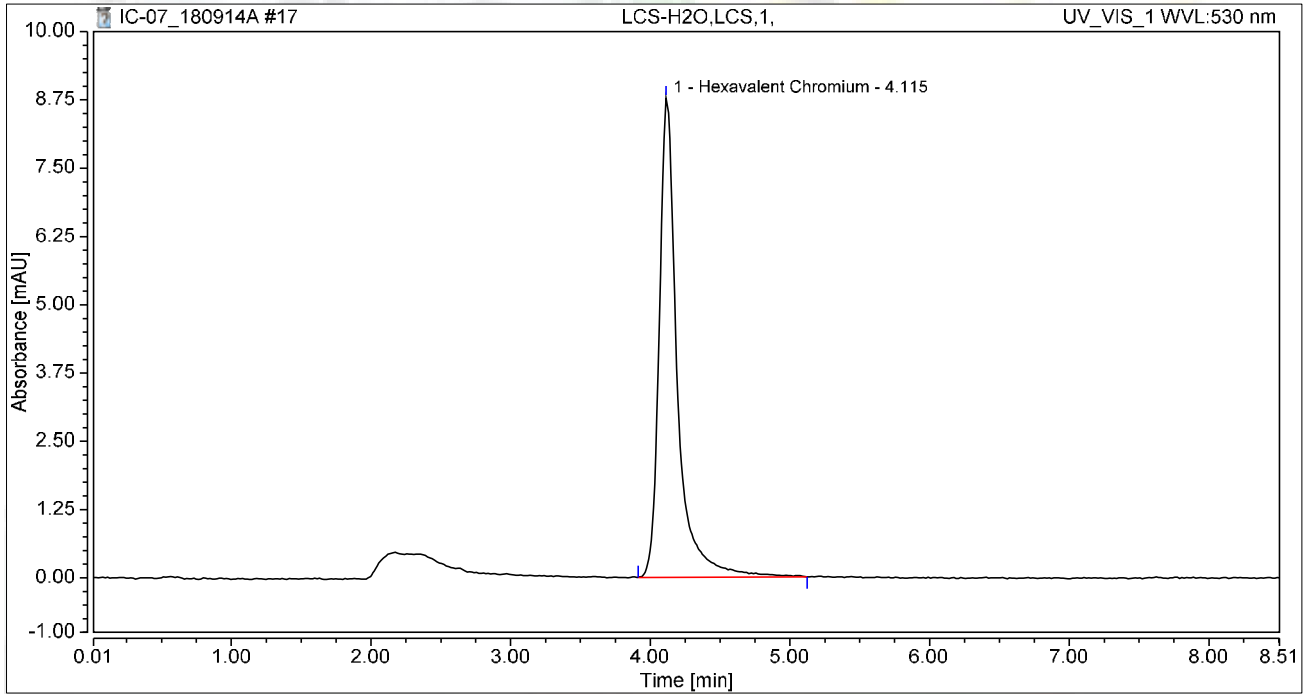
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	LCS-H2O,LCS,1,	Run Time (min):	8.49
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 10:24	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.321	8.777	100.00	100.00	5.2534
<b>Total:</b>			<b>1.321</b>	<b>8.777</b>	<b>100.00</b>	<b>100.00</b>	

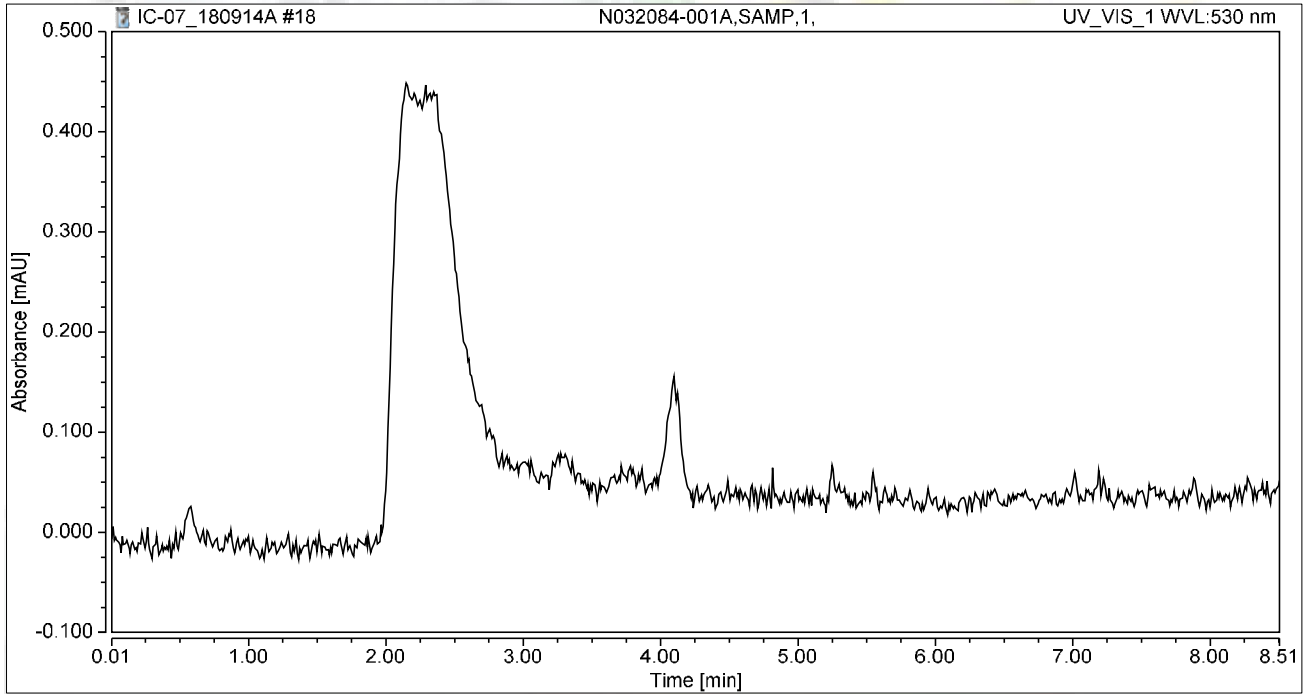


### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 10:56	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

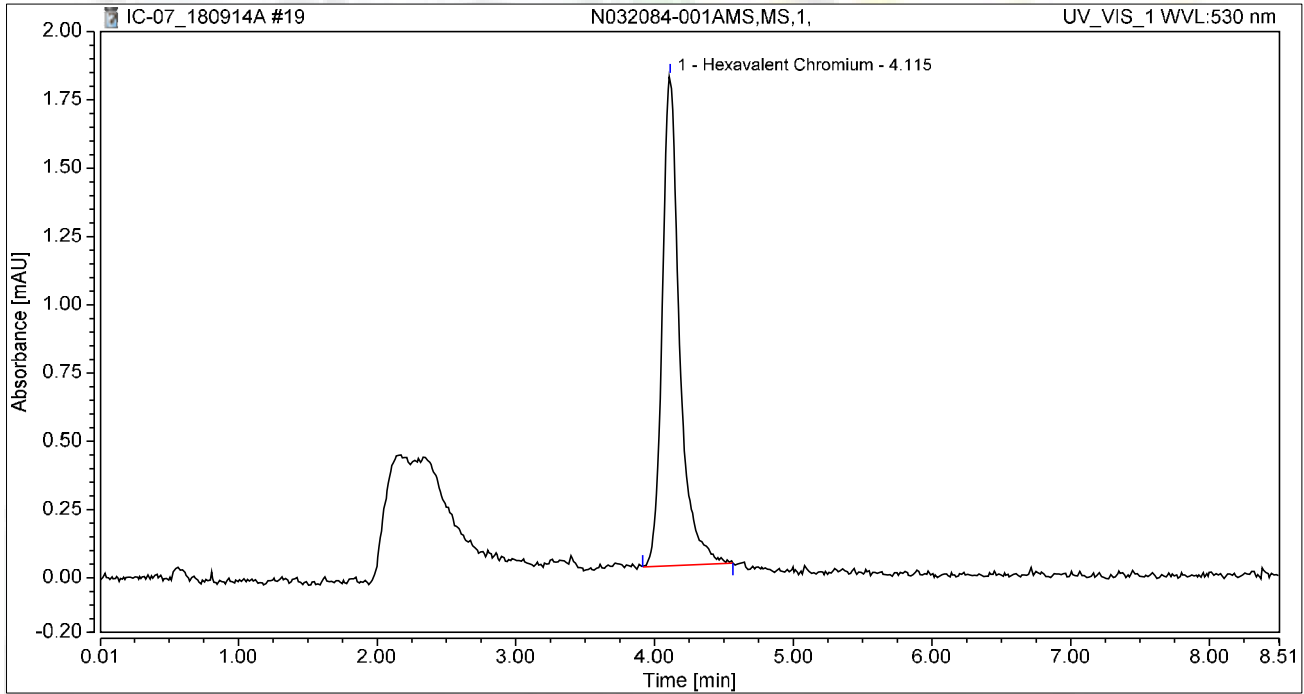
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 11:08	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

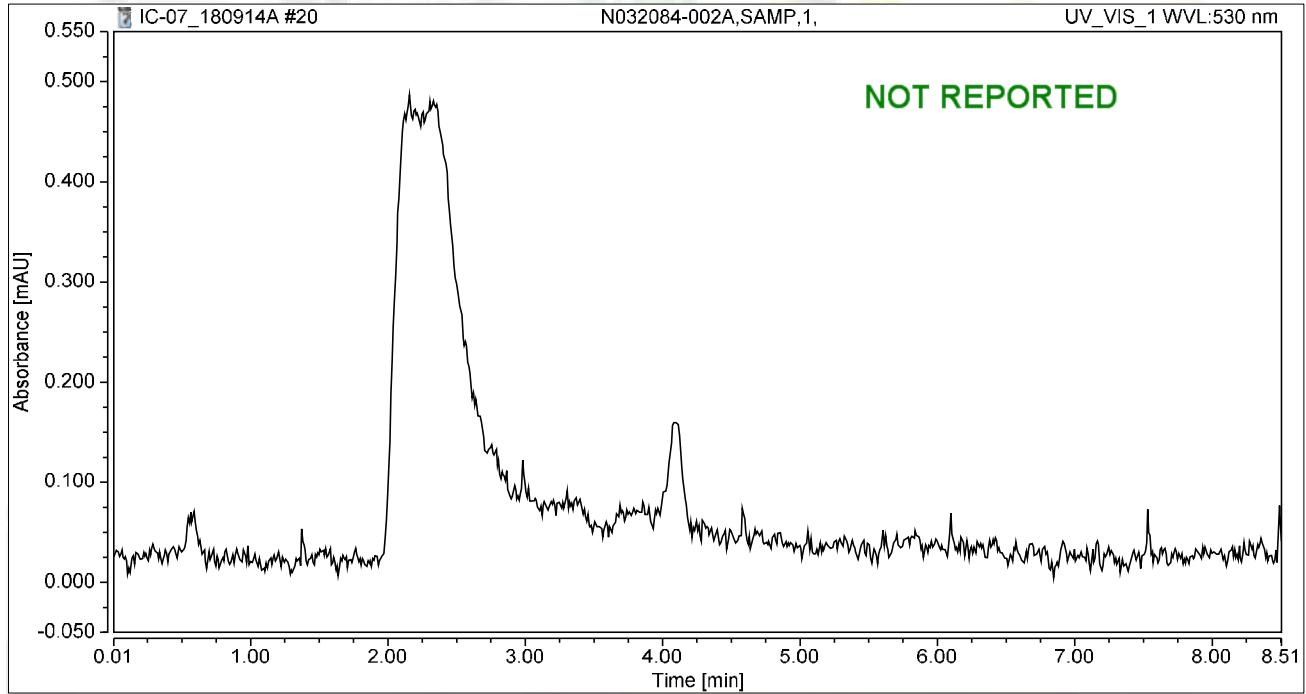
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.261	1.794	100.00	100.00	1.0370
<b>Total:</b>			<b>0.261</b>	<b>1.794</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-002A,SAMP,1,	Run Time (min):	8.50
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 11:17	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

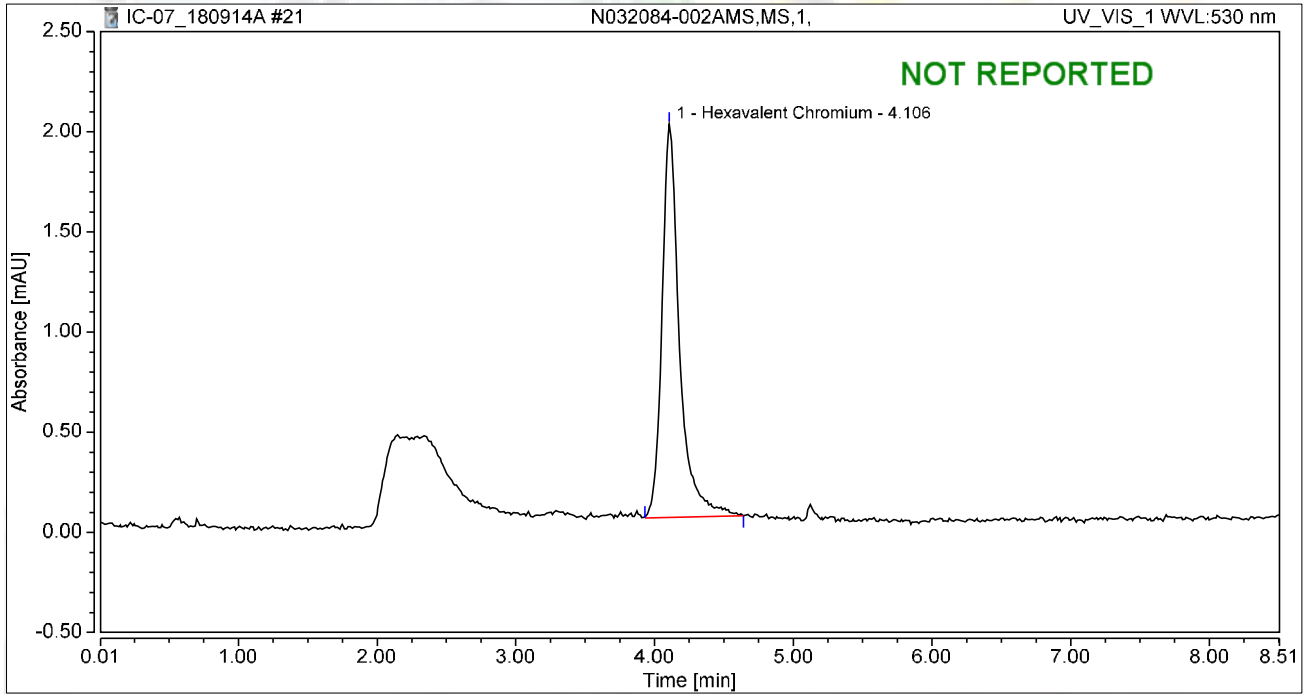
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-002AMS,MS,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 11:27	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

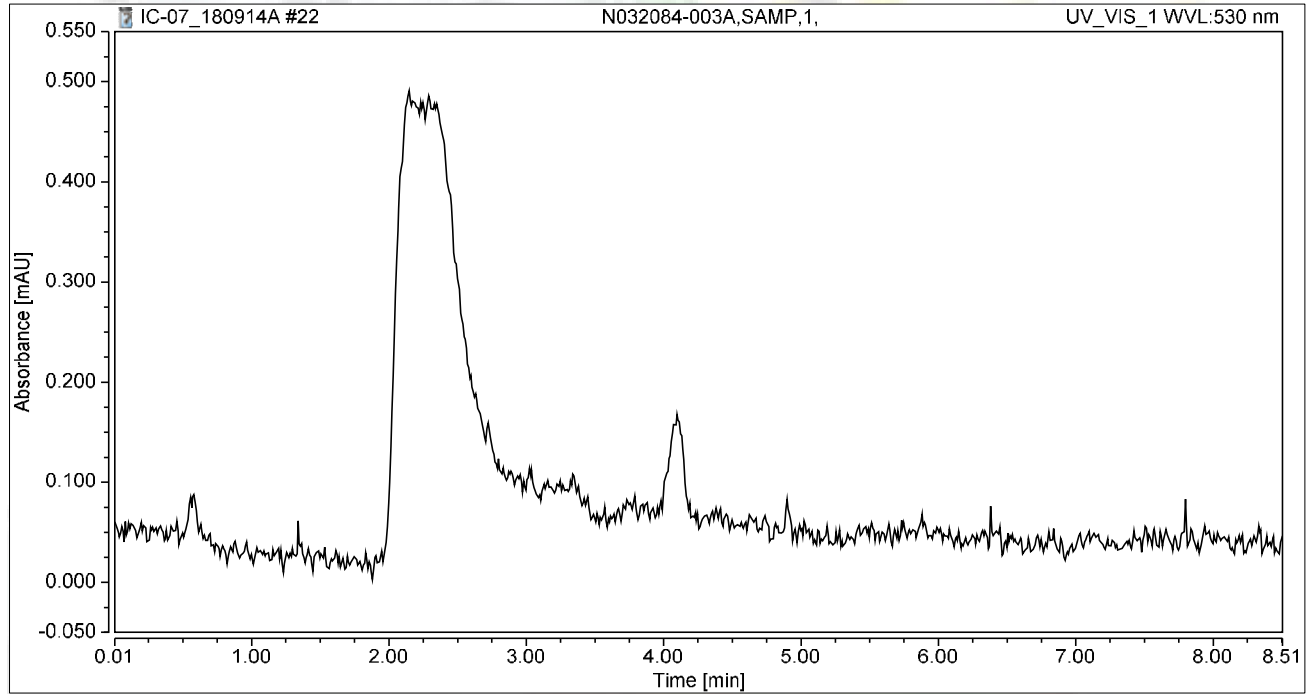
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.289	1.965	100.00	100.00	1.1476
<b>Total:</b>			<b>0.289</b>	<b>1.965</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-003A,SAMP,1,	Run Time (min):	8.50
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 11:36	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

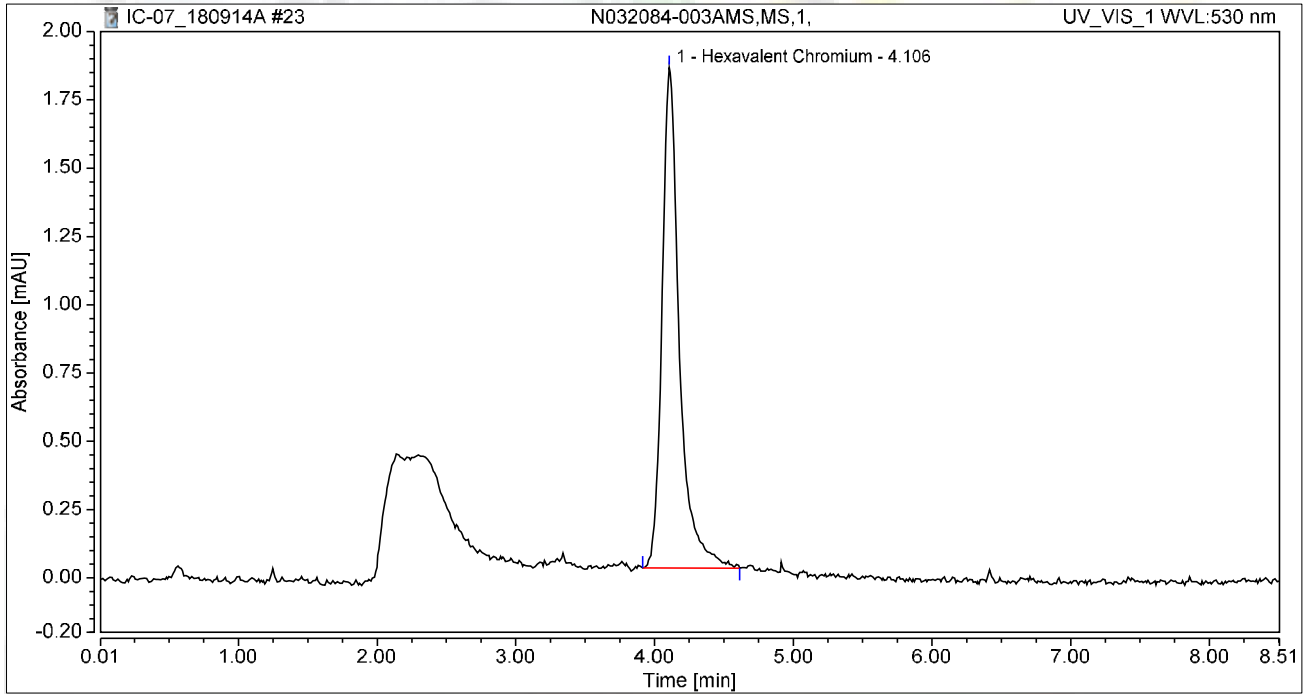
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-003AMS,MS,1,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 11:46	Sample Weight:	1.0000

**Chromatogram**



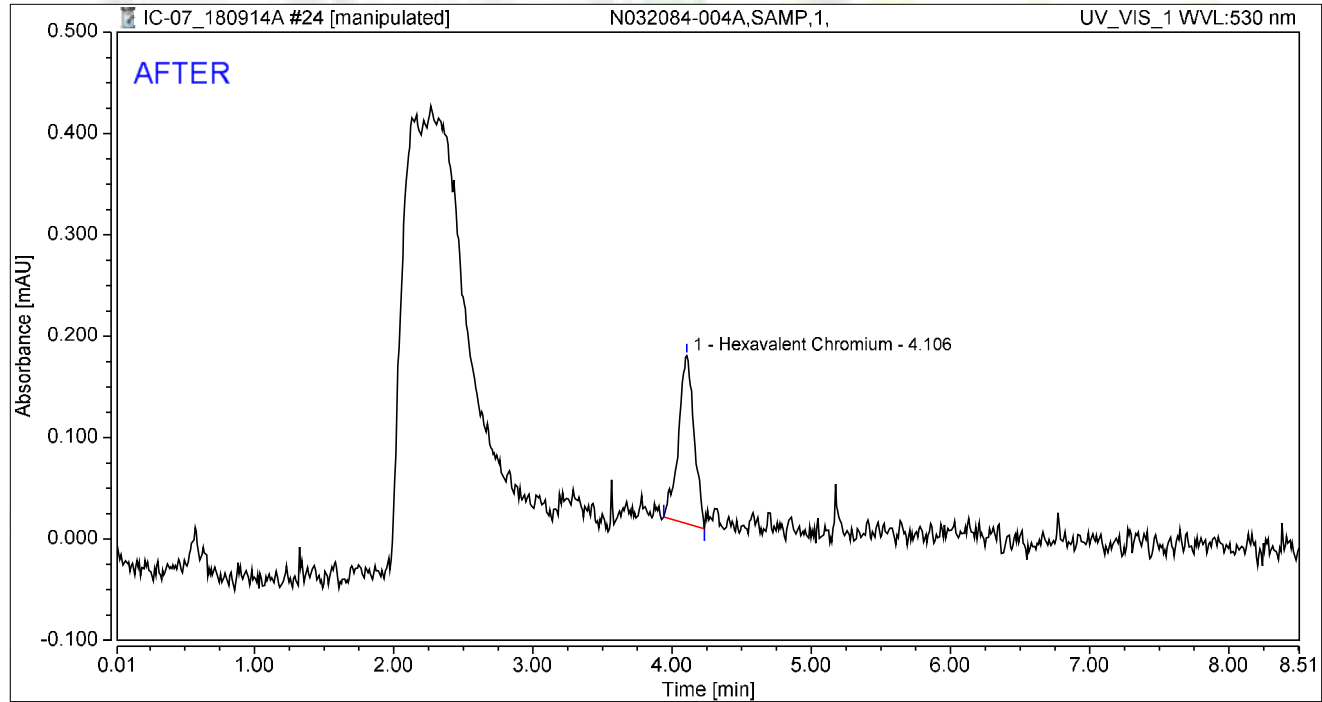
**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.267	1.832	100.00	100.00	1.0599
<b>Total:</b>			<b>0.267</b>	<b>1.832</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

Injection Details		
Injection Name:	N032084-004A,SAMP,1,	Run Time (min): 8.49
Vial Number:	15	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	14/Sep/18 11:55	Sample Weight: 1.0000

### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.021	0.166	100.00	100.00	0.0849
<b>Total:</b>			<b>0.021</b>	<b>0.166</b>	<b>100.00</b>	<b>100.00</b>	

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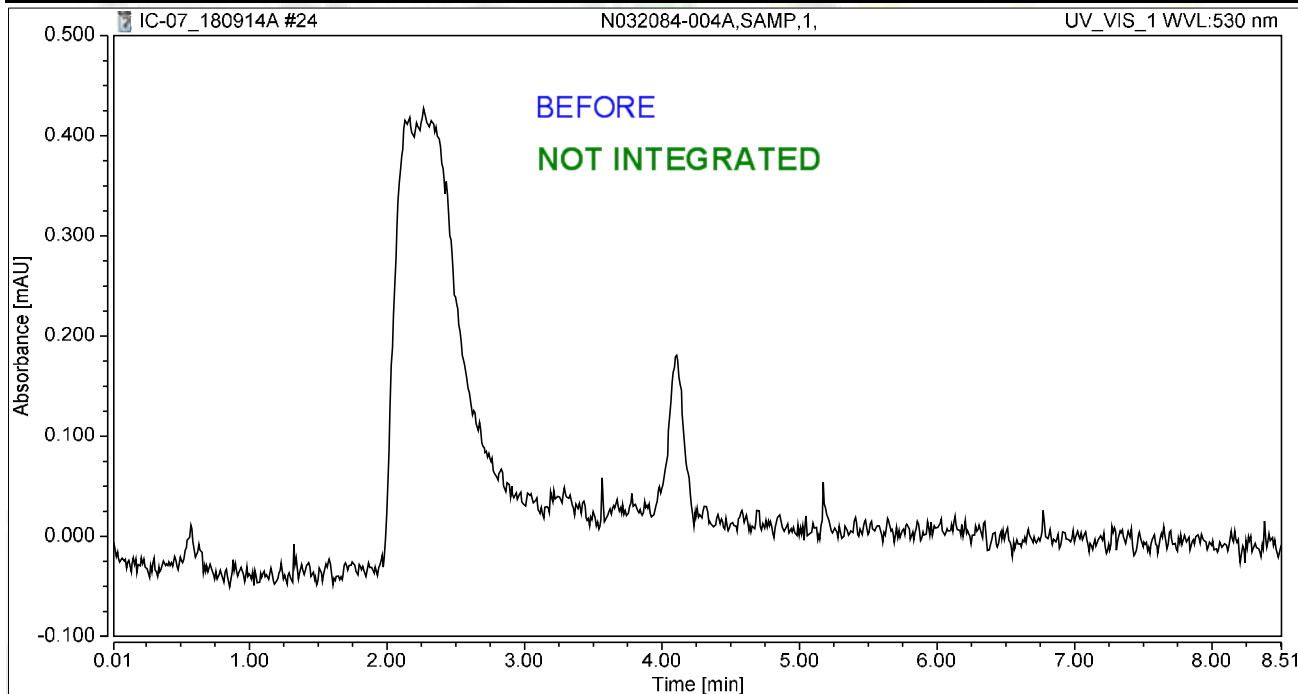
Reviewed by:  
*Nancy* 9/26/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-004A,SAMP,1,	Run Time (min):	8.49
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 11:55	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

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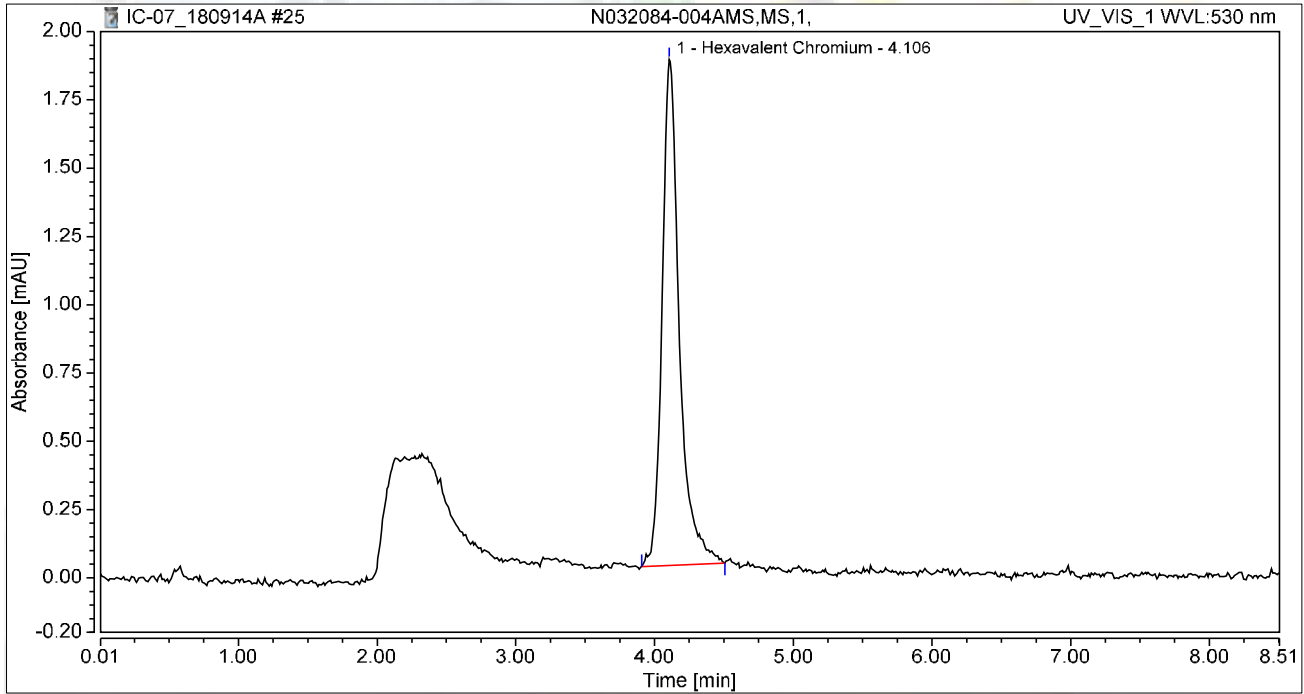


### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-004AMS,MS,1,	Run Time (min):	8.50
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 12:04	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

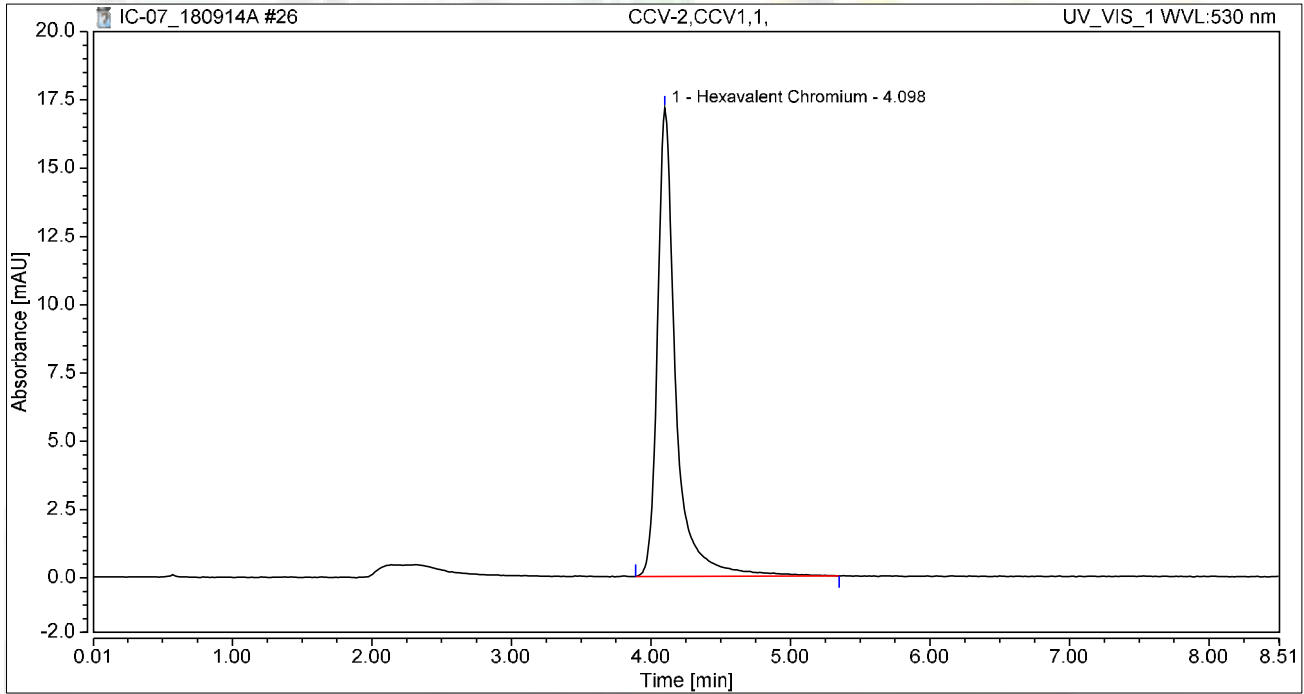
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.268	1.852	100.00	100.00	1.0658
<b>Total:</b>			<b>0.268</b>	<b>1.852</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-2,CCV1,1,	Run Time (min):	8.50
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 12:14	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

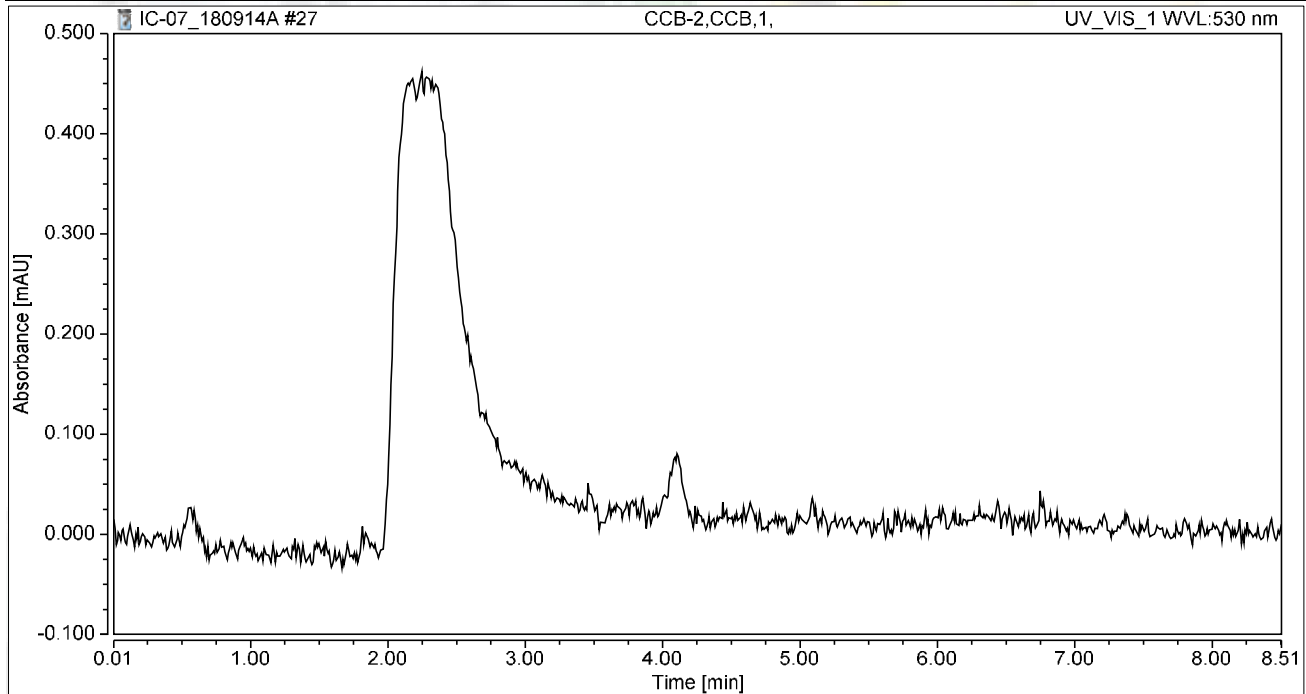
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	2.603	17.141	100.00	100.00	10.3490
<b>Total:</b>			<b>2.603</b>	<b>17.141</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

<i>Injection Name:</i>	<b>CCB-2,CCB,1,</b>	<i>Run Time (min):</i>	<b>8.50</b>
<i>Vial Number:</i>	<b>18</b>	<i>Injection Volume:</i>	<b>1000.00</b>
<i>Injection Type:</i>	<b>Unknown</b>	<i>Channel:</i>	<b>UV_VIS_1</b>
<i>Calibration Level:</i>		<i>Wavelength:</i>	<b>530.0</b>
<i>Instrument Method:</i>	<b>Hex Chrom 4 mm</b>	<i>Bandwidth:</i>	<b>n.a.</b>
<i>Processing Method:</i>	<b>180827_IC-07_Cr6_218_6_HIGH</b>	<i>Dilution Factor:</i>	<b>1.0000</b>
<i>Injection Date/Time:</i>	<b>14/Sep/18 12:23</b>	<i>Sample Weight:</i>	<b>1.0000</b>

**Chromatogram**



**Integration Results**

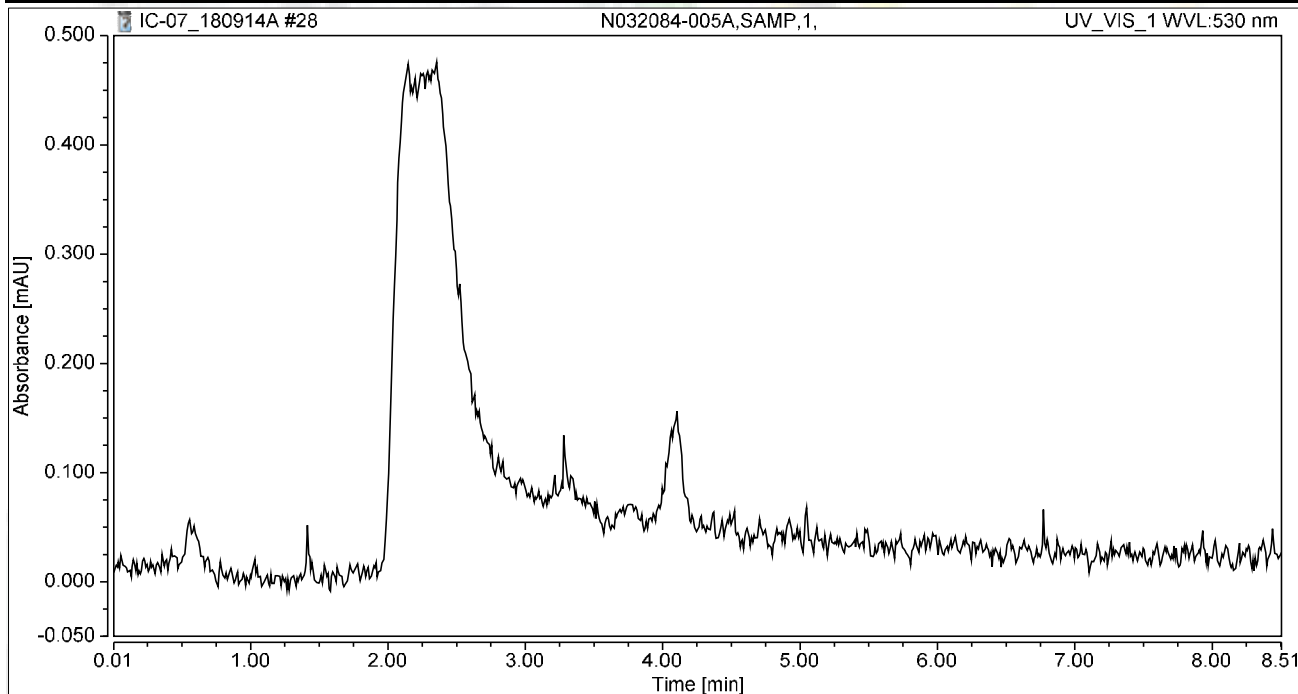
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-005A,SAMP,1,	Run Time (min):	8.50
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 12:33	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

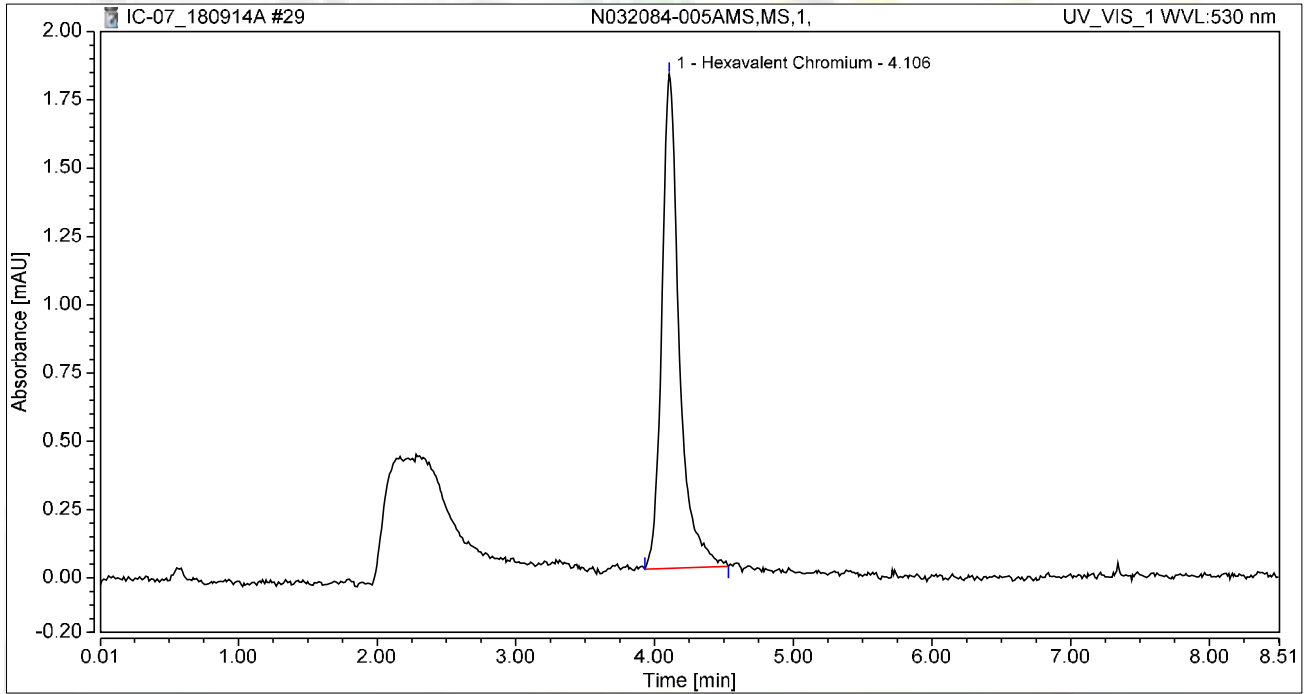
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-005AMS,MS,1,	Run Time (min):	8.50
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 12:43	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

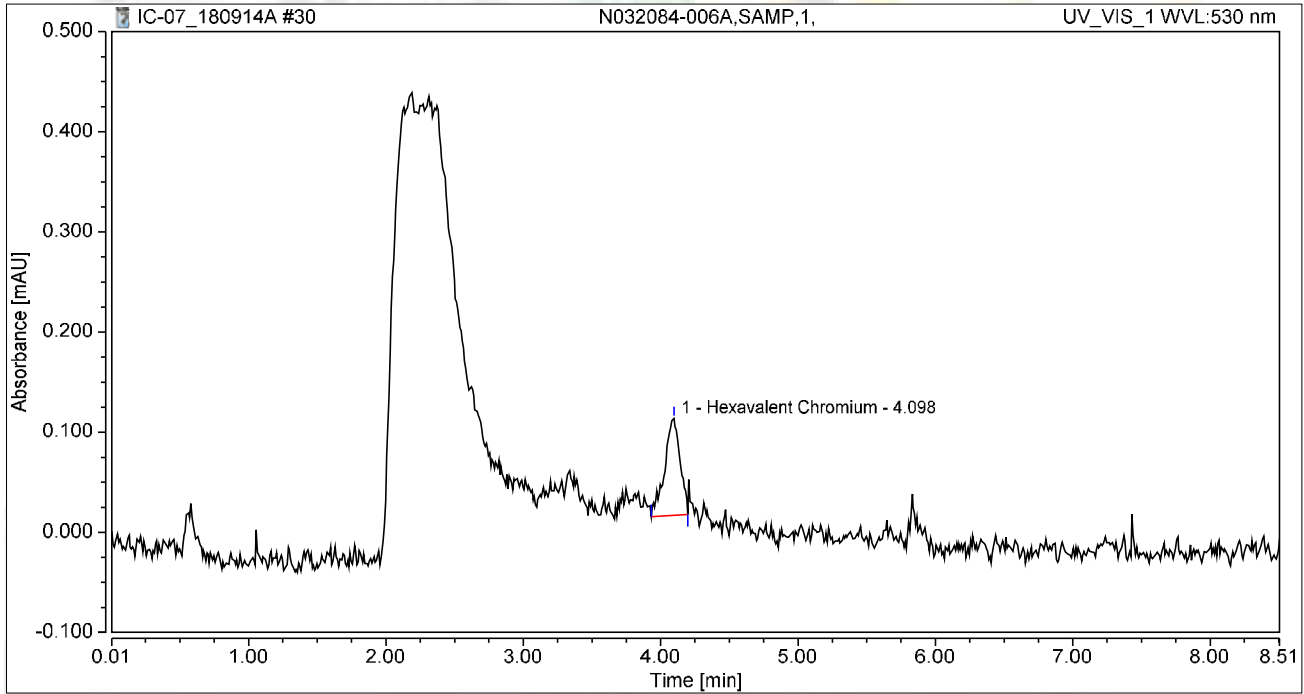
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.265	1.810	100.00	100.00	1.0522
<b>Total:</b>			<b>0.265</b>	<b>1.810</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-006A,SAMP,1,	Run Time (min):	8.50
Vial Number:	21	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 12:52	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

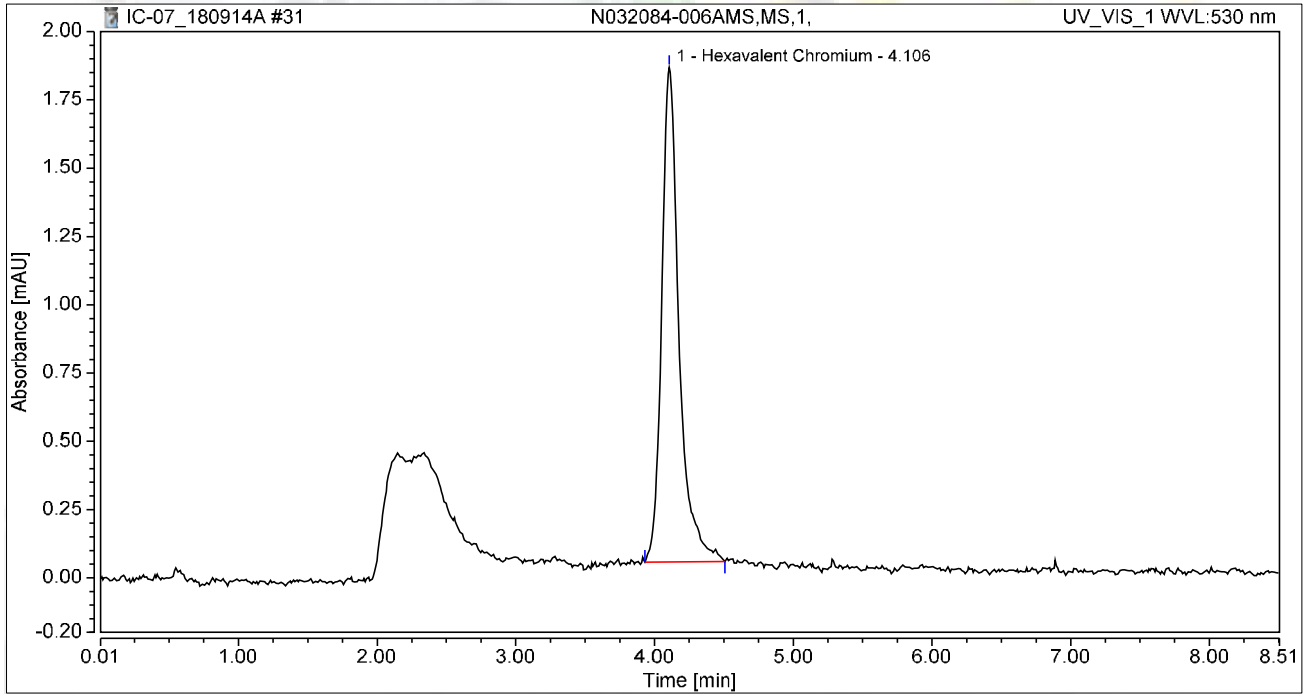
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.013	0.097	100.00	100.00	0.0500
<b>Total:</b>			<b>0.013</b>	<b>0.097</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-006AMS,MS,1,	Run Time (min):	8.50
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 13:01	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

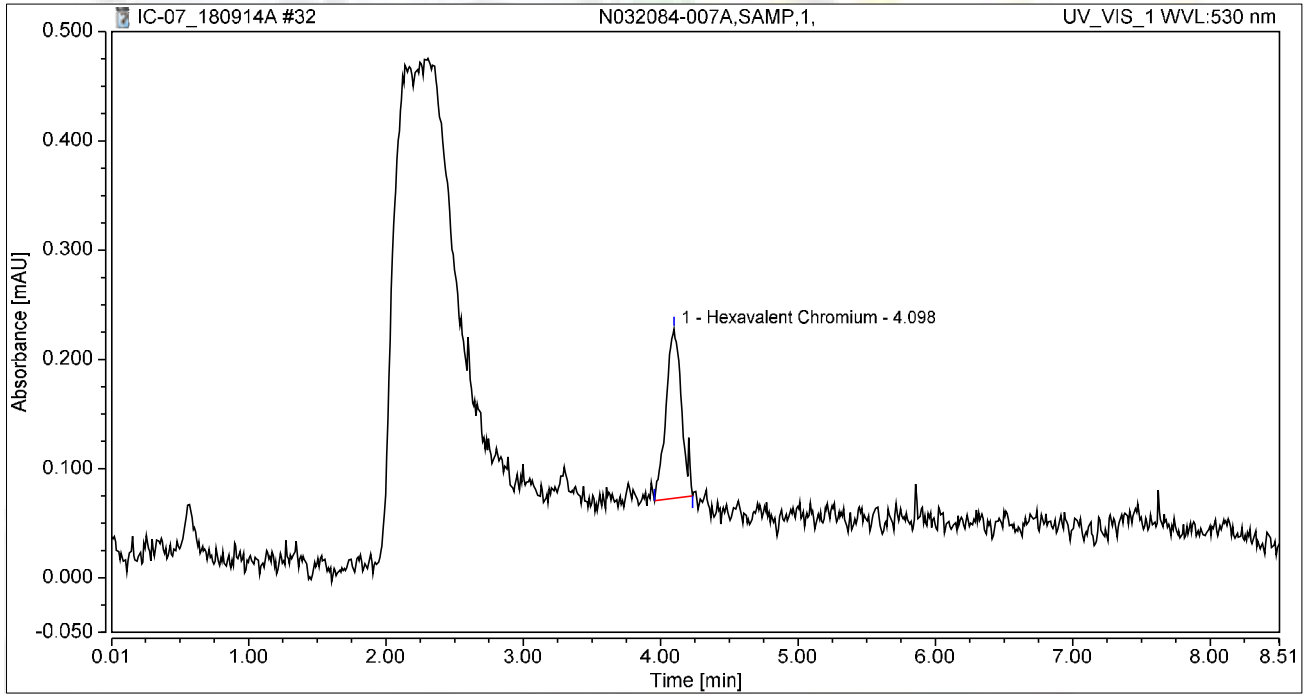
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.263	1.811	100.00	100.00	1.0456
<b>Total:</b>			<b>0.263</b>	<b>1.811</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-007A,SAMP,1,	Run Time (min):	8.50
Vial Number:	23	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 13:11	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.020	0.155	100.00	100.00	0.0809
<b>Total:</b>			<b>0.020</b>	<b>0.155</b>	<b>100.00</b>	<b>100.00</b>	

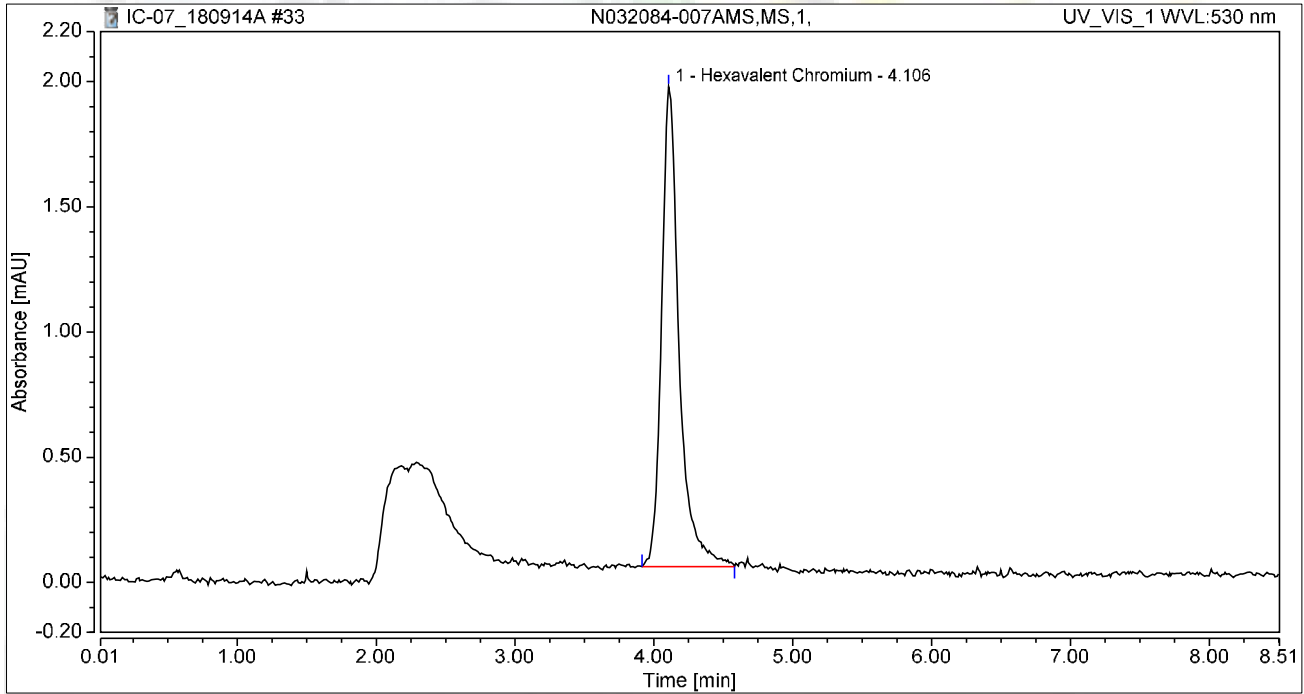


### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-007AMS,MS,1,	Run Time (min):	8.49
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 13:20	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

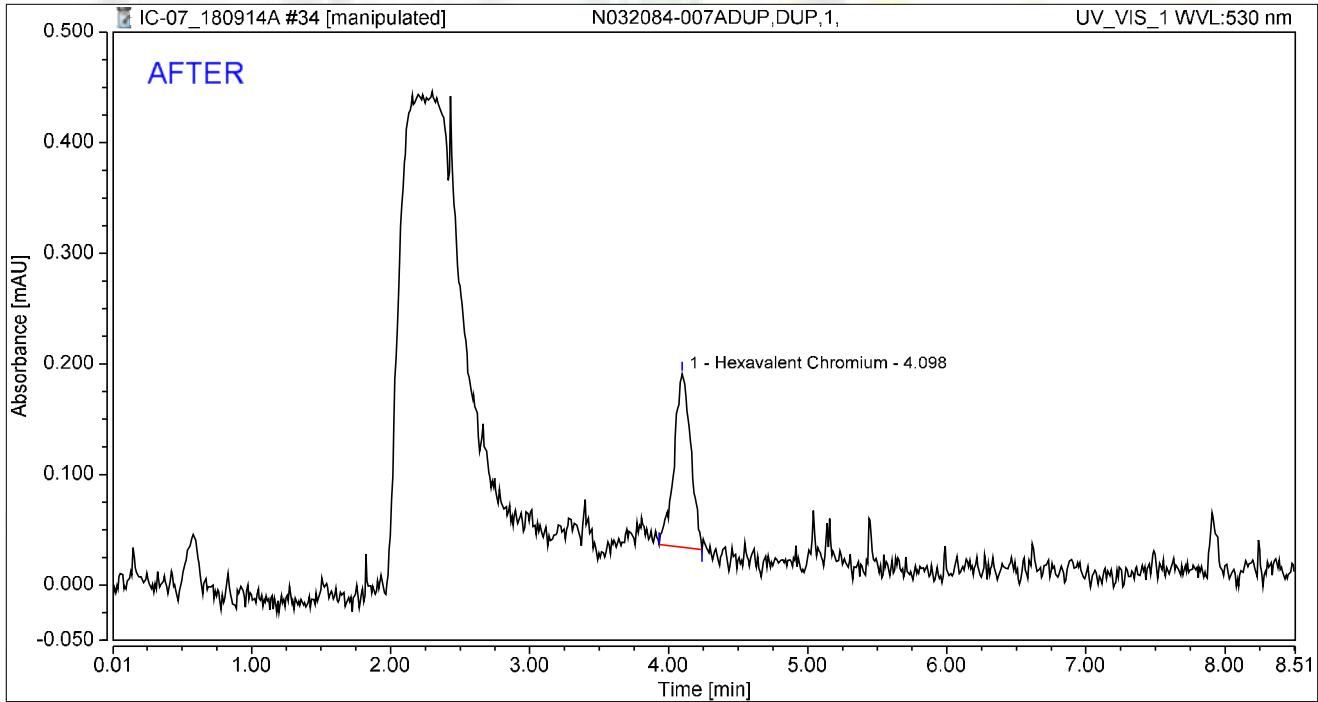
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.281	1.916	100.00	100.00	1.1181
<b>Total:</b>			<b>0.281</b>	<b>1.916</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-007ADUP,DUP,1,	Run Time (min):	8.50
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 13:30	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.022	0.157	100.00	100.00	0.0865
<b>Total:</b>			<b>0.022</b>	<b>0.157</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/20/2018

Reviewed by:

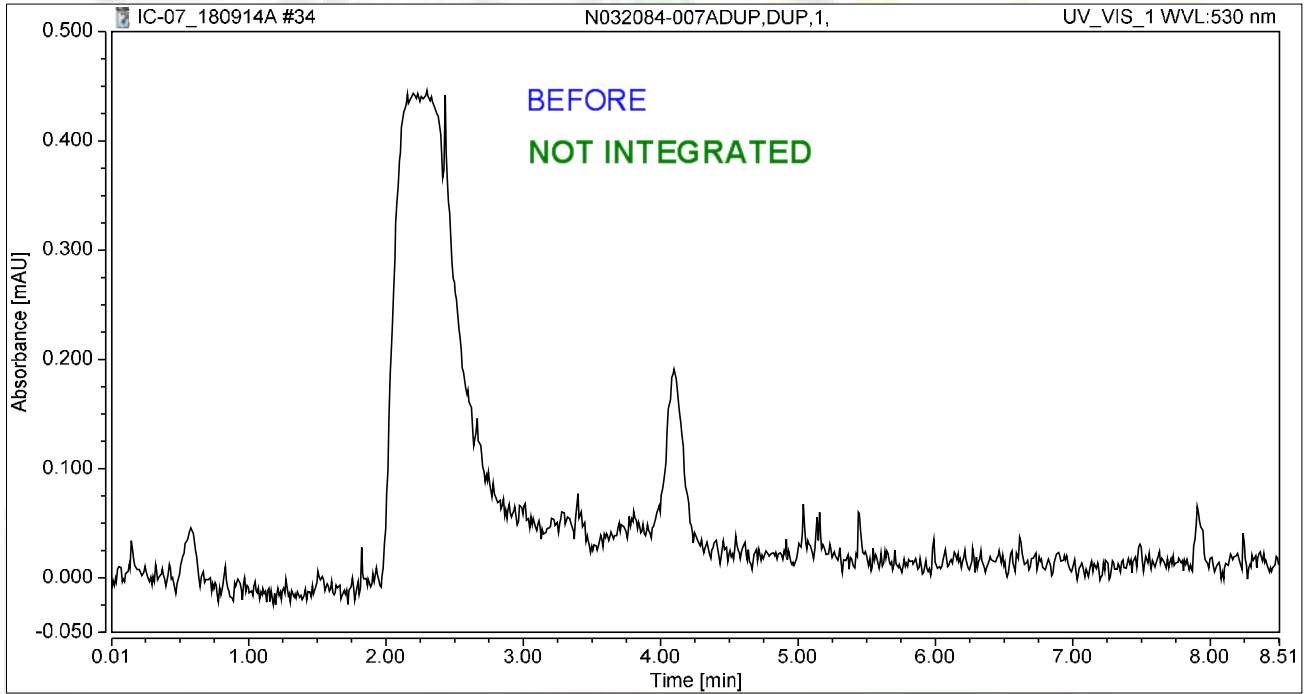
Nancy 9/26/2018  
My first report/Integration

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-007ADUP,DUP,1,	Run Time (min):	8.50
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 13:30	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

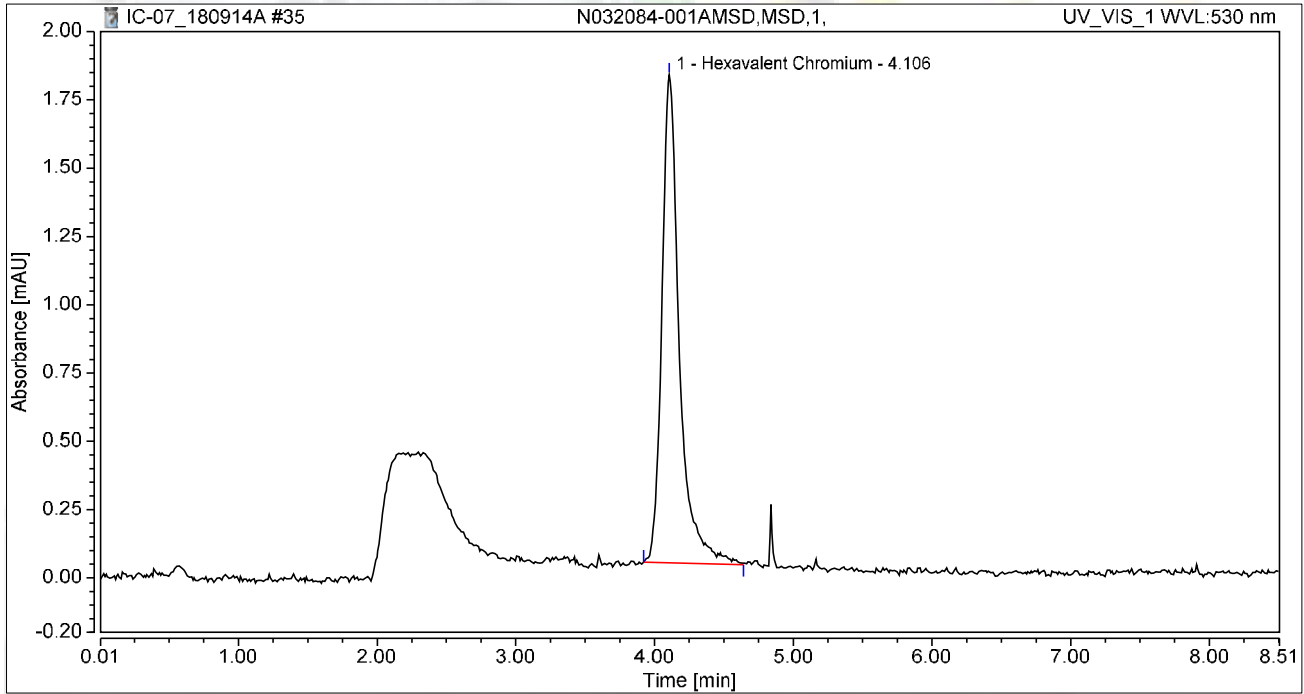
rba 9/20/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-001AMSD,MSD,1,	Run Time (min):	8.50
Vial Number:	26	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 13:39	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

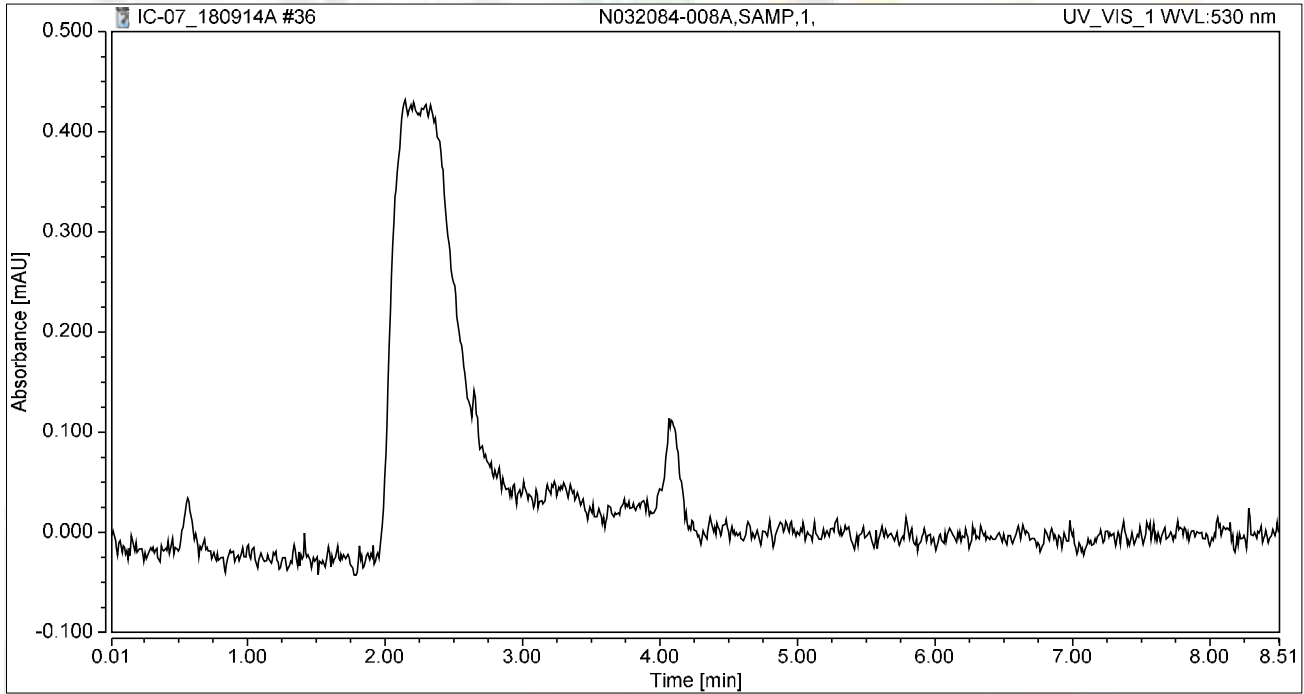
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.261	1.787	100.00	100.00	1.0384
<b>Total:</b>			<b>0.261</b>	<b>1.787</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-008A,SAMP,1,	Run Time (min):	8.49
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 13:49	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

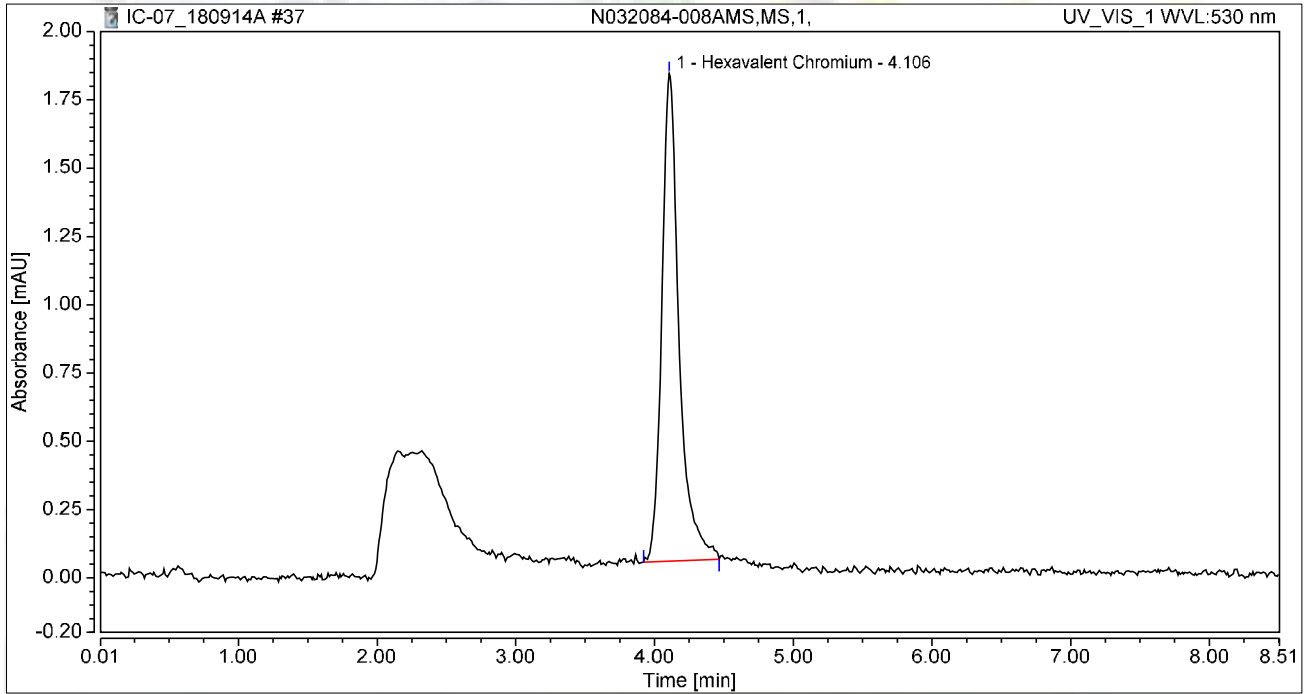
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-008AMS,MS,1,	Run Time (min):	8.50
Vial Number:	28	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 13:58	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

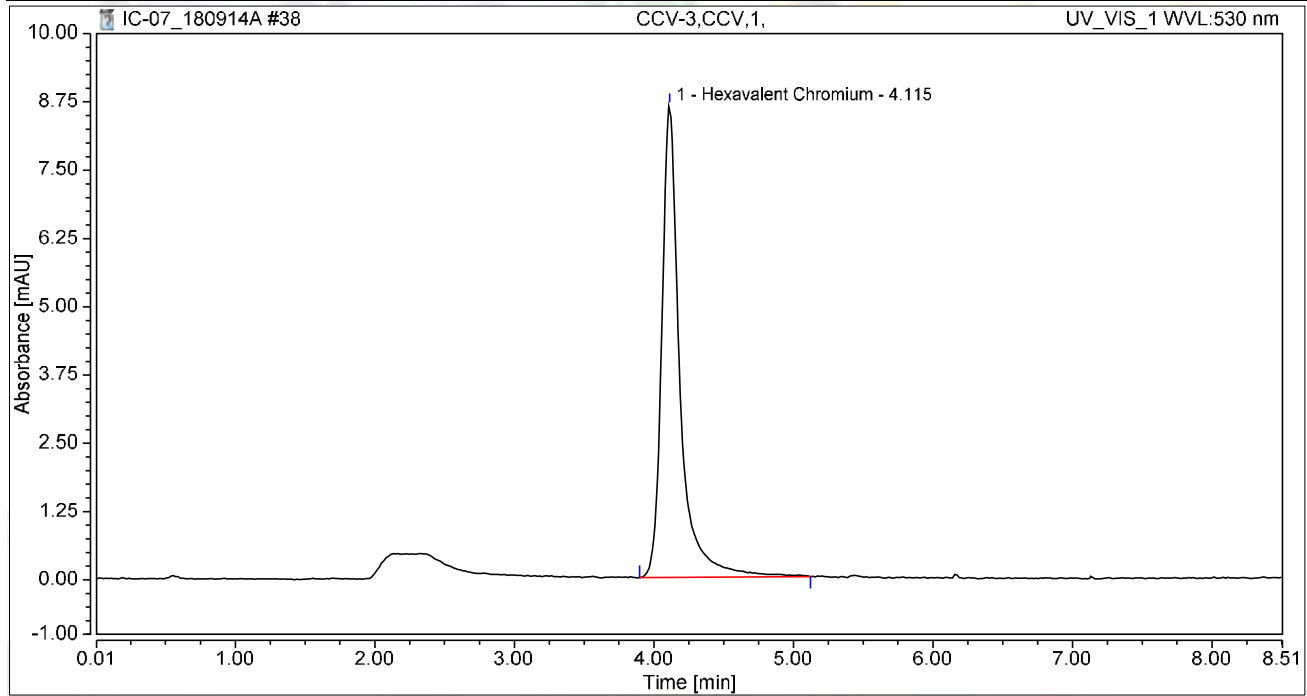
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.258	1.785	100.00	100.00	1.0258
<b>Total:</b>			<b>0.258</b>	<b>1.785</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-3,CCV,1,	Run Time (min):	8.50
Vial Number:	29	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 14:07	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

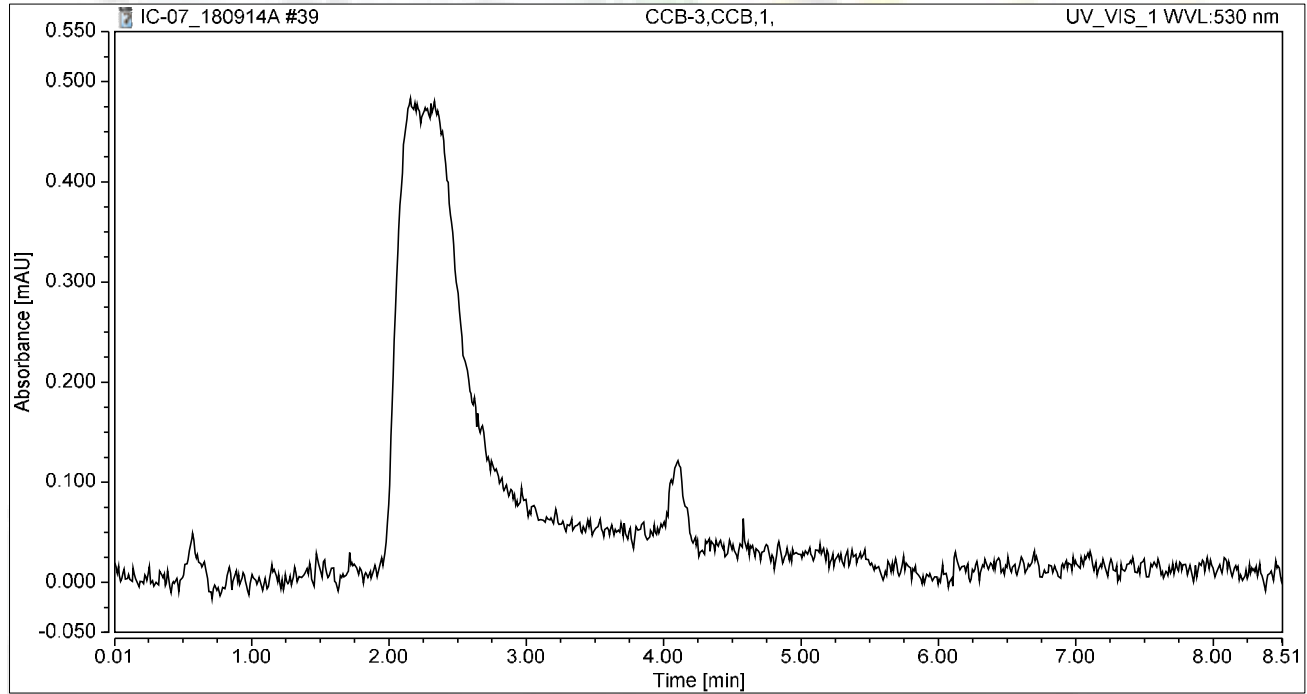
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.311	8.640	100.00	100.00	5.2117
<b>Total:</b>			<b>1.311</b>	<b>8.640</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

<i>Injection Name:</i>	<b>CCB-3,CCB,1,</b>	<i>Run Time (min):</i>	<b>8.50</b>
<i>Vial Number:</i>	<b>30</b>	<i>Injection Volume:</i>	<b>1000.00</b>
<i>Injection Type:</i>	<b>Unknown</b>	<i>Channel:</i>	<b>UV_VIS_1</b>
<i>Calibration Level:</i>		<i>Wavelength:</i>	<b>530.0</b>
<i>Instrument Method:</i>	<b>Hex Chrom 4 mm</b>	<i>Bandwidth:</i>	<b>n.a.</b>
<i>Processing Method:</i>	<b>180827_IC-07_Cr6_218_6_HIGH</b>	<i>Dilution Factor:</i>	<b>1.0000</b>
<i>Injection Date/Time:</i>	<b>14/Sep/18 14:17</b>	<i>Sample Weight:</i>	<b>1.0000</b>

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

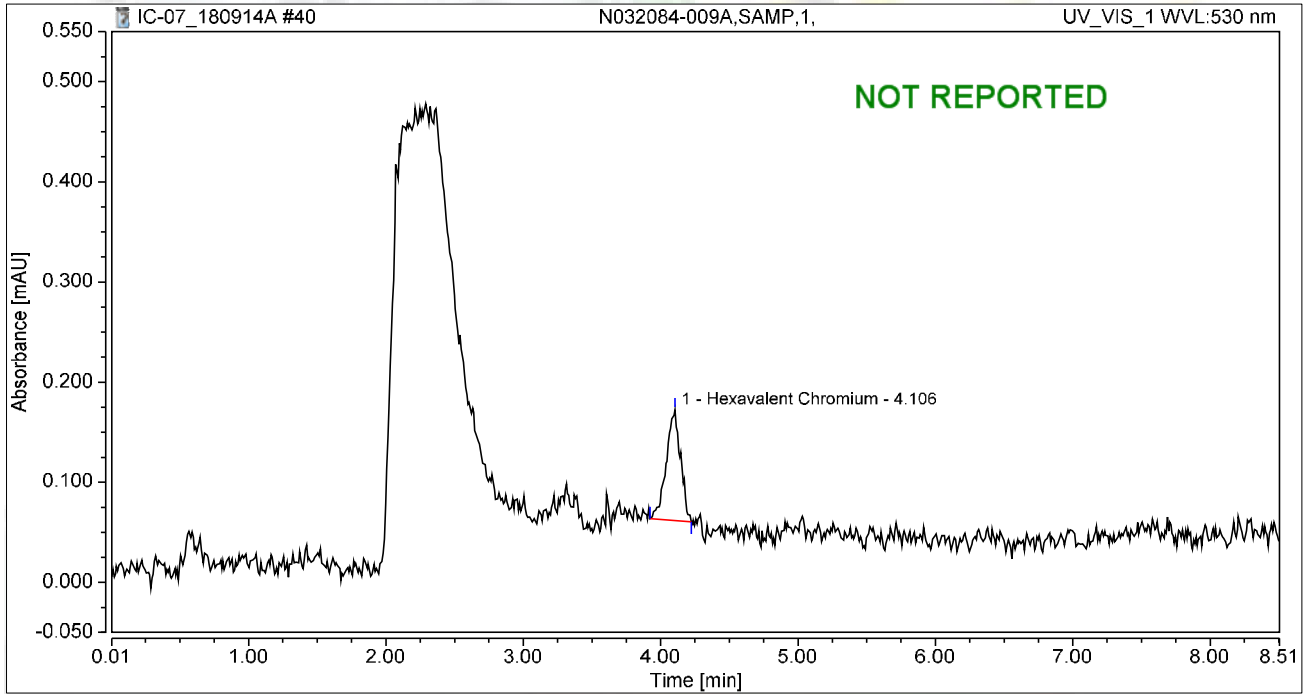


### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-009A,SAMP,1,	Run Time (min):	8.50
Vial Number:	31	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 14:26	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

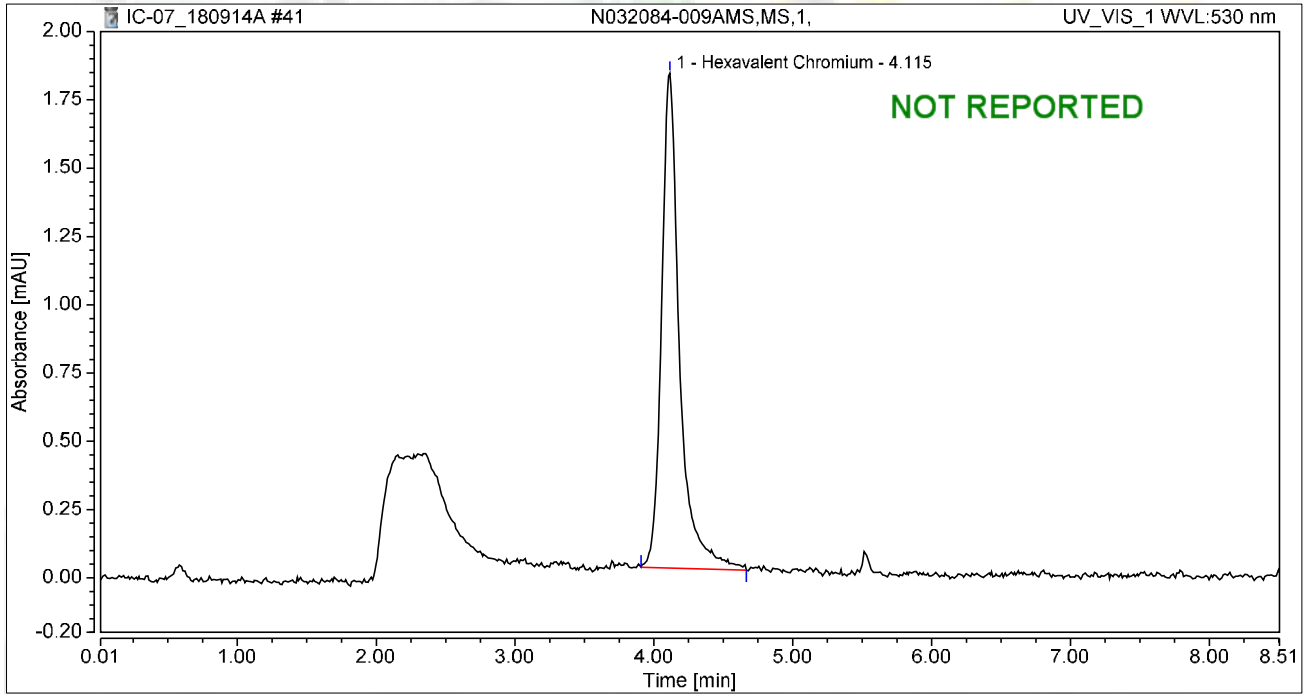
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.013	0.111	100.00	100.00	0.0525
<b>Total:</b>			<b>0.013</b>	<b>0.111</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-009AMS,MS,1,	Run Time (min):	8.49
Vial Number:	32	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 14:36	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

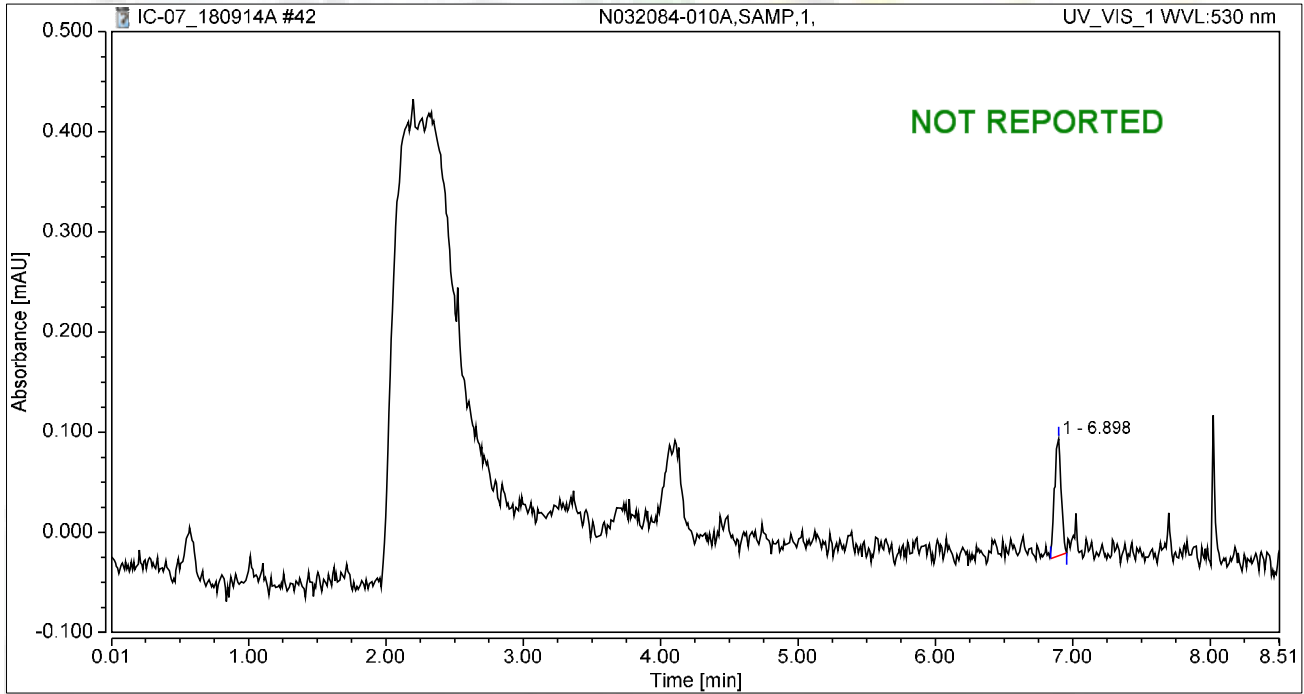
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.272	1.811	100.00	100.00	1.0830
<b>Total:</b>			<b>0.272</b>	<b>1.811</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-010A,SAMP,1,	Run Time (min):	8.50
Vial Number:	33	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 14:45	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

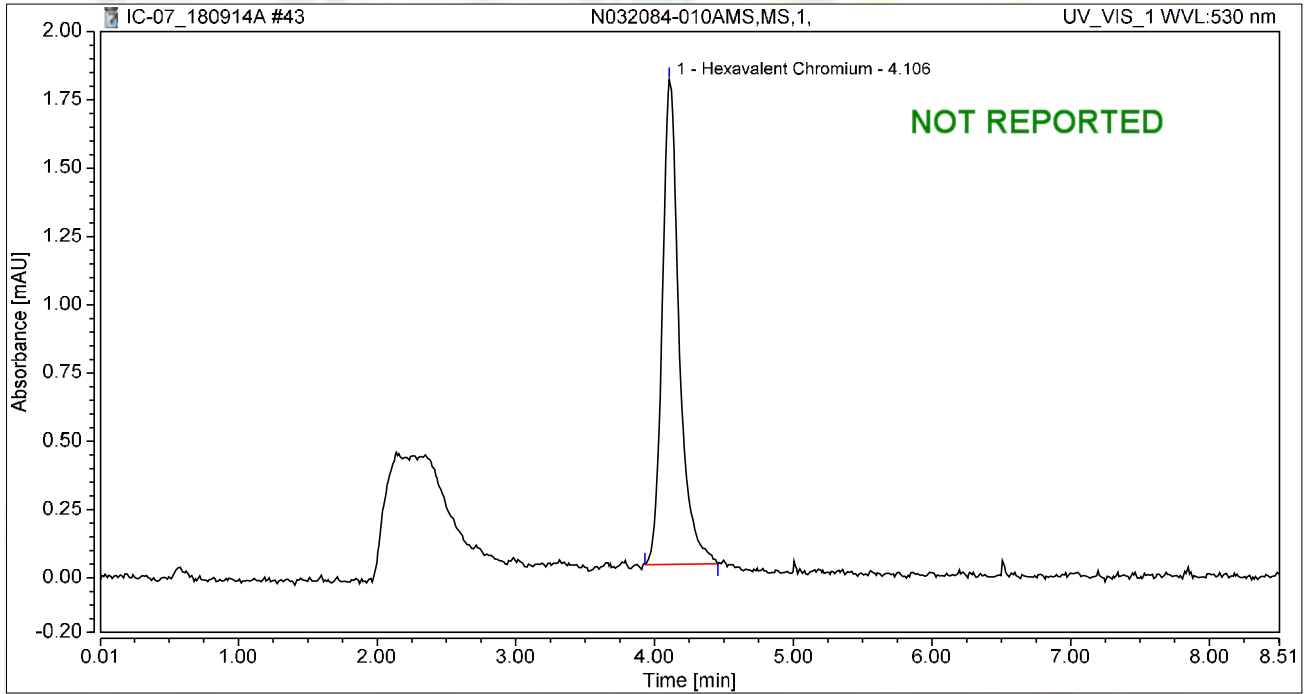
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		6.898	0.006	0.117	100.00	100.00	n.a.
<b>Total:</b>			<b>0.006</b>	<b>0.117</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-010AMS,MS,1,	Run Time (min):	8.50
Vial Number:	34	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 14:55	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

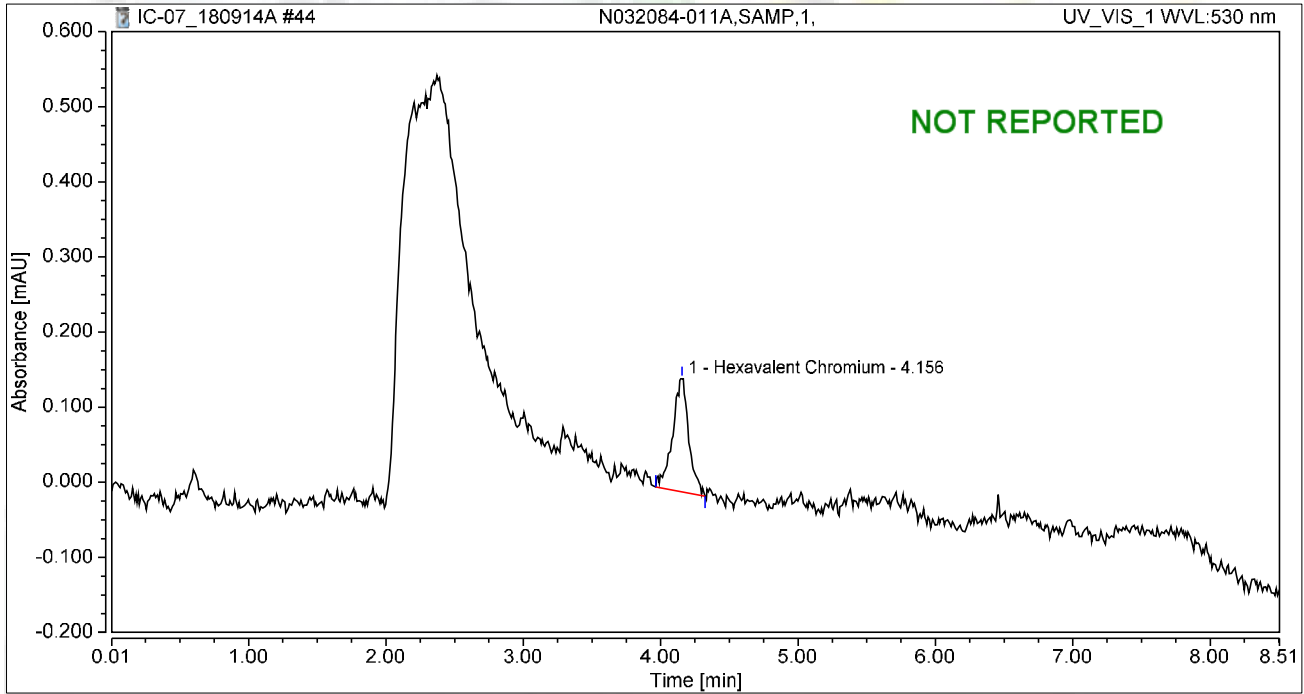
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.253	1.775	100.00	100.00	1.0044
<b>Total:</b>			<b>0.253</b>	<b>1.775</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-011A,SAMP,1,	Run Time (min):	8.50
Vial Number:	35	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 15:04	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

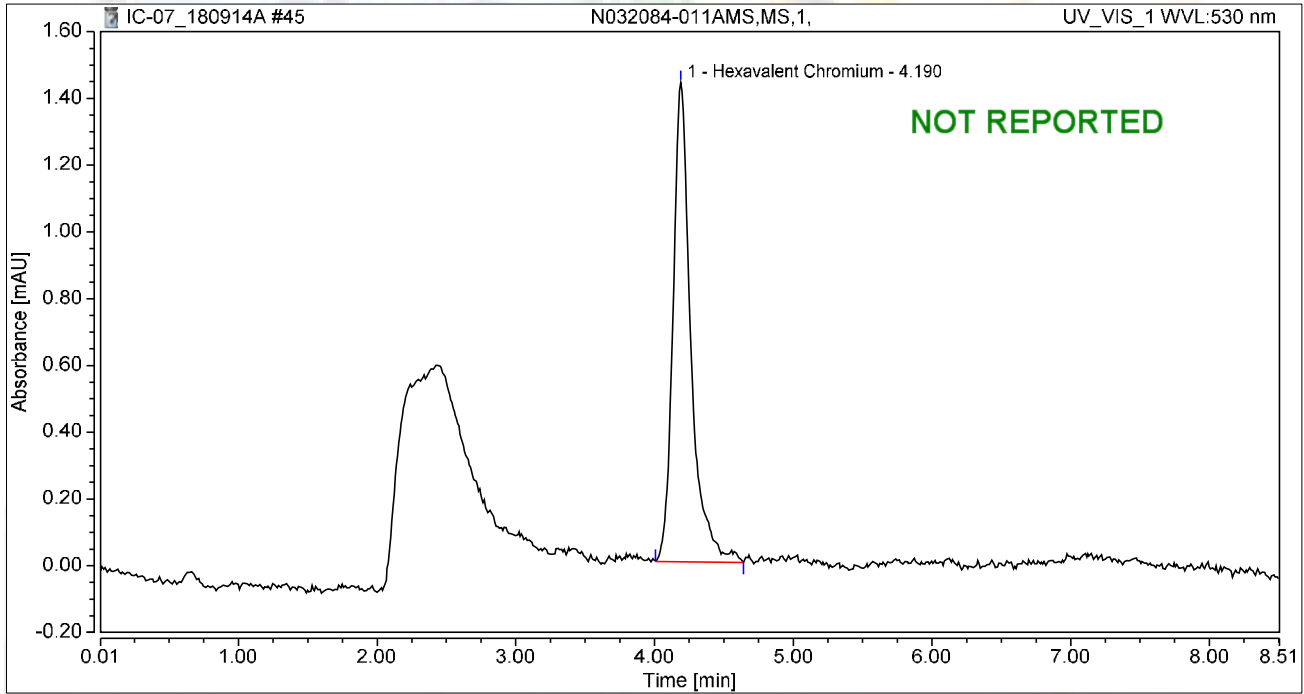
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.156	0.021	0.151	100.00	100.00	0.0827
<b>Total:</b>			<b>0.021</b>	<b>0.151</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-011AMS,MS,1,	Run Time (min):	8.50
Vial Number:	36	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 15:14	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

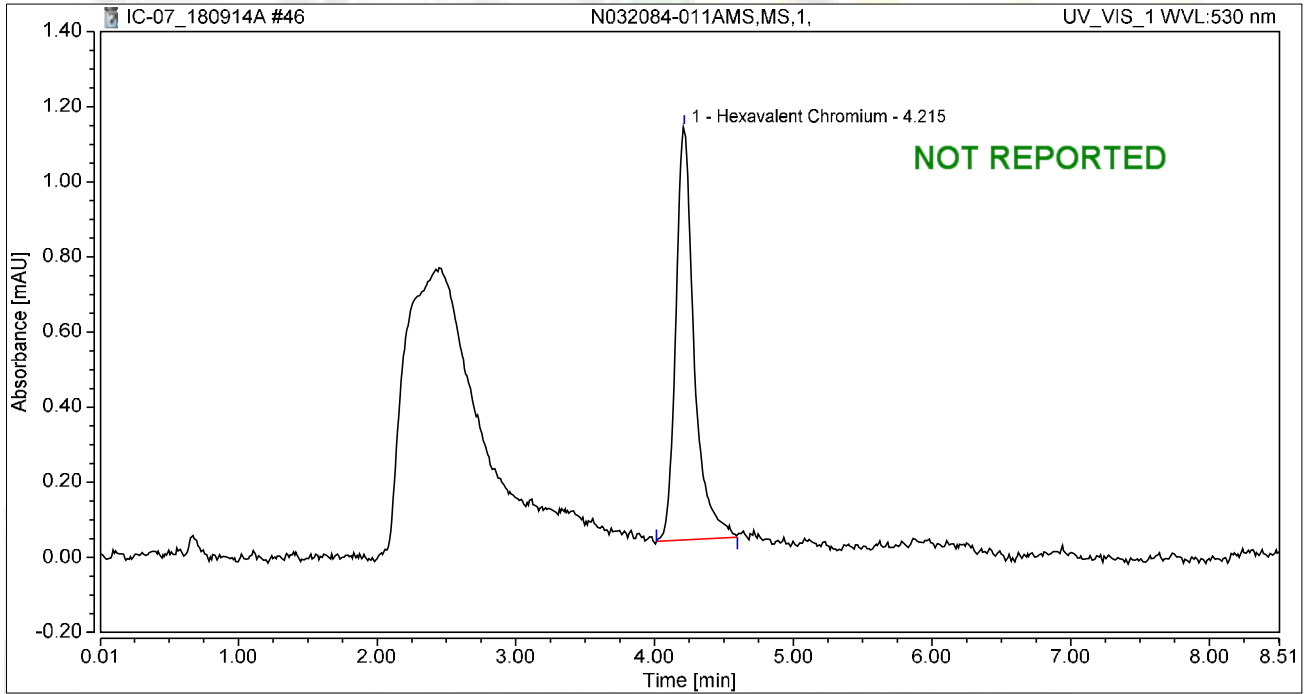
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.190	0.214	1.436	100.00	100.00	0.8517
<b>Total:</b>			<b>0.214</b>	<b>1.436</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-011AMS,MS,1,	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 15:30	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

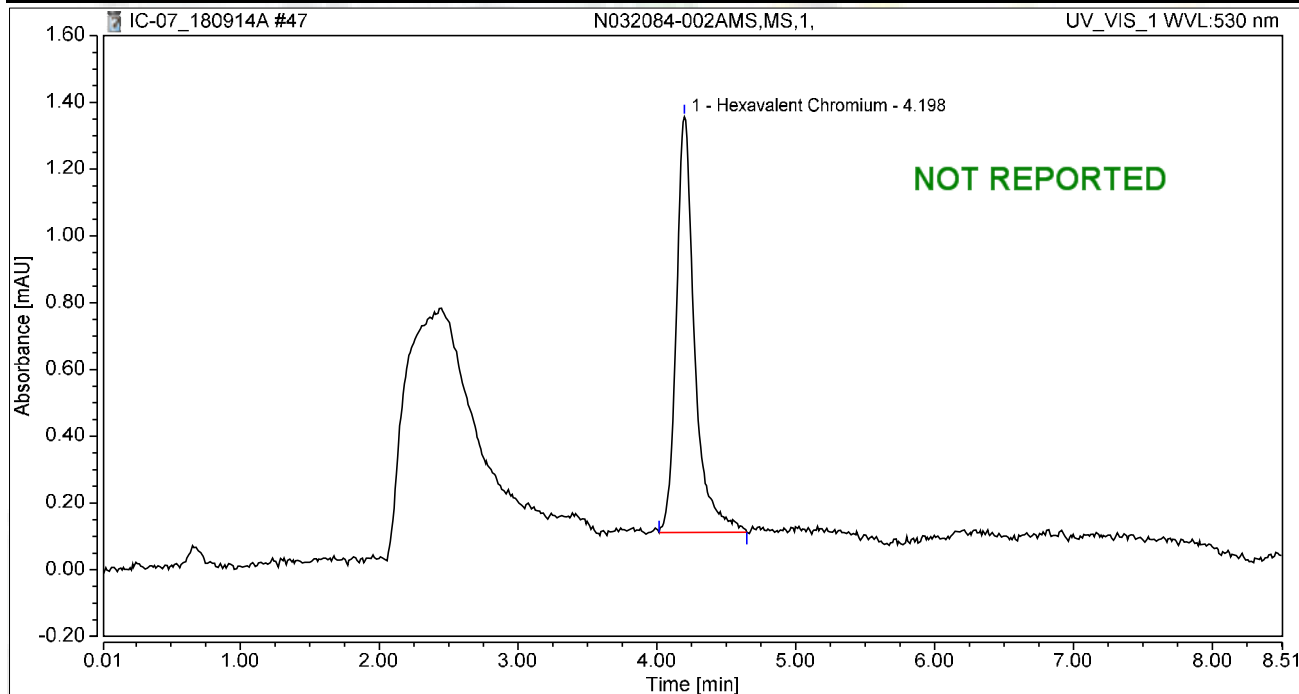
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.215	0.168	1.099	100.00	100.00	0.6670
<b>Total:</b>			<b>0.168</b>	<b>1.099</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-002AMS,MS,1,	Run Time (min):	8.49
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 15:41	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.198	0.190	1.246	100.00	100.00	0.7569
<b>Total:</b>			<b>0.190</b>	<b>1.246</b>	<b>100.00</b>	<b>100.00</b>	

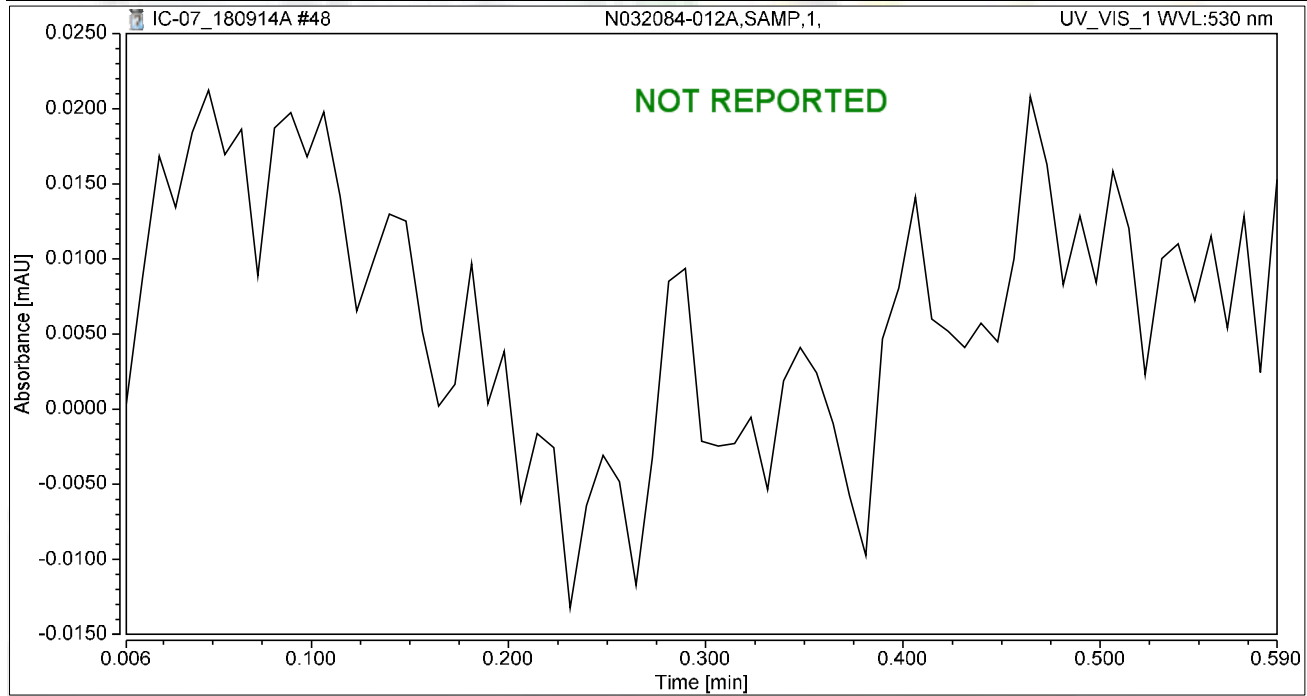


### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-012A,SAMP,1,	Run Time (min):	0.58
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 15:50	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

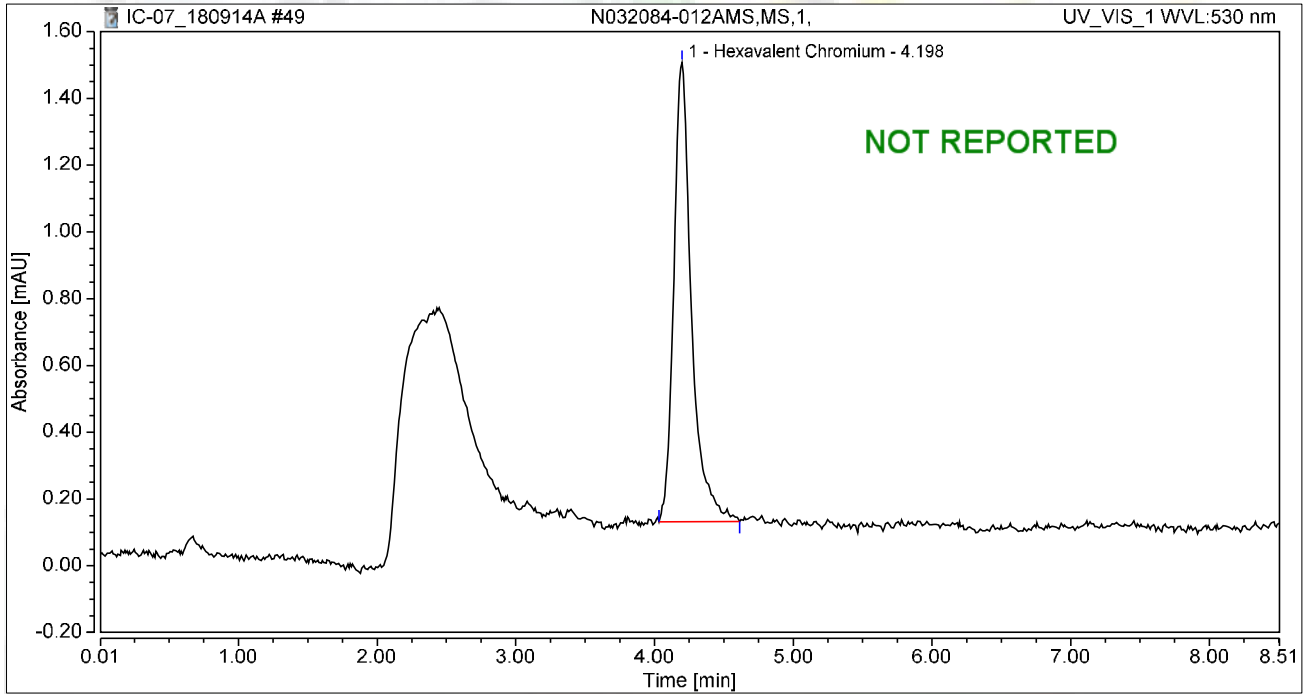
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-012AMS,MS,1,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 16:52	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

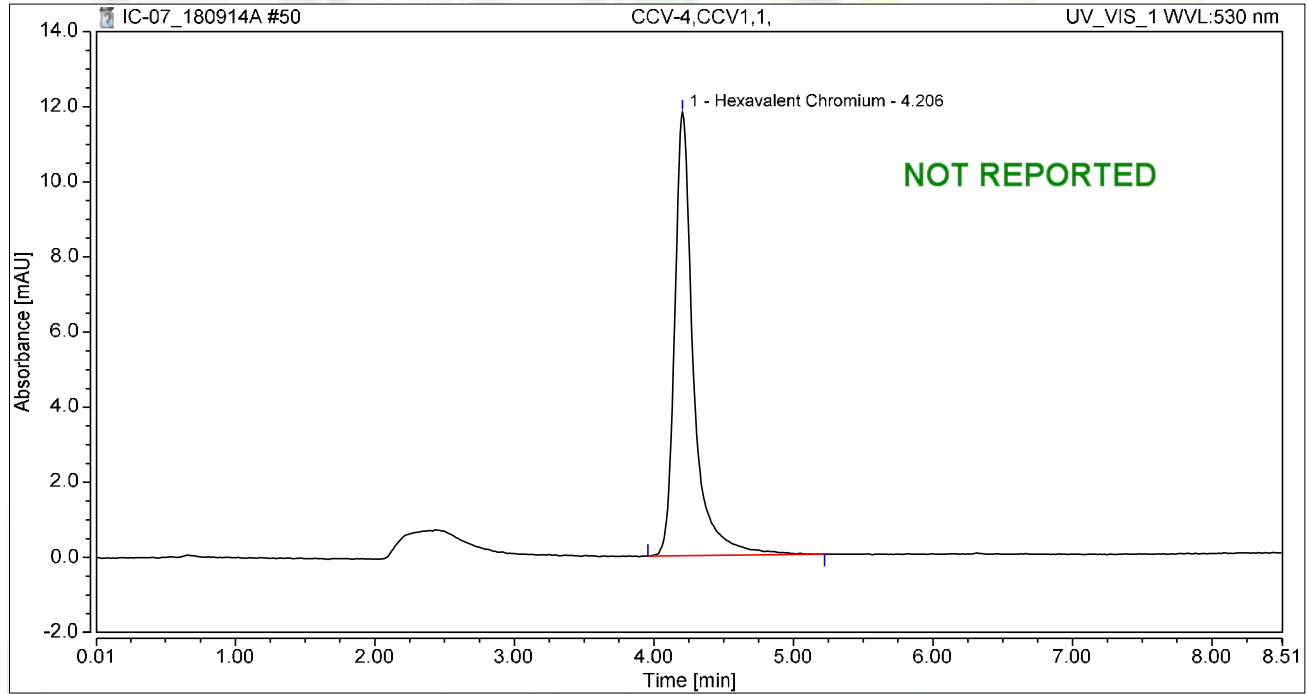
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.198	0.204	1.376	100.00	100.00	0.8094
<b>Total:</b>			<b>0.204</b>	<b>1.376</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-4,CCV1,1,	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 17:59	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

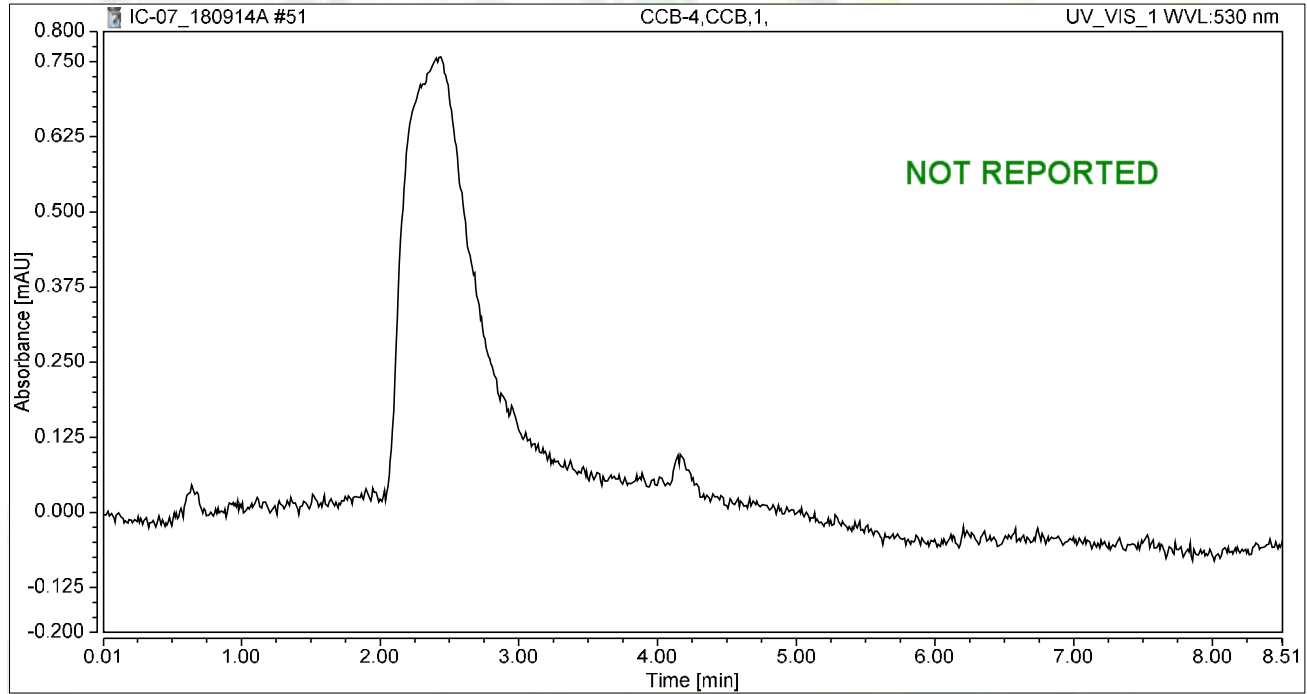
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.206	1.850	11.817	100.00	100.00	7.3539
<b>Total:</b>			<b>1.850</b>	<b>11.817</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-4,CCB,1,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	14/Sep/18 18:10	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89119  
P: 702.307.2659 F: 702.307.2659



**INJECTION LOG: 180917A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:10 AM	Not Reported
2	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:21 AM	Not Reported
3	BLANK	BLANK	1	Hexavalent Chromium	08/27/18 10:30 AM	Not Reported
4	iBLANK	iBLANK	1	Hexavalent Chromium	08/27/18 11:08 AM	Reported
5	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:20 AM	Reported
6	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:29 AM	Reported
7	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:38 AM	Reported
8	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:48 AM	Reported
9	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 11:57 AM	Reported
10	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	08/27/18 12:07 PM	Reported
11	BLANK	BLANK	1	Hexavalent Chromium	09/17/18 10:58 AM	Not Reported
12	BLANK	BLANK	1	Hexavalent Chromium	09/17/18 11:09 AM	Not Reported
13	BLANK	BLANK	1	Hexavalent Chromium	09/17/18 11:25 AM	Not Reported
14	BLANK	BLANK	1	Hexavalent Chromium	09/17/18 11:36 AM	Not Reported
15	CCV-1	CCV	1	Hexavalent Chromium	09/17/18 11:45 AM	Reported
16	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/17/18 12:02 PM	Reported
17	CCB-1	CCB	1	Hexavalent Chromium	09/17/18 12:14 PM	Reported
18	MB-R127668	MBLK	1	Hexavalent Chromium	09/17/18 12:23 PM	Reported
19	LCS-R127668	LCS	1	Hexavalent Chromium	09/17/18 12:33 PM	Reported
20	N032084-002A	SAMP	1	Hexavalent Chromium	09/17/18 1:06 PM	Reported
21	N032084-002AMS	MS	1	Hexavalent Chromium	09/17/18 1:17 PM	Reported
22	N032084-009A	SAMP	1	Hexavalent Chromium	09/17/18 1:26 PM	Reported
23	N032084-009AMS	MS	1	Hexavalent Chromium	09/17/18 1:35 PM	Reported
24	N032084-010A	SAMP	1	Hexavalent Chromium	09/17/18 1:45 PM	Reported
25	N032084-010AMS	MS	1	Hexavalent Chromium	09/17/18 1:54 PM	Reported
26	N032084-011A	SAMP	1	Hexavalent Chromium	09/17/18 2:04 PM	Reported
27	N032084-011AMS	MS	1	Hexavalent Chromium	09/17/18 2:14 PM	Reported
28	CCV-2	CCV1	1	Hexavalent Chromium	09/17/18 2:23 PM	Reported
29	CCB-2	CCB	1	Hexavalent Chromium	09/17/18 2:32 PM	Reported
30	N032084-012A	SAMP	1	Hexavalent Chromium	09/17/18 2:42 PM	Reported
31	N032084-012AMS	MS	1	Hexavalent Chromium	09/17/18 2:51 PM	Reported
32	N032084-013A	SAMP	1	Hexavalent Chromium	09/17/18 3:01 PM	Reported
33	N032084-013AMS	MS	1	Hexavalent Chromium	09/17/18 3:10 PM	Reported
34	N032084-014A	SAMP	1	Hexavalent Chromium	09/17/18 3:20 PM	Reported
35	N032084-014AMS	MS	1	Hexavalent Chromium	09/17/18 3:29 PM	Reported
36	N032084-015A	SAMP	1	Hexavalent Chromium	09/17/18 3:38 PM	Reported
37	N032084-015AMS	MS	1	Hexavalent Chromium	09/17/18 3:48 PM	Reported
38	N032084-002ADUP	DUP	1	Hexavalent Chromium	09/17/18 3:57 PM	Reported
39	N032084-009AMSD	MSD	1	Hexavalent Chromium	09/17/18 4:07 PM	Reported
40	CCV-3	CCV	1	Hexavalent Chromium	09/17/18 4:16 PM	Reported
41	CCB-3	CCB	1	Hexavalent Chromium	09/17/18 4:26 PM	Reported

*Nancy* 9/26/2018

IC7 RBA 9/19/2018 10:05 AM

*rba* 9/20/2018

## Injection Log Summary

## Sequence Details

Name:	IC-07_180917A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	18/Sep/18 09:55:45
No. of Injections:	44	Updated By:	ics 5000

## Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		08/27/2018 10:10	Finished	BLANK
2	BLANK	2	1000	Unknown		08/27/2018 10:21	Finished	BLANK
3	BLANK	3	1000	Unknown		08/27/2018 10:30	Finished	BLANK
4	iBLANK	5	1000	Unknown		08/27/2018 11:08	Finished	INSTRUMENT BLANK
5	STD1-0.2 ppb	6	1000	Calibration Standard	01	08/27/2018 11:20	Finished	0.2 ppb, IWST-180622A
6	STD2-1.0 ppb	7	1000	Calibration Standard	02	08/27/2018 11:29	Finished	1.0 ppb, IWST-180622A
7	STD3-5.0 ppb	8	1000	Calibration Standard	03	08/27/2018 11:38	Finished	5.0 ppb, IWST-180622A
8	STD4-10.0 ppb	9	1000	Calibration Standard	04	08/27/2018 11:48	Finished	10 ppb, IWST-180622A
9	STD5-15.0 ppb	10	1000	Calibration Standard	05	08/27/2018 11:57	Finished	15 ppb, IWST-180622A
10	STD6-20.0 ppb	11	1000	Calibration Standard	06	08/27/2018 12:07	Finished	20 ppb, IWST-180622A
11	BLANK	1	1000	Unknown		09/17/2018 10:58	Finished	BLANK
12	BLANK	2	1000	Unknown		09/17/2018 11:09	Finished	BLANK
13	BLANK	4	1000	Unknown		09/17/2018 11:25	Finished	BLANK
14	BLANK	5	1000	Unknown		09/17/2018 11:36	Finished	BLANK
15	CCV-1,CCV,1,	6	1000	Unknown		09/17/2018 11:45	Finished	CCV @5ppb, IWST-180622A
16	PQL@0.2ppb,CCV2,	8	1000	Unknown		09/17/2018 12:02	Finished	PQL @ 0.2ppb
17	CCB-1,CCB,1,	9	1000	Unknown		09/17/2018 12:14	Finished	CCB R180806A
18	MB-H2O,MBLK,1,	10	1000	Unknown		09/17/2018 12:23	Finished	MBLK R180913A
19	LCS-H2O,LCS,1,	11	1000	Unknown		09/17/2018 12:33	Finished	LCS @5ppb, IWST-180622B
20	N032084-002A,SAMP	1	1000	Unknown		09/17/2018 13:06	Finished	SAMP, 10mL
21	N032084-002AMS,MS	2	1000	Unknown		09/17/2018 13:17	Finished	MS (1ppb), IWST-180622B,10
22	N032084-009A,SAMP	3	1000	Unknown		09/17/2018 13:26	Finished	SAMP, 10mL
23	N032084-009AMS,MS	4	1000	Unknown		09/17/2018 13:35	Finished	MS (1ppb), IWST-180622B,10
24	N032084-010A,SAMP	5	1000	Unknown		09/17/2018 13:45	Finished	SAMP, 10mL
25	N032084-010AMS,MS	6	1000	Unknown		09/17/2018 13:54	Finished	MS (1ppb), IWST-180622B,10
26	N032084-011A,SAMP	7	1000	Unknown		09/17/2018 14:04	Finished	SAMP, 10mL
27	N032084-011AMS,MS	8	1000	Unknown		09/17/2018 14:14	Finished	MS (1ppb), IWST-180622B,10
28	CCV-2,CCV1,1,	9	1000	Unknown		09/17/2018 14:23	Finished	CCV @10ppb, IWST-180622A
29	CCB-2,CCB,1,	10	1000	Unknown		09/17/2018 14:32	Finished	CCB R180806A
30	N032084-012A,SAMP	11	1000	Unknown		09/17/2018 14:42	Finished	SAMP, 10mL
31	N032084-012AMS,MS	12	1000	Unknown		09/17/2018 14:51	Finished	MS (1ppb), IWST-180622B,10
32	N032084-013A,SAMP	13	1000	Unknown		09/17/2018 15:01	Finished	SAMP, 10mL
33	N032084-013AMS,MS	14	1000	Unknown		09/17/2018 15:10	Finished	MS (1ppb), IWST-180622B,10
34	N032084-014A,SAMP	15	1000	Unknown		09/17/2018 15:20	Finished	SAMP, 10mL
35	N032084-014AMS,MS	16	1000	Unknown		09/17/2018 15:29	Finished	MS (1ppb), IWST-180622B,10
36	N032084-015A,SAMP	17	1000	Unknown		09/17/2018 15:38	Finished	SAMP, 10mL
37	N032084-015AMS,MS	18	1000	Unknown		09/17/2018 15:48	Finished	MS (1ppb), IWST-180622B,10
38	N032084-002ADUP,D	19	1000	Unknown		09/17/2018 15:57	Finished	DUP, 10mL
39	N032084-009AMSD,N	20	1000	Unknown		09/17/2018 16:07	Finished	MSD (1ppb), IWST-180622B,10
40	CCV-3,CCV,1,	21	1000	Unknown		09/17/2018 16:16	Finished	CCV @5ppb, IWST-180622A
41	CCB-3,CCB,1,	22	1000	Unknown		09/17/2018 16:26	Finished	CCB R180913A
42	SHUTDOWN	23	1000	Unknown		09/17/2018 16:35	Finished	
43	Eluent: R180917A	24	1000	Unknown		n.a.	Finished	Eluent
44	PCR: R180917B	25	1000	Unknown		n.a.	Finished	Post-Column Reagent

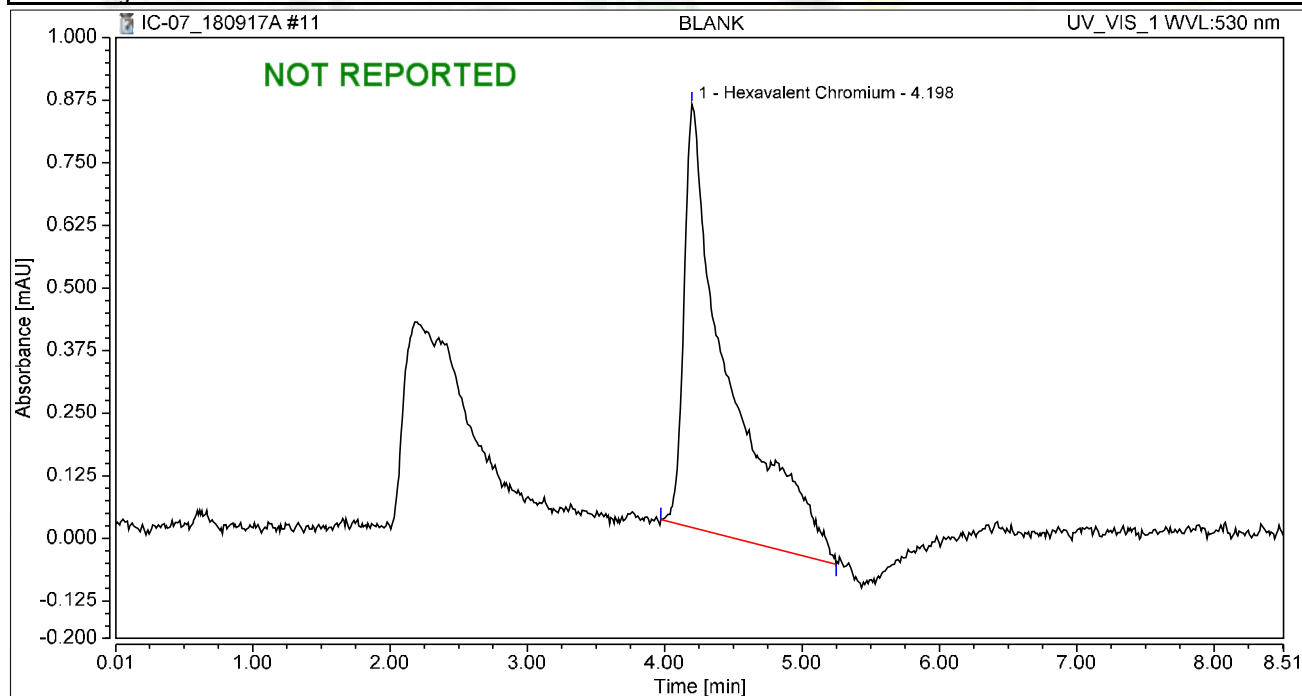
rba 9/20/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	<b>BLANK</b>	Run Time (min):	<b>8.50</b>
Vial Number:	<b>1</b>	Injection Volume:	<b>1000.00</b>
Injection Type:	<b>Unknown</b>	Channel:	<b>UV_VIS_1</b>
Calibration Level:		Wavelength:	<b>530.0</b>
Instrument Method:	<b>Hex Chrom 4 mm</b>	Bandwidth:	<b>n.a.</b>
Processing Method:	<b>180827_IC-07_Cr6_218_6_HIGH</b>	Dilution Factor:	<b>1.0000</b>
Injection Date/Time:	<b>17/Sep/18 10:58</b>	Sample Weight:	<b>1.0000</b>

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.198	0.311	0.846	100.00	100.00	1.2368
<b>Total:</b>			<b>0.311</b>	<b>0.846</b>	<b>100.00</b>	<b>100.00</b>	

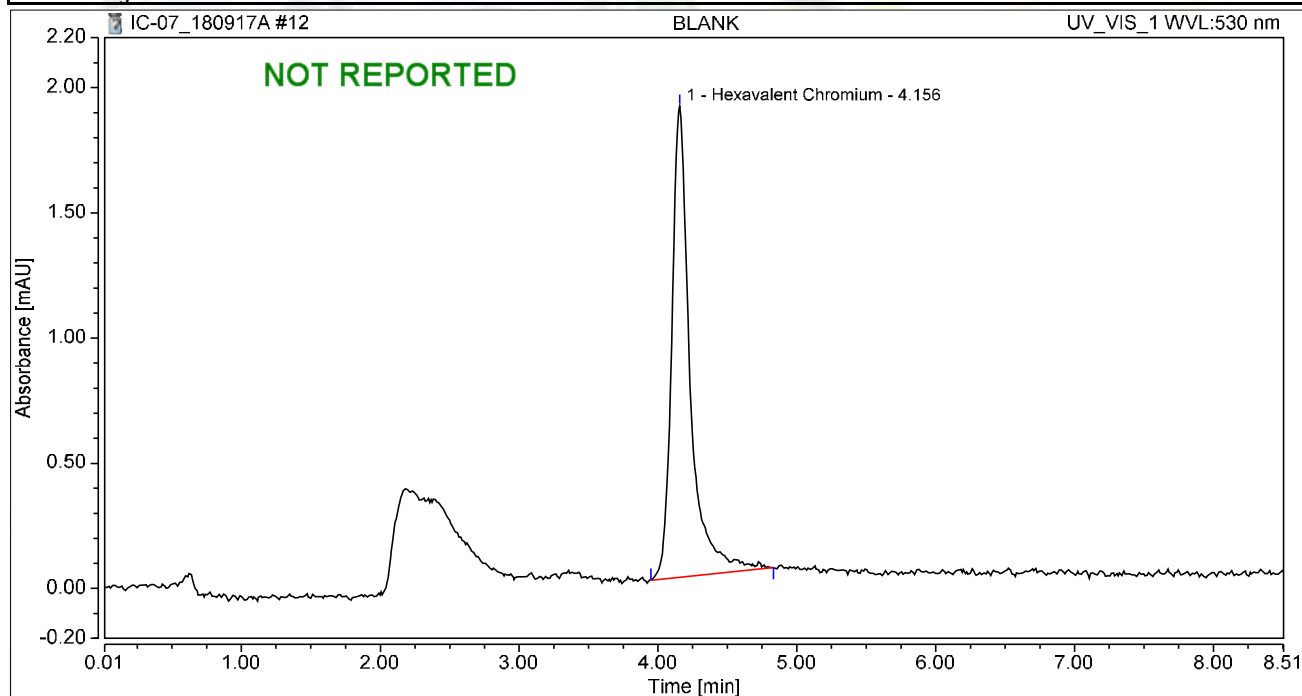


### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.49
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 11:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

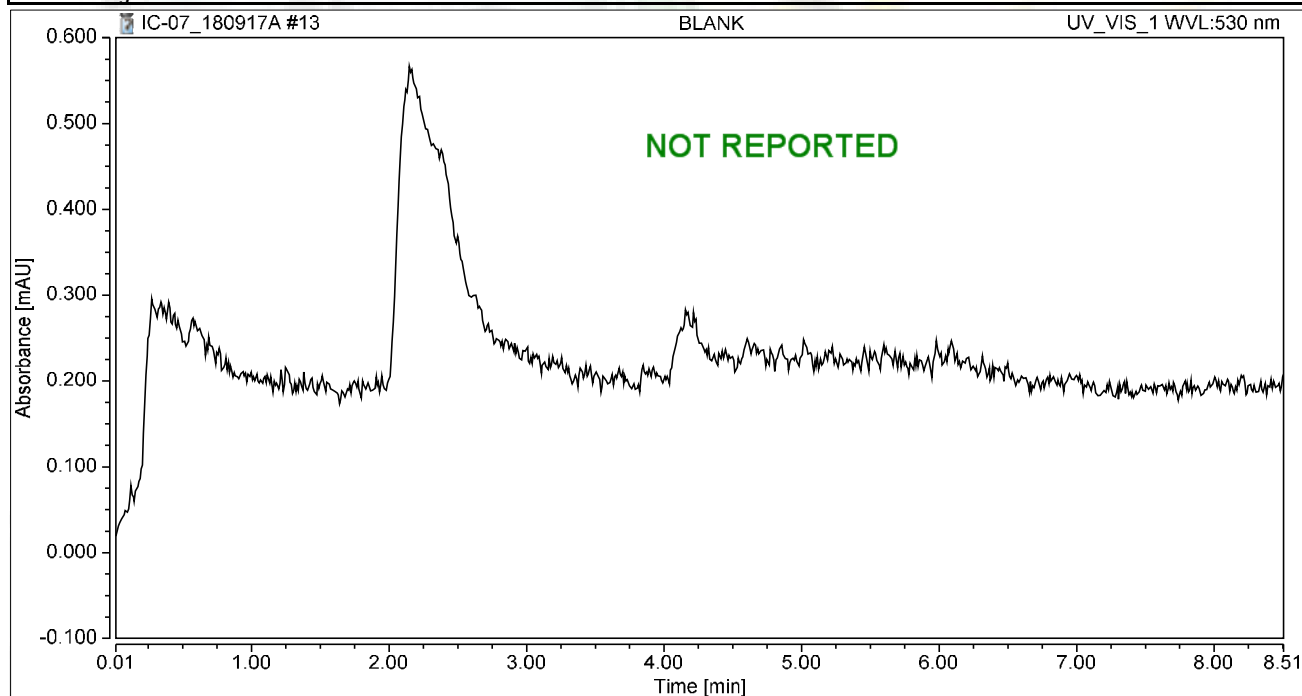
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.156	0.289	1.881	100.00	100.00	1.1498
<b>Total:</b>			<b>0.289</b>	<b>1.881</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.49
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 11:25	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

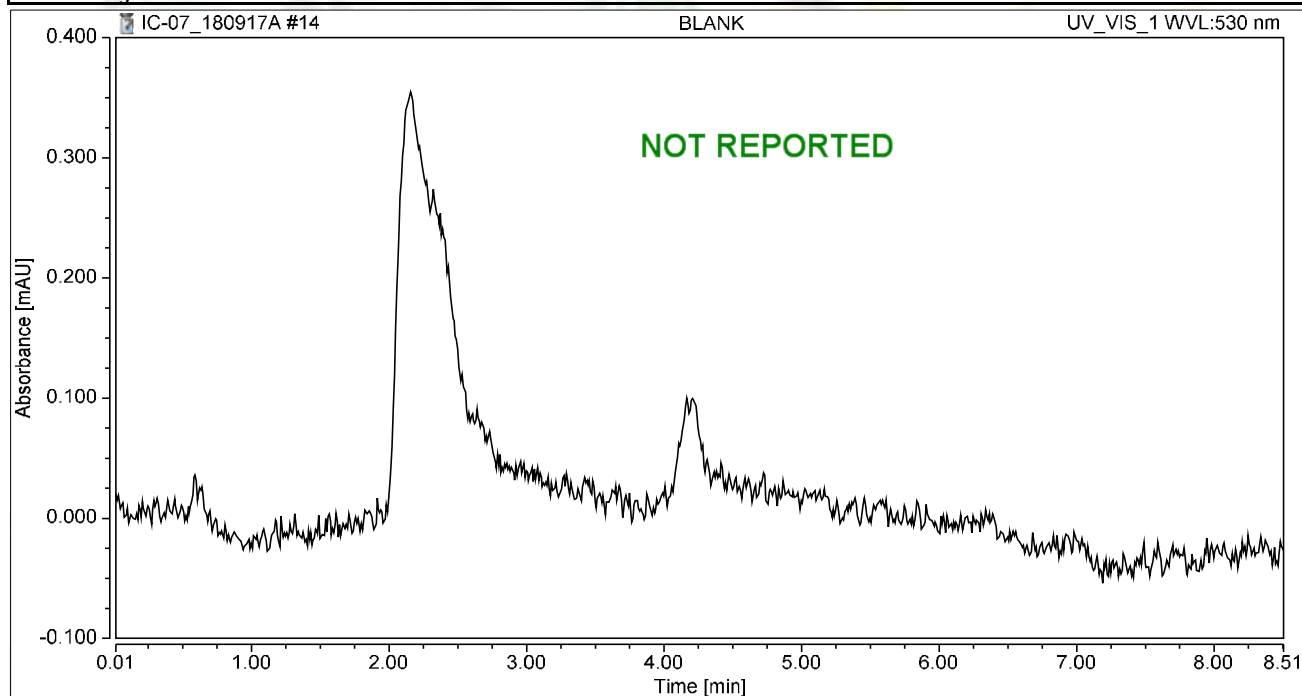
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.49
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 11:36	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

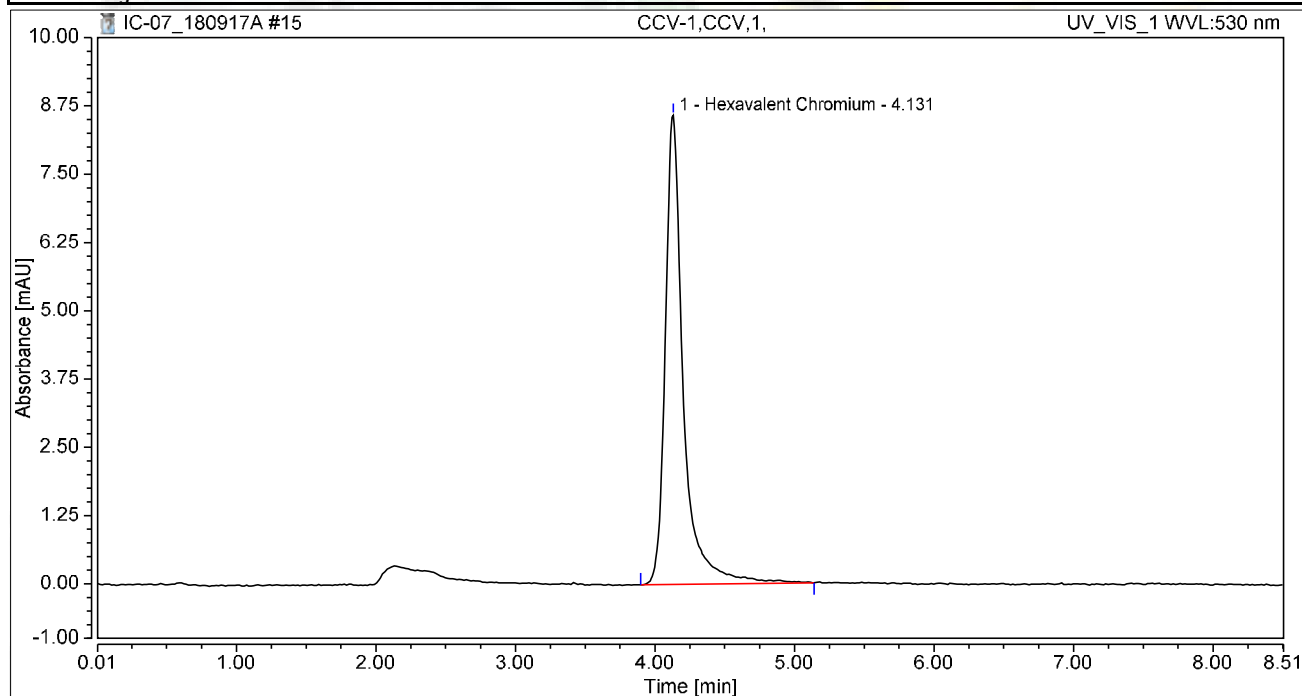
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-1,CCV,1,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 11:45	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

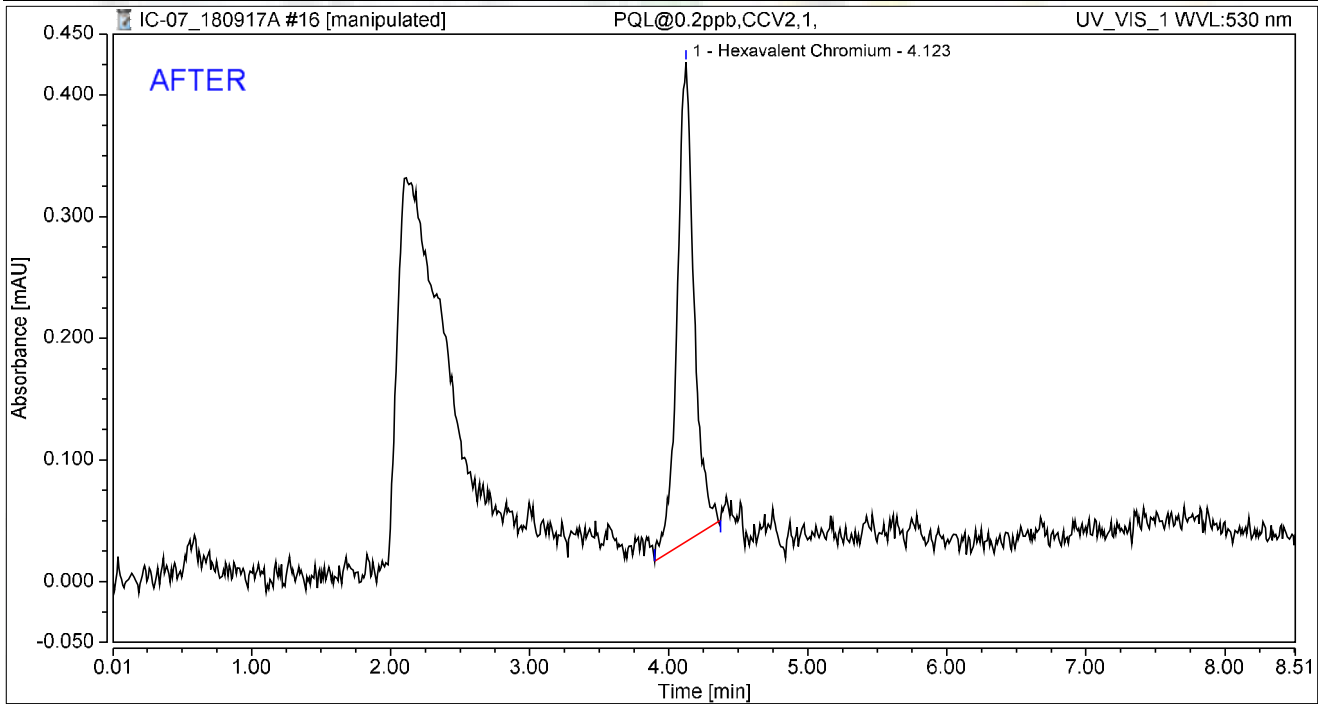
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.285	8.585	100.00	100.00	5.1094
<b>Total:</b>			<b>1.285</b>	<b>8.585</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 12:02	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.055	0.394	100.00	100.00	0.2203
<b>Total:</b>			<b>0.055</b>	<b>0.394</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/20/2018

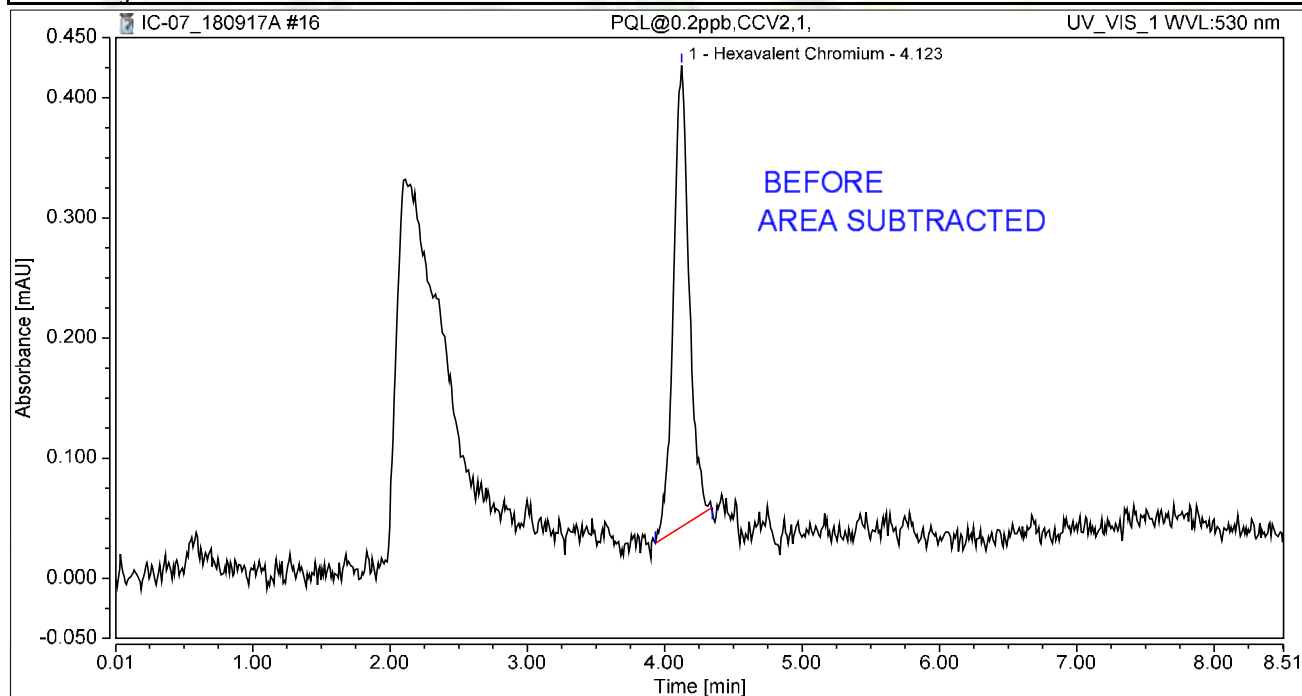
Reviewed by:  
*Nancy* 9/26/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 12:02	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.051	0.384	100.00	100.00	0.2015
<b>Total:</b>			<b>0.051</b>	<b>0.384</b>	<b>100.00</b>	<b>100.00</b>	

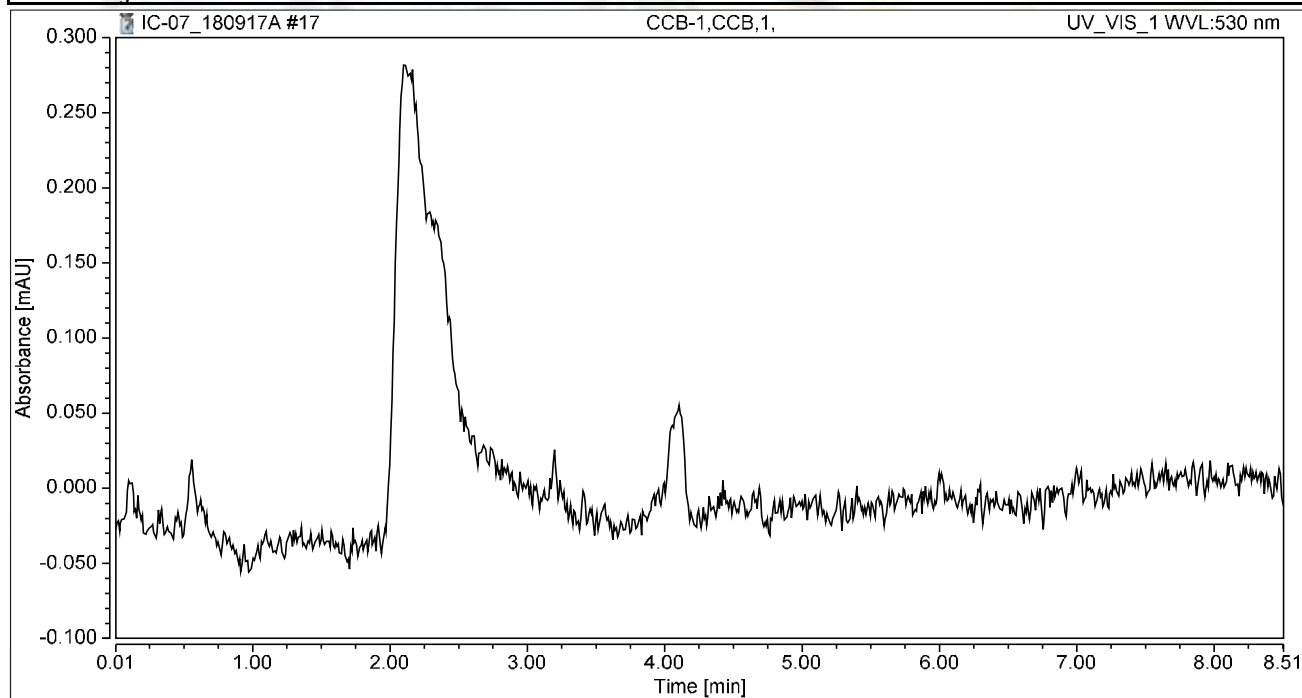
*rba* 9/20/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-1,CCB,1,	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 12:14	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

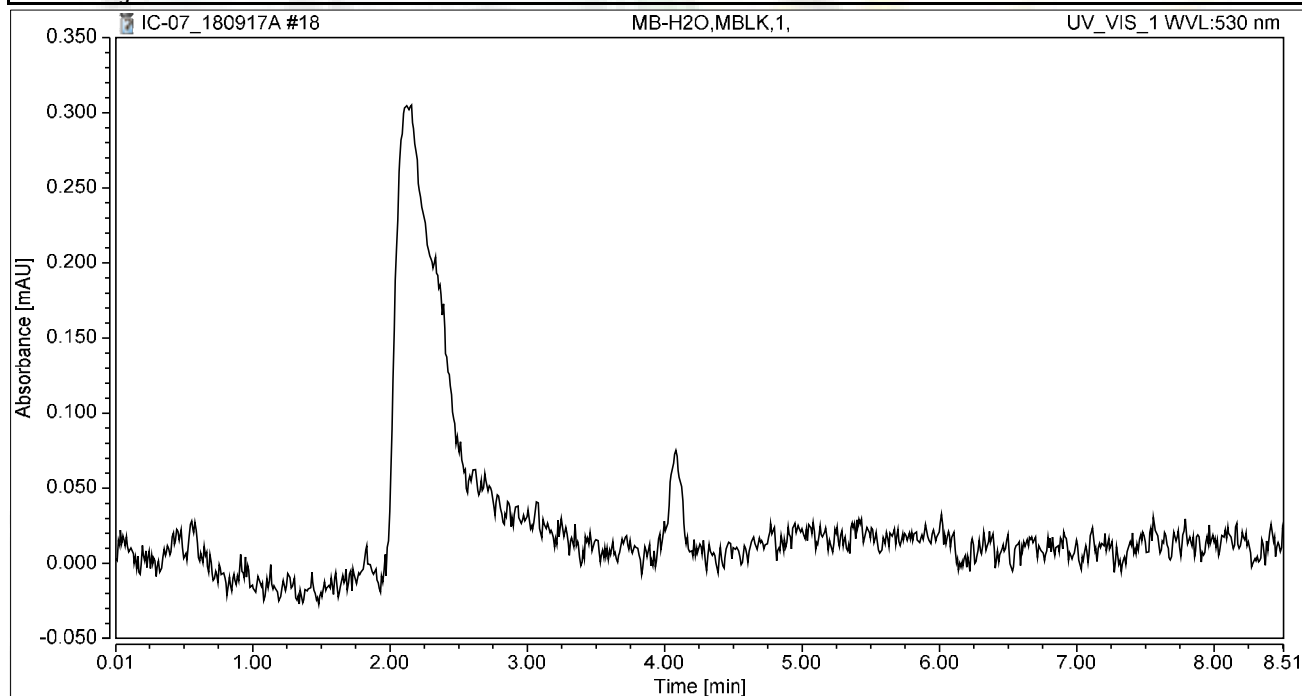
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	MB-H2O,MBLK,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 12:23	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

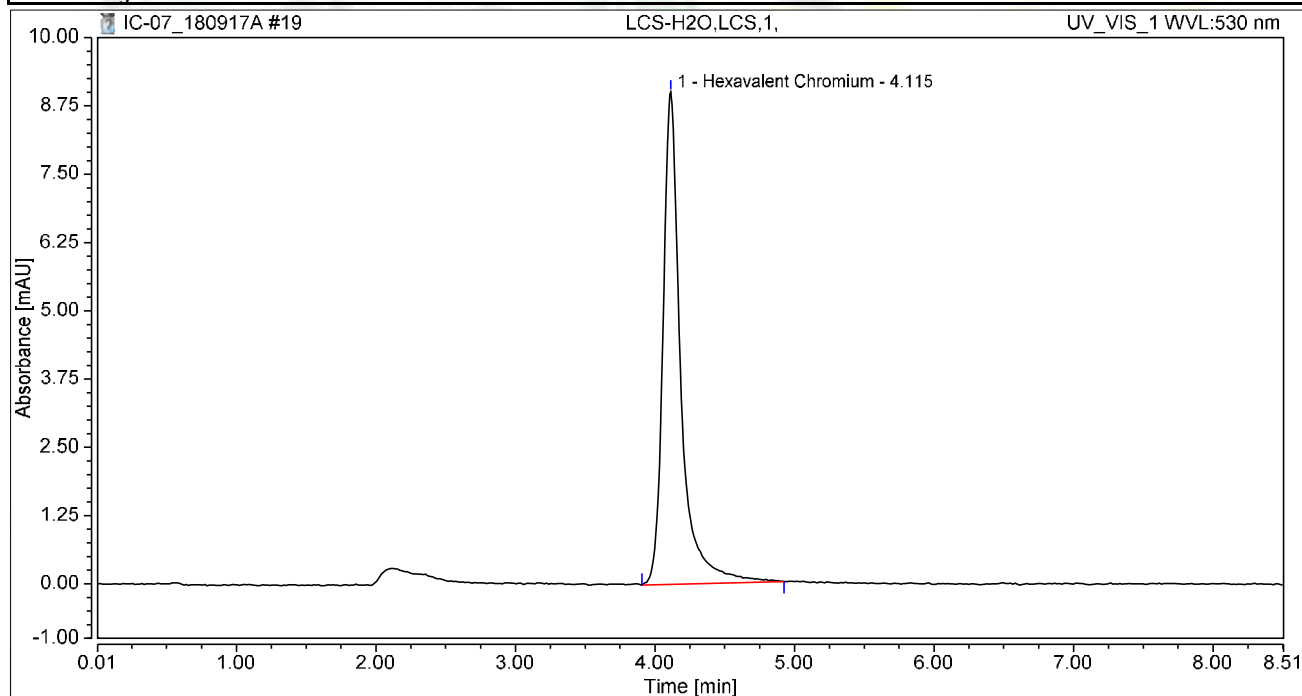


### Chromatogram and Results

**Injection Details**

Injection Name:	LCS-H2O,LCS,1,	Run Time (min):	8.50
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 12:33	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

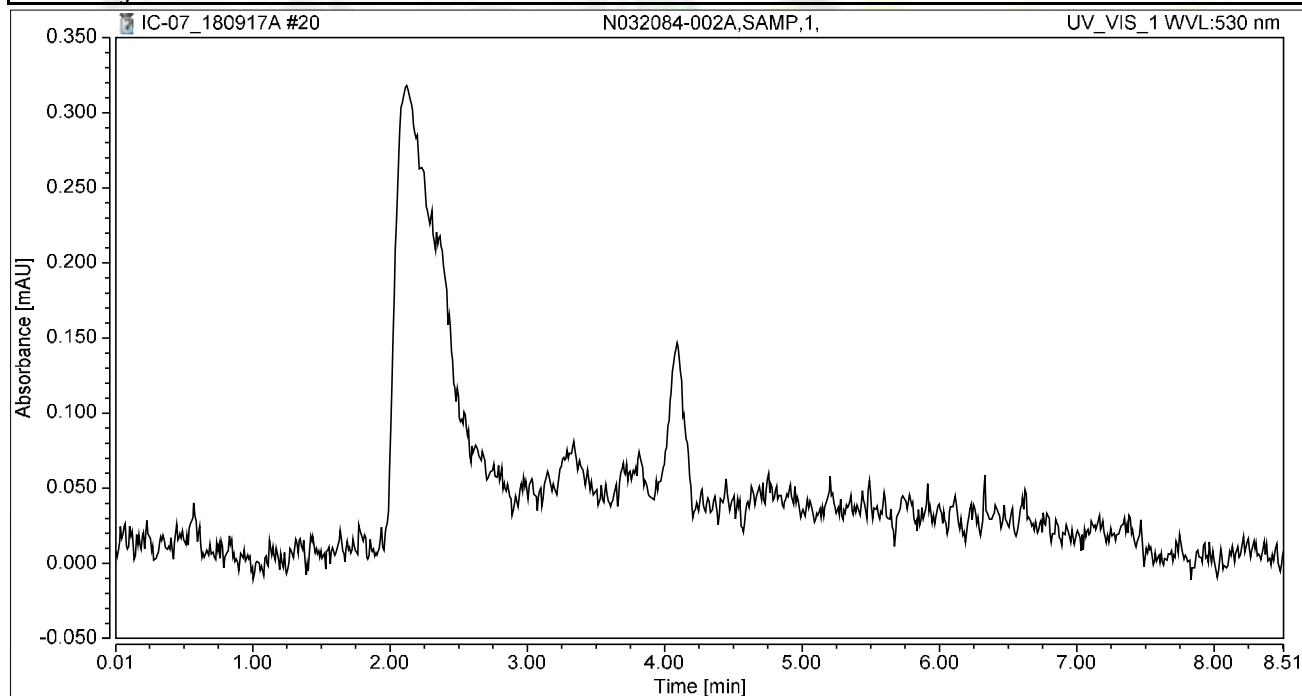
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.332	9.009	100.00	100.00	5.2952
<b>Total:</b>			<b>1.332</b>	<b>9.009</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032084-002A,SAMP,1,	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 13:06	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

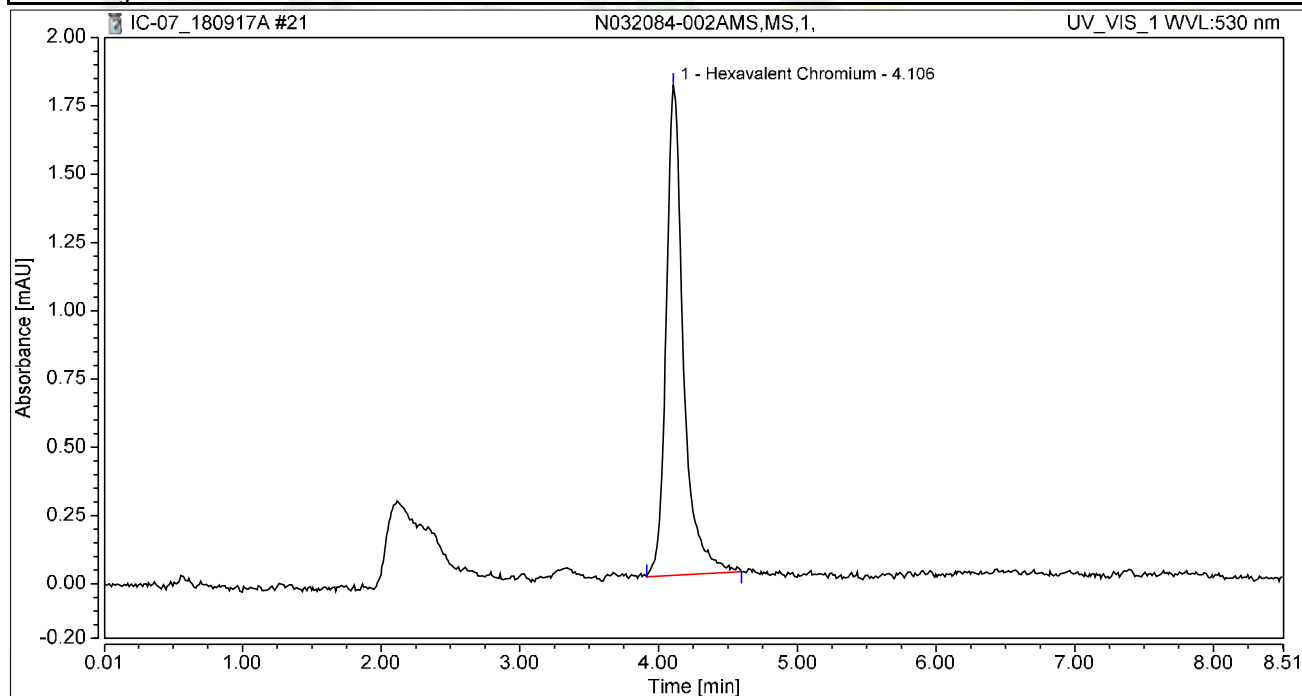
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032084-002AMS,MS,1,	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 13:17	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

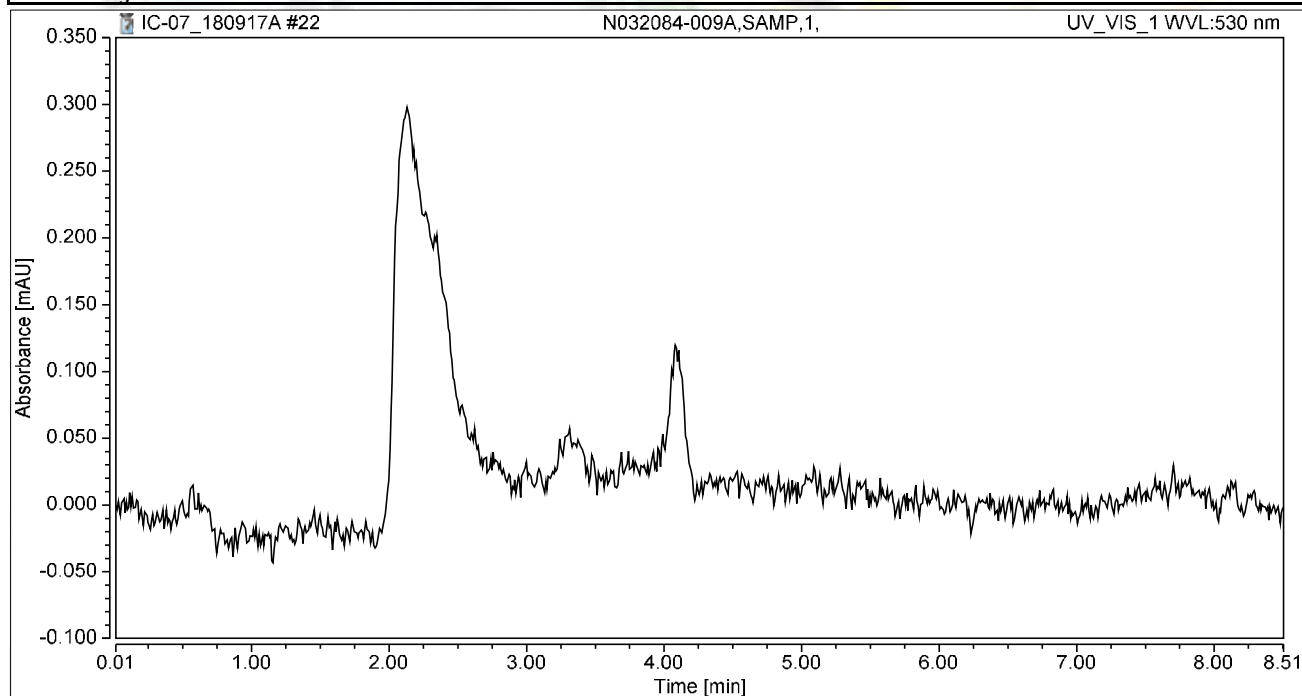
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.259	1.796	100.00	100.00	1.0288
<b>Total:</b>			<b>0.259</b>	<b>1.796</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-009A,SAMP,1,	Run Time (min):	8.49
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 13:26	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

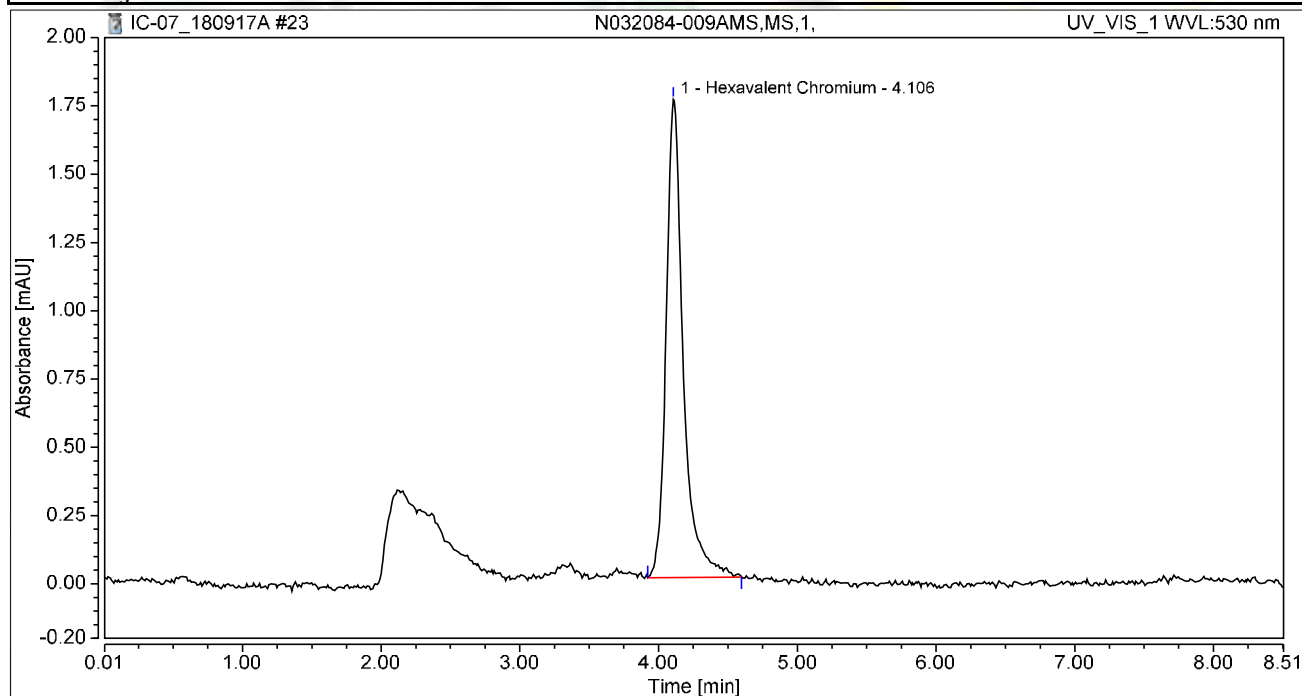
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-009AMS,MS,1,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 13:35	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

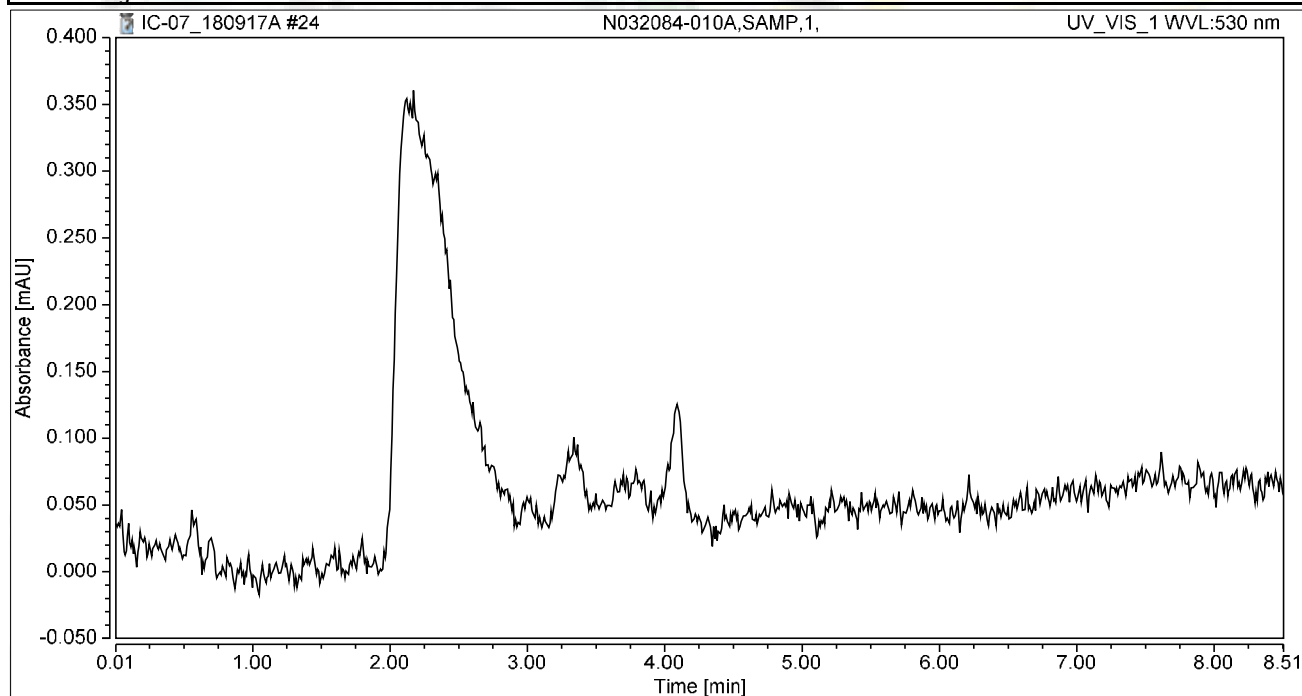
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.251	1.751	100.00	100.00	0.9964
<b>Total:</b>			<b>0.251</b>	<b>1.751</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-010A,SAMP,1,	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 13:45	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

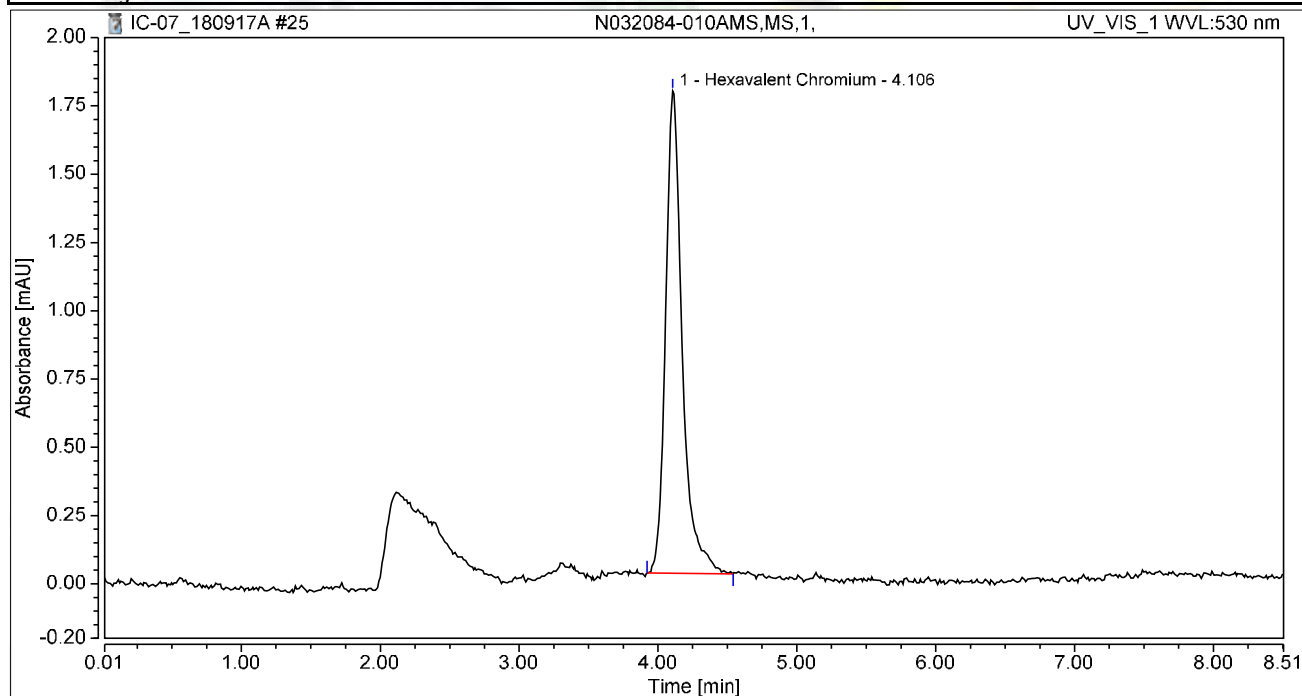
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032084-010AMS,MS,1,	Run Time (min):	8.49
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 13:54	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

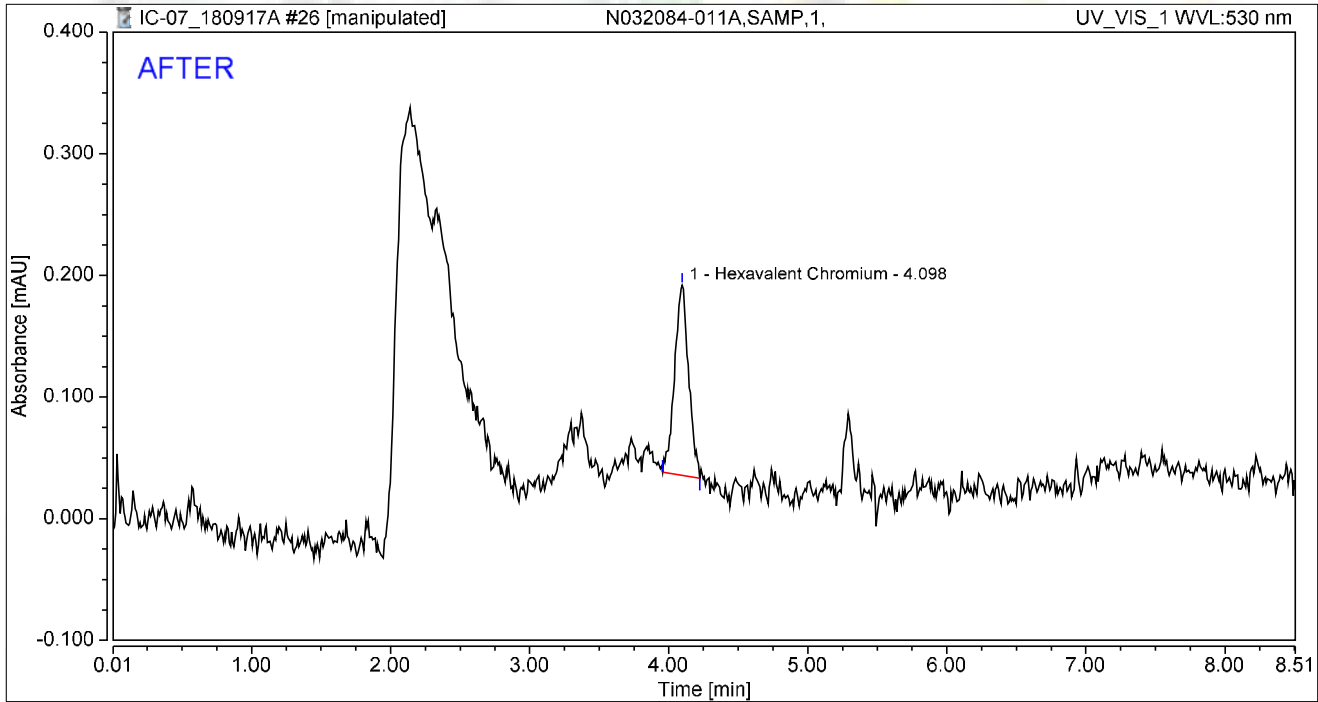
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.245	1.766	100.00	100.00	0.9738
<b>Total:</b>			<b>0.245</b>	<b>1.766</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032084-011A,SAMP,1,	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 14:04	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.018	0.156	100.00	100.00	0.0724
<b>Total:</b>			<b>0.018</b>	<b>0.156</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/20/2018

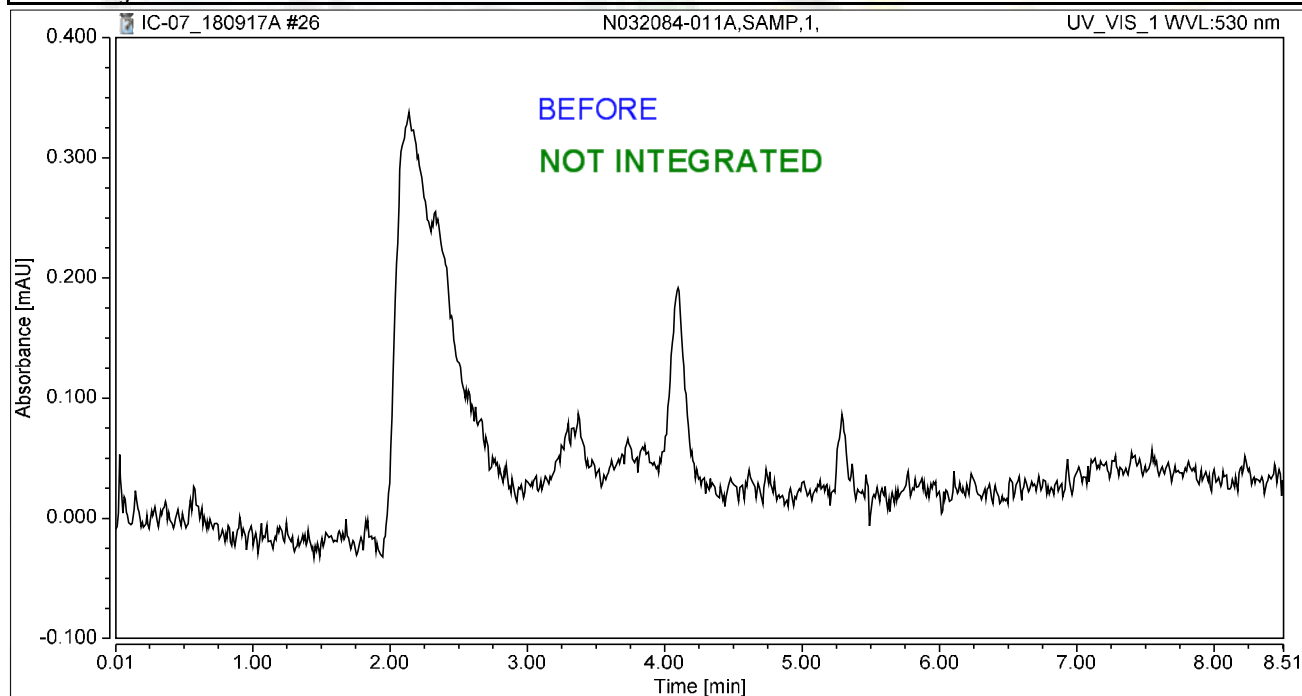


### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-011A,SAMP,1,	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 14:04	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

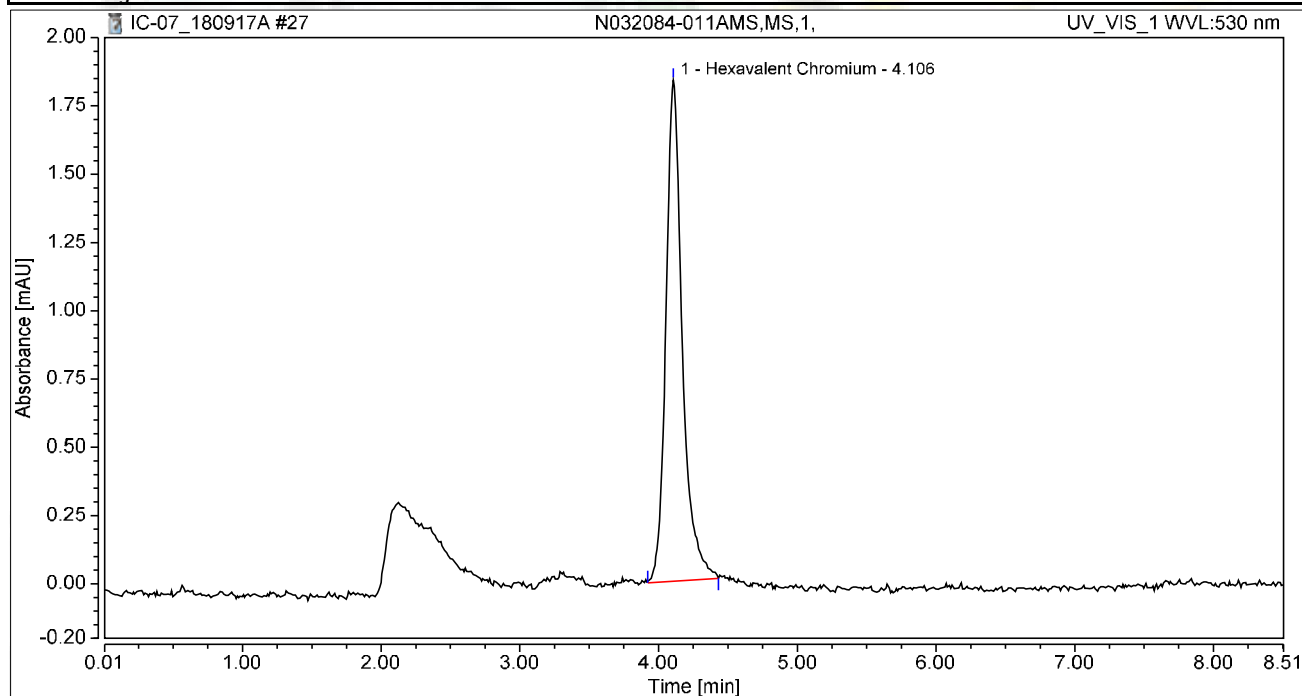
rba 9/20/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-011AMS,MS,1,	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 14:14	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

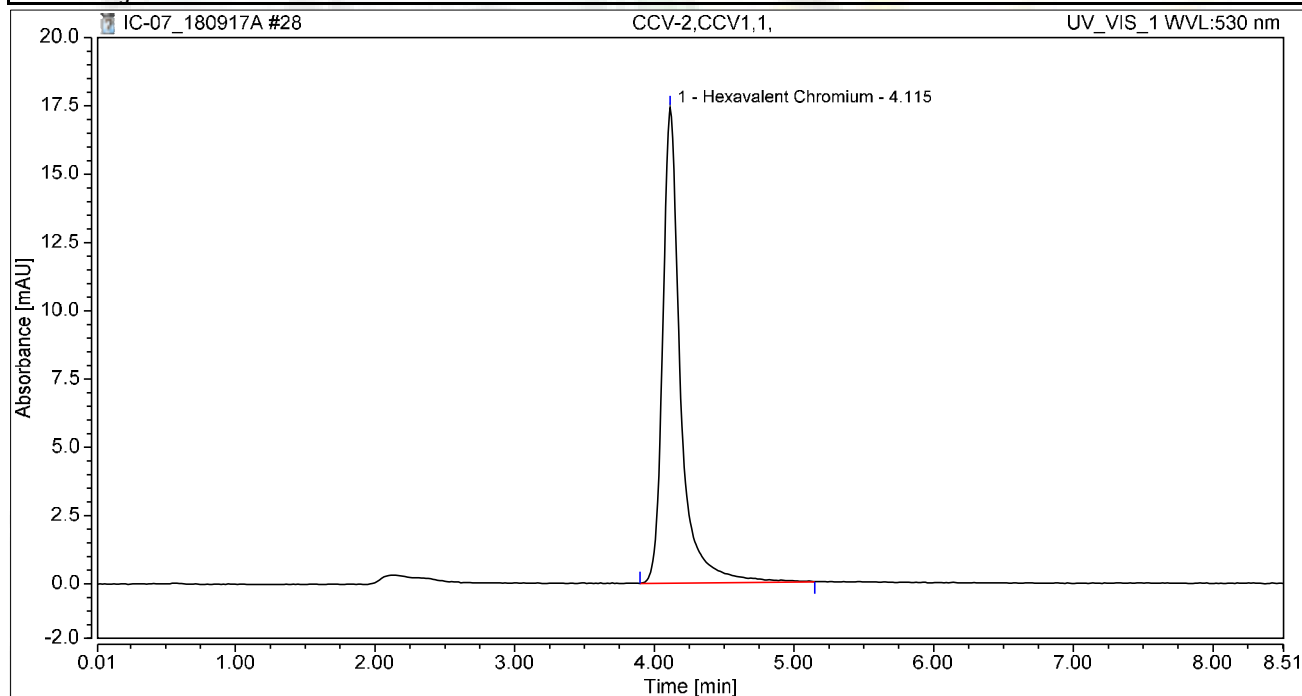
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.251	1.834	100.00	100.00	0.9972
<b>Total:</b>			<b>0.251</b>	<b>1.834</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-2,CCV1,1,	Run Time (min):	8.49
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 14:23	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

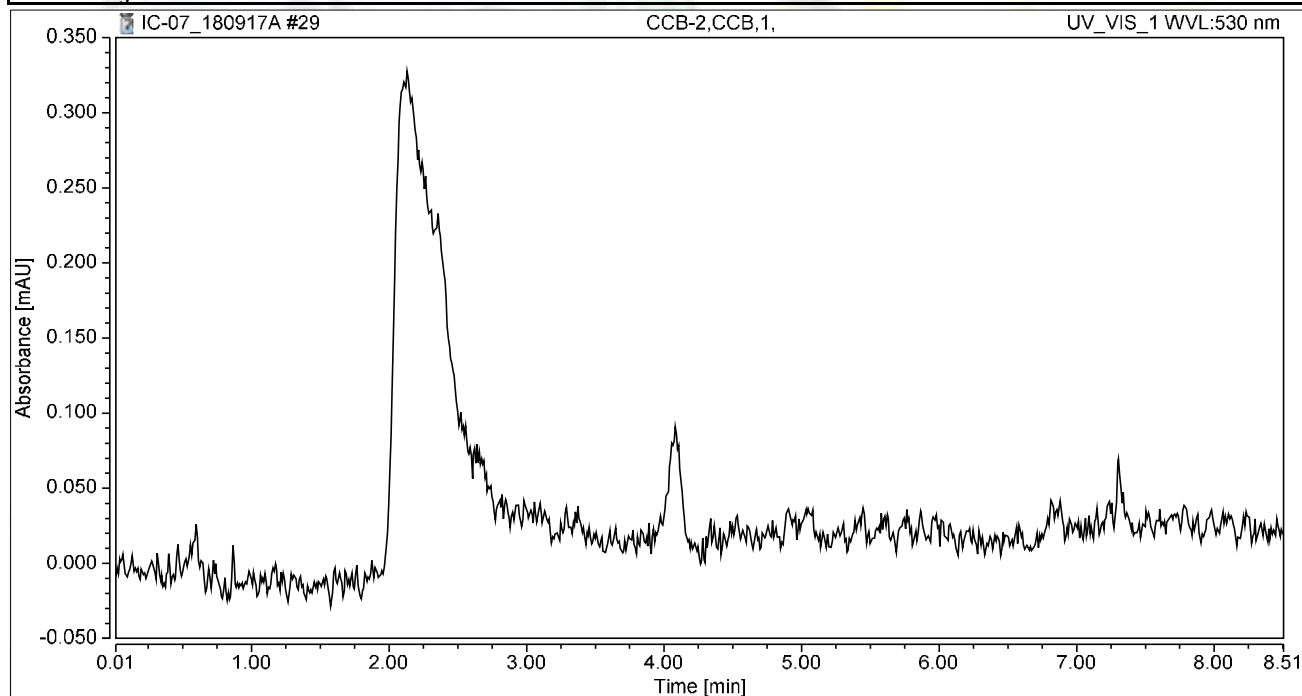
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.577	17.409	100.00	100.00	10.2458
<b>Total:</b>			<b>2.577</b>	<b>17.409</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-2,CCB,1,	Run Time (min):	8.49
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 14:32	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

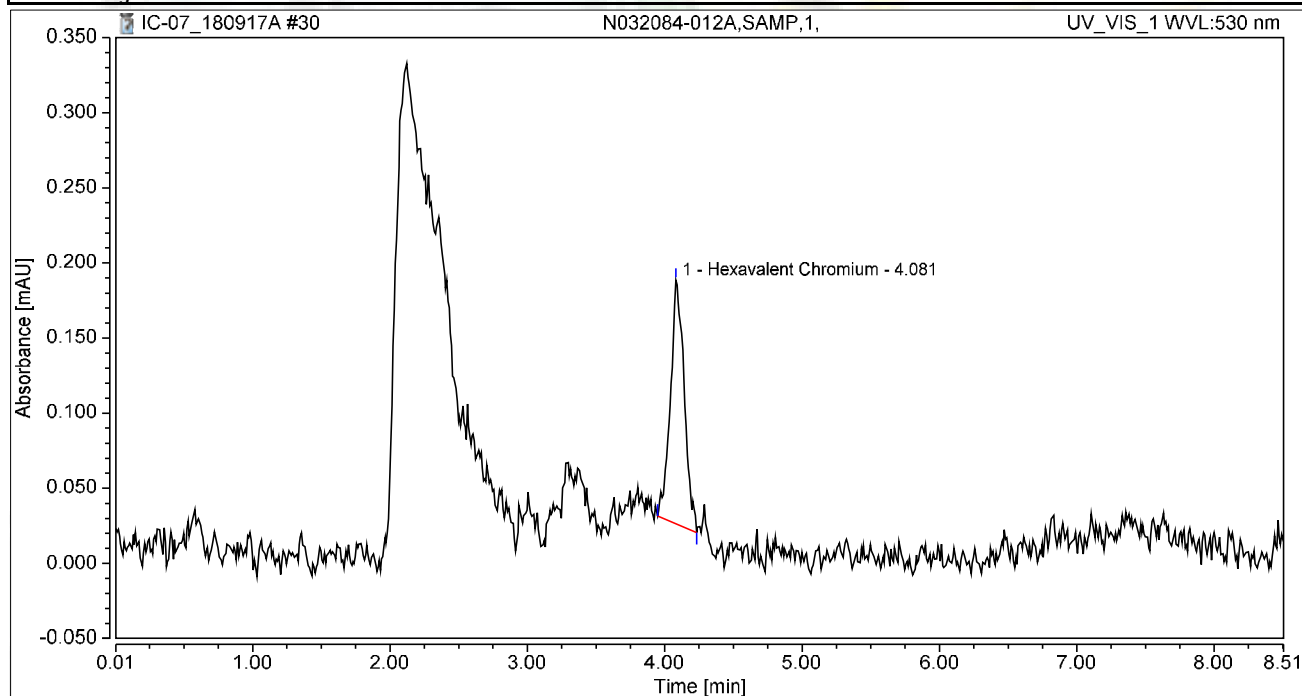
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032084-012A,SAMP,1,	Run Time (min):	8.50
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 14:42	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

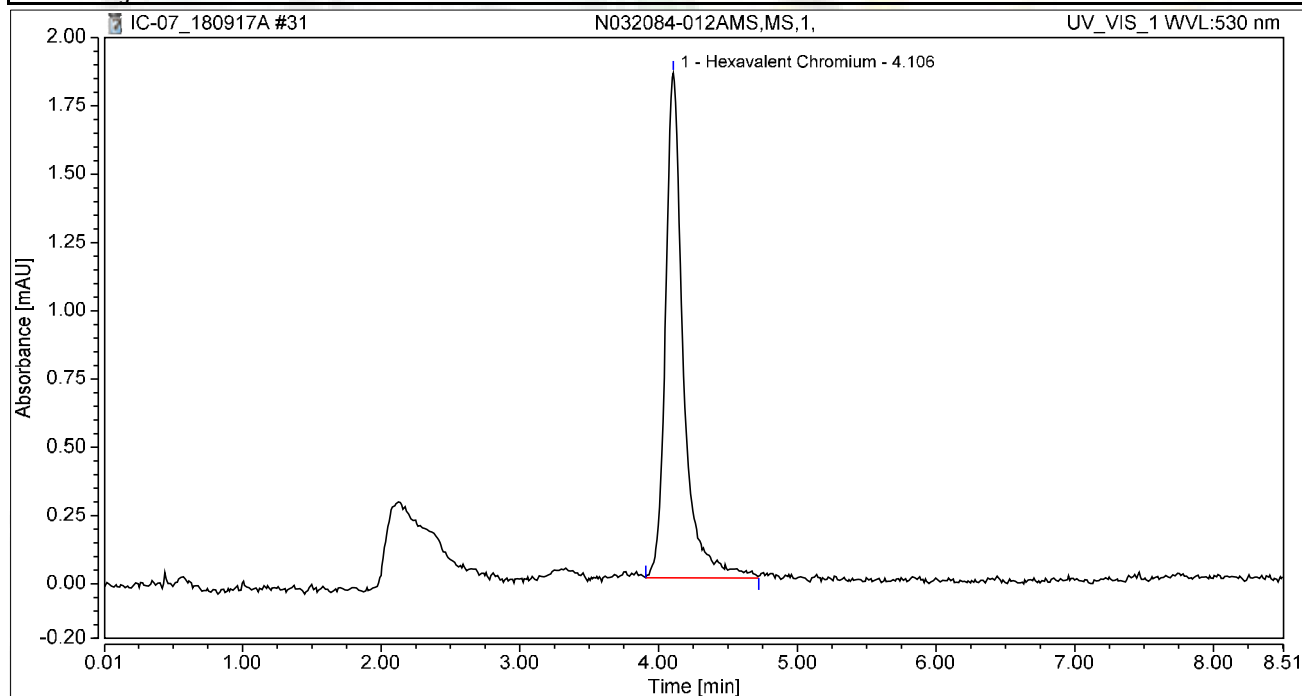
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.019	0.162	100.00	100.00	0.0753
<b>Total:</b>			<b>0.019</b>	<b>0.162</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032084-012AMS,MS,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 14:51	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

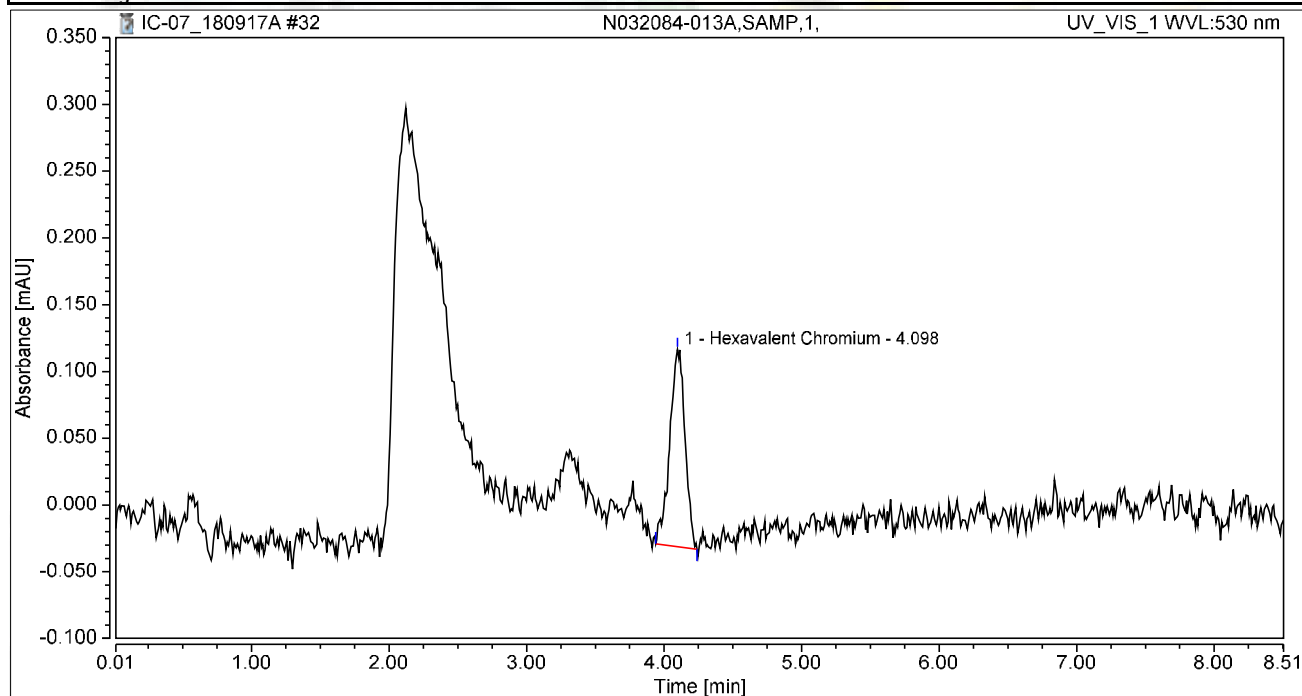
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.275	1.848	100.00	100.00	1.0924
<b>Total:</b>			<b>0.275</b>	<b>1.848</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032084-013A,SAMP,1,	Run Time (min):	8.49
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 15:01	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

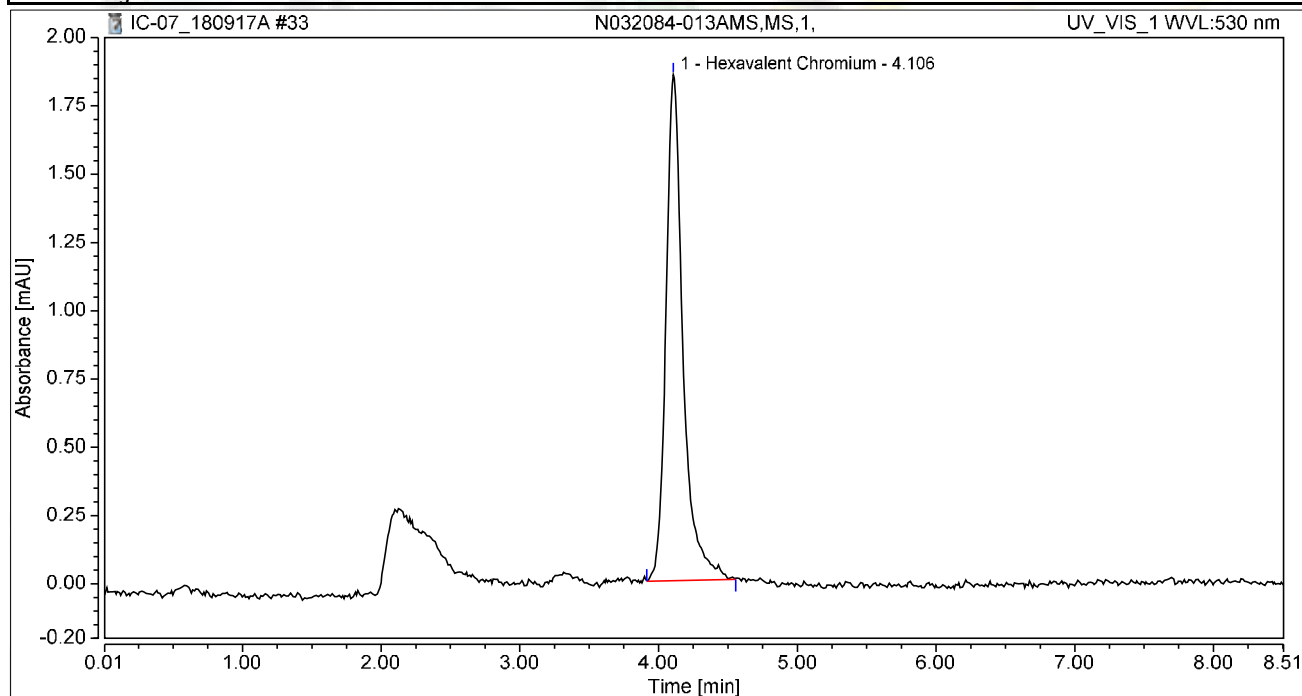
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.019	0.148	100.00	100.00	0.0757
<b>Total:</b>			<b>0.019</b>	<b>0.148</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-013AMS,MS,1,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 15:10	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.264	1.853	100.00	100.00	1.0514
<b>Total:</b>			<b>0.264</b>	<b>1.853</b>	<b>100.00</b>	<b>100.00</b>	

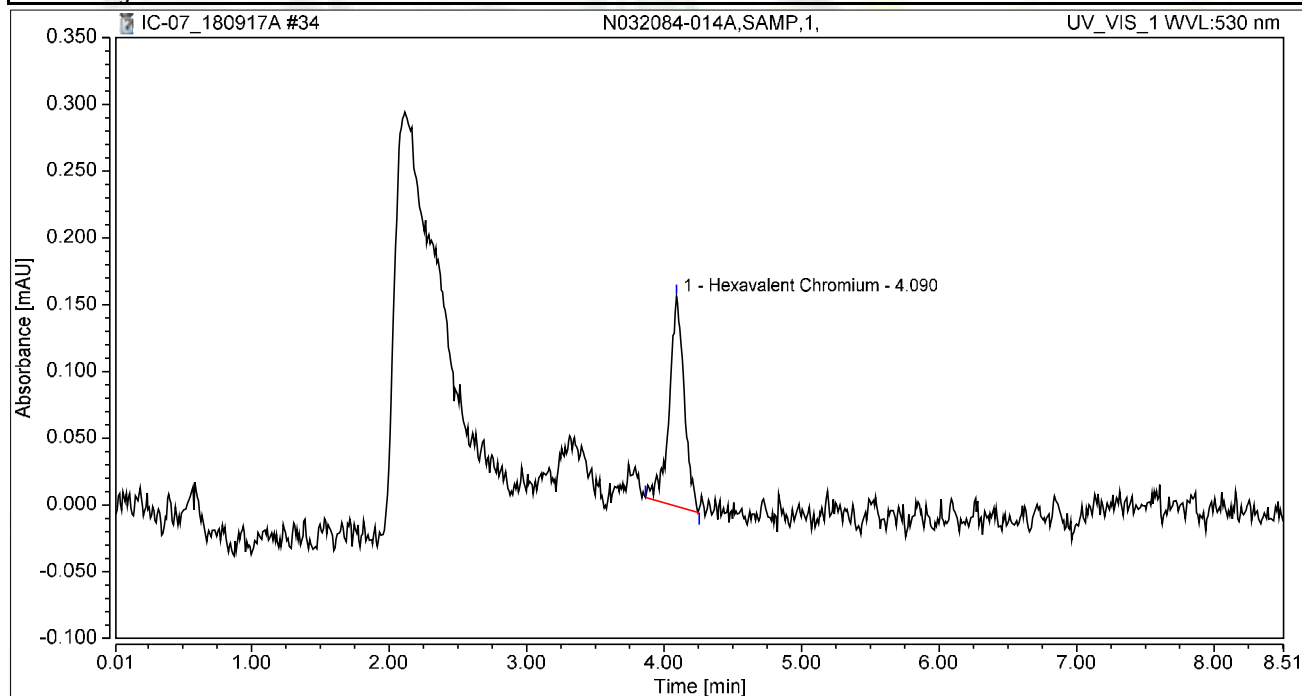


### Chromatogram and Results

#### Injection Details

Injection Name:	N032084-014A,SAMP,1,	Run Time (min):	8.49
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 15:20	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

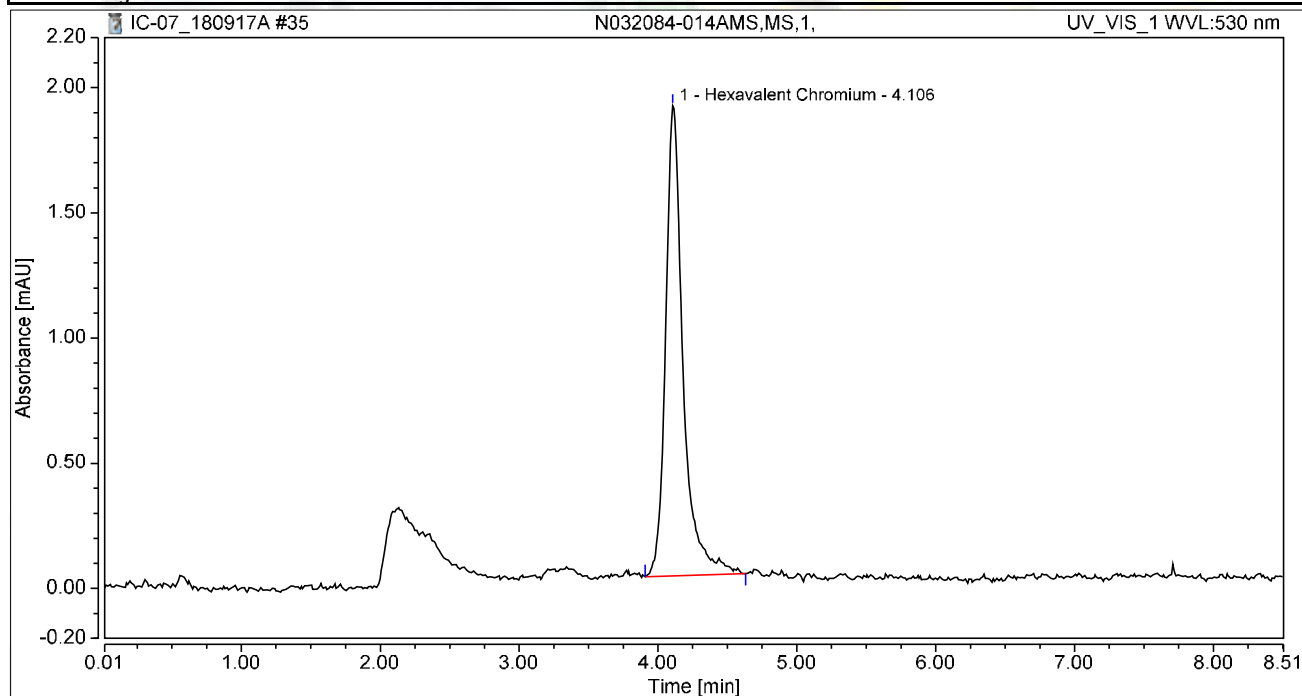
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	0.020	0.157	100.00	100.00	0.0796
<b>Total:</b>			<b>0.020</b>	<b>0.157</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032084-014AMS,MS,1,	Run Time (min):	8.49
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 15:29	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

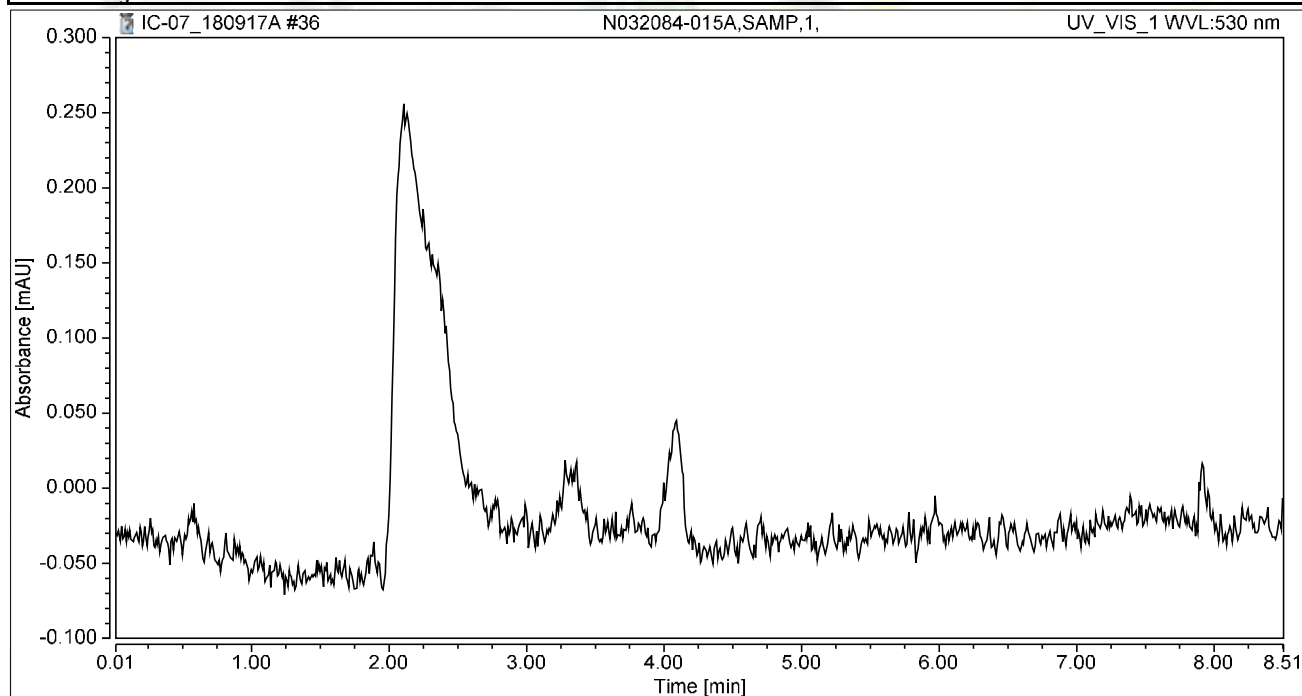
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.273	1.877	100.00	100.00	1.0852
<b>Total:</b>			<b>0.273</b>	<b>1.877</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032084-015A,SAMP,1,	Run Time (min):	8.49
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 15:38	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

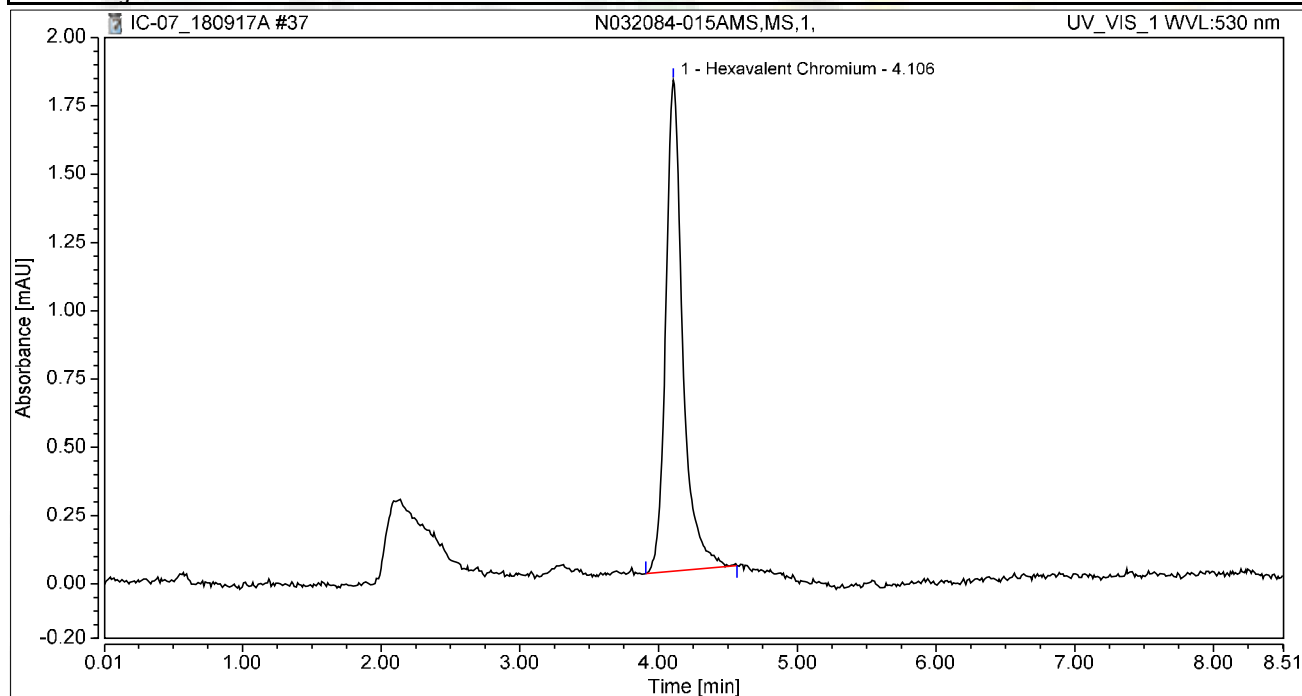
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-015AMS,MS,1,	Run Time (min):	8.50
Vial Number:	18	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 15:48	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

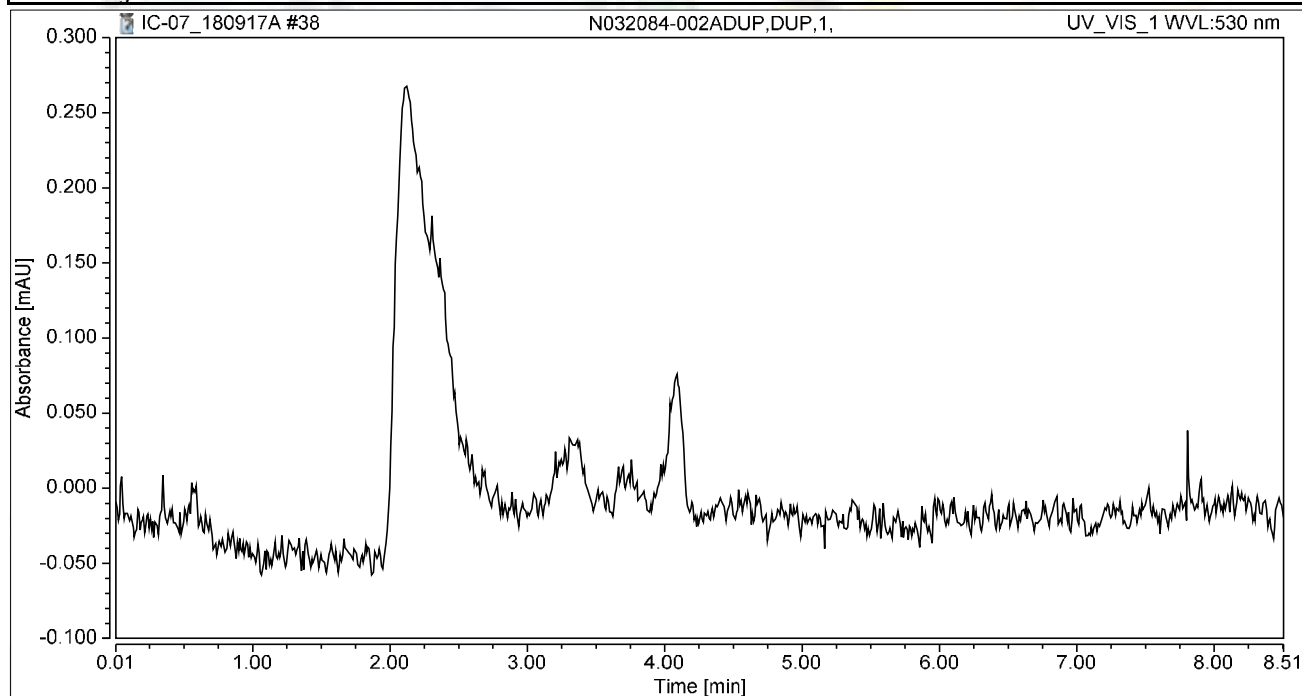
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.255	1.798	100.00	100.00	1.0127
<b>Total:</b>			<b>0.255</b>	<b>1.798</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032084-002ADUP,DUP,1,	Run Time (min):	8.50
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 15:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

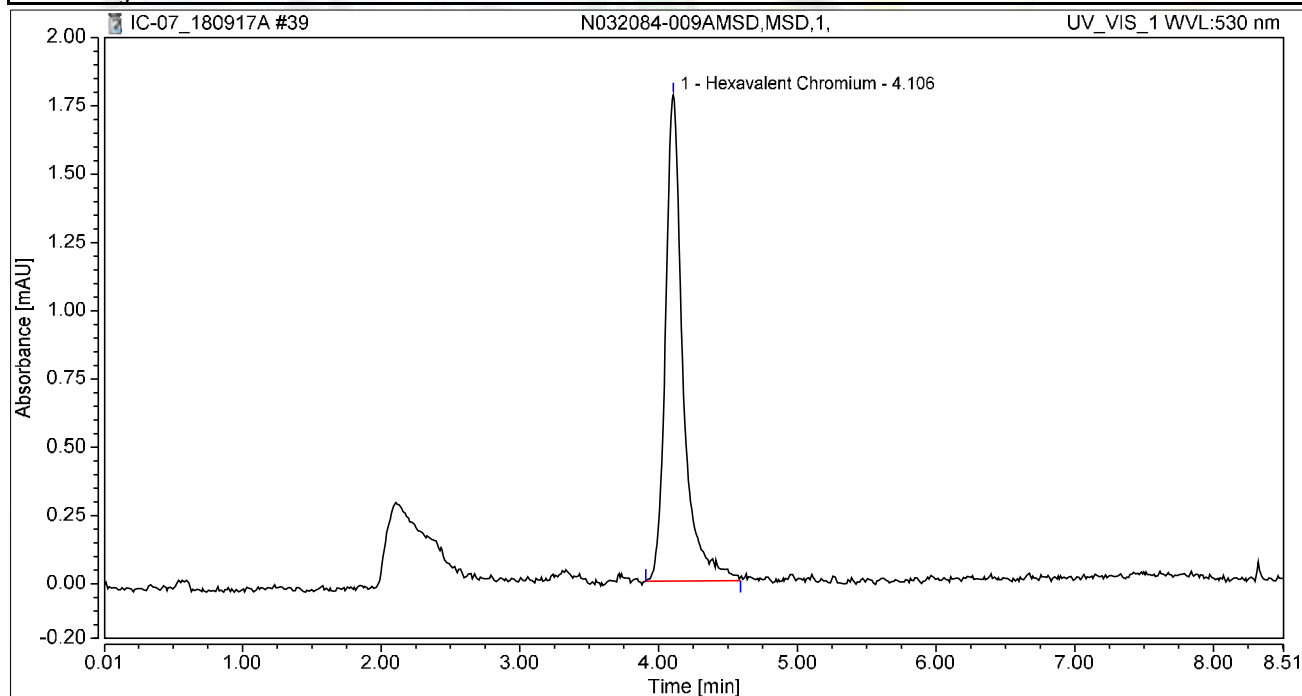
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032084-009AMSD,MSD,1,	Run Time (min):	8.50
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 16:07	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

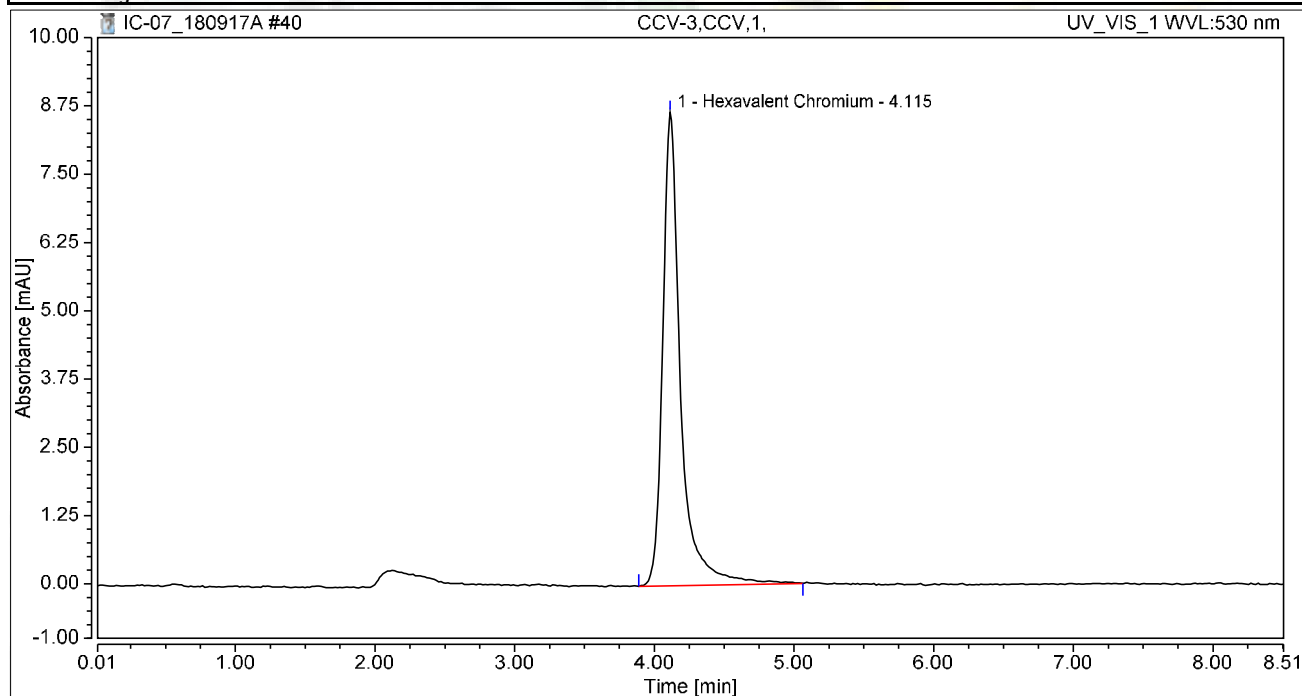
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.260	1.781	100.00	100.00	1.0353
<b>Total:</b>			<b>0.260</b>	<b>1.781</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-3,CCV,1,	Run Time (min):	8.49
Vial Number:	21	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 16:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

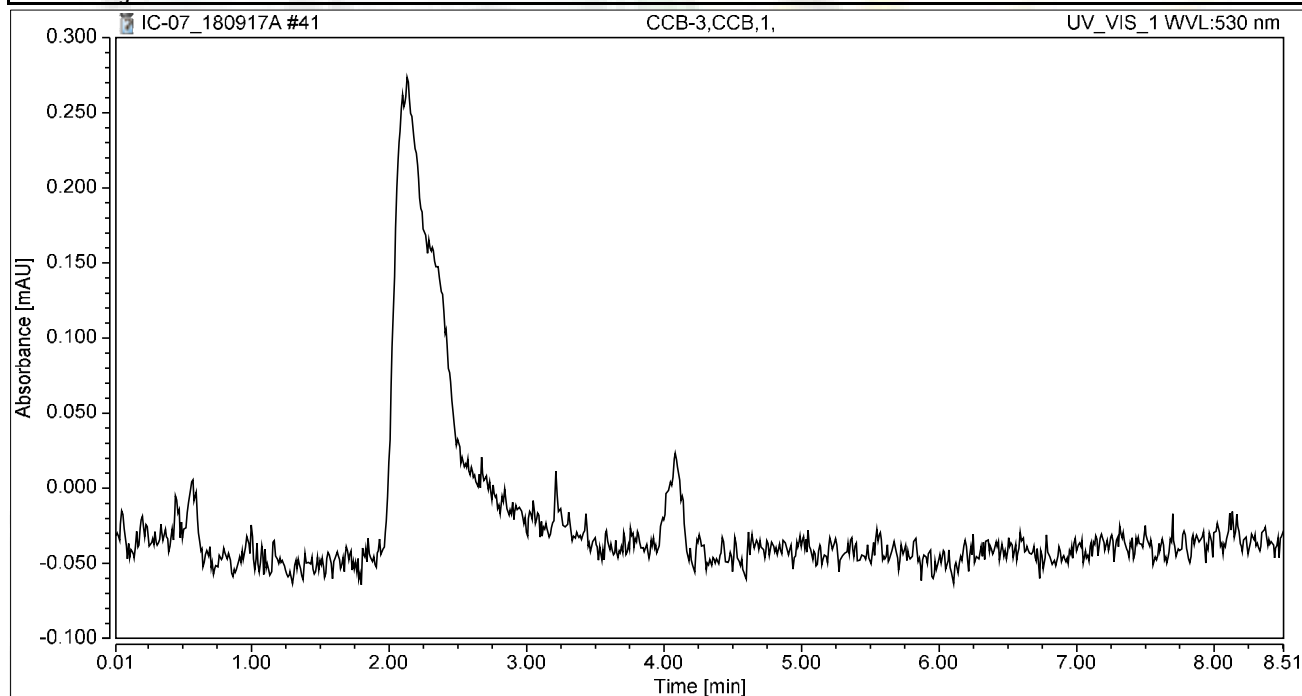
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.288	8.665	100.00	100.00	5.1197
<b>Total:</b>			<b>1.288</b>	<b>8.665</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-3,CCB,1,	Run Time (min):	8.49
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180827_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	17/Sep/18 16:26	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	



# SM 4500-NO3F



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number:                     R127753                     Analyst:                     QBM                    

ASSET #:                     N032084                     Date Analyzed:                     9/21/2018                    

Method:           4500\_N03          

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.	X					
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)	X					
3. ICV within ± 15% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.	X					
5. CCV within ± 15% of expected value.	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)	X					
<b>Sample Information</b>						
8. All samples are within linear range.	X					
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer                     QBM                    

Date:           9/27/18          

2nd Level Reviewer                     *Manny* 9/27/2018                    

Date:                     —

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 4500N03F  
**TEST NAME:** Nitrate/Nitrite-N by Automated Cadmium Reduction  
**MATRIX:** Groundwater

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

$$\text{Nitrate/Nitrite-N, mg/L} = A * DF$$

where:

A = mg/L, instrument calculated concentration

DF = dilution factor

For: **N032084-001E**

The concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{Nitrate/Nitrite-N} &= 0.4059 * 1 \\ &= 0.4059 \text{ mg/L} \end{aligned}$$

Reporting result in two significant figures,

$$\text{Nitrate/Nitrite-N} = 0.41 \text{ mg/L}$$

# INITIAL CALIBRATION DATA SUMMARY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## EPA 353.2 NO3 as N (NO3CD) - Endpoint

## General setup

Measuring unit	ppm
Number of decimals	4
Stabilization time (sec)	26
Measurement time (sec)	3
Sample volume (µl)	450
Filter	546
Reagent prime	No
CD Reduction	Yes

## Limits and dilution

Low level	-0.2
High level	4
Max linearity	4
Blank min	0
Blank max	0.049
Postdilution factor %	10
Factor Calculations	No

## Washes

Number of final washes	6
Wash every	R1, R2

## O.D. Corrections

Carry Over	No
Carry Over value	0.0000
Blank	No
Gain	No

## Reagents

N.	Volume (µl)	Incubation time (sec)
1	200	102
2	300	663
3	0	0

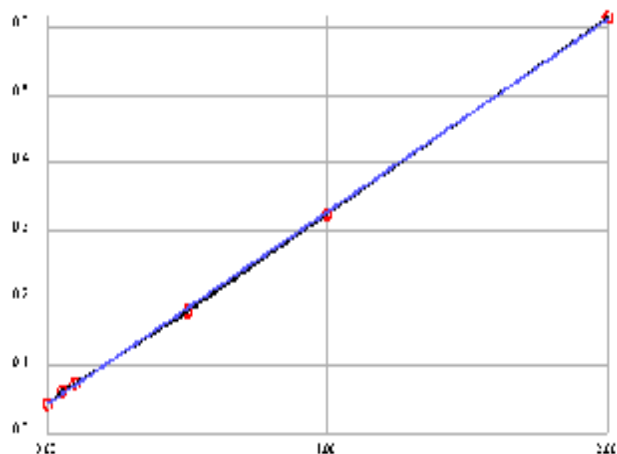
## QC

N.	Value	Tolerance
1	1	0.1

## Calibration

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	$y = 0.2837x + 0.0439$
Correlation	.999868



Calibrant	Energy	Set	Conc
1	0.0438	0.0000	-0.0005
2	0.0618	0.0500	0.0629
3	0.0746	0.1000	0.1080
4	0.1805	0.5000	0.4813
5	0.3244	1.0000	0.9885
6	0.6141	2.0000	2.0097

Notes:

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147332</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.530	0.050	0.5000	0	106	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147343</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.512	0.050	0.5000	0	102	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147354</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.475	0.050	0.5000	0	95.1	90	110				

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147358</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.492	0.050	0.5000	0	98.4	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values



# INITIAL CALIBRATION AND CONTINUING CALIBRATION BLANK SUMMARY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147333</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147344</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147355</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>127753</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127753</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3147359</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Advanced Technology Laboratories, Inc.

3151 W. Post Rd.  
Las Vegas, NV. 89118  
702-307-2659  
702-307-2691  
[www.atl-labs.com](http://www.atl-labs.com)

Time start: 09-21-2018 17:34

Time end: 09-21-2018 20:08

		EPA 353.2 NO3 as N		
		ppm	Flags	OD
1	<BLANK>	19:32:53	0.0079	0.0462
2	<BLANK>	19:33:54	0.0023	0.0446
3	<CAL1>	19:34:48	-0.0005 [0]	0.0438
4	<CAL2>	19:35:50	0.0629 [0.05]	0.0618
5	<CAL3>	19:36:45	0.1080 [0.1]	0.0746
6	<CAL4>	19:37:39	0.4813 [0.5]	0.1805
7	<CAL5>	19:38:41	0.9885 [1]	0.3244
8	<CAL6>	19:39:36	2.0097 [2]	0.6141
9	,BLANK,BLANK,1, <b>NOT REPORTED</b>	19:40:32	0.1014	0.0727
10	,ICV,ICV,1,	19:41:32	0.5303	0.1944
11	,ICB,ICB,1,	19:42:27	0.0266	0.0515
12	,MB-H2O,MBLK,1,	19:43:23	0.0139	0.0479
13	,LCS-H2O,LCS,1,	19:44:23	0.5367	0.1962
14	,N032084-001E,SAMP,1,	19:45:18	0.4059	0.1591
15	,N032084-002E,SAMP,1,	19:46:14	0.5152	0.1901
16	,N032084-003E,SAMP,1,	19:47:16	0.3788	0.1514
17	,N032084-003EDUP,DUP,1,	19:48:10	0.3960	0.1563
18	,N032084-004E,SAMP,1,	19:49:05	0.3357	0.1392
19	,N032084-004EMS,MS,1,	19:50:07	0.8624	0.2886
20	,N032084-004EMSD,MSD,1,	19:51:01	0.9466	0.3125
21	,BLANK, <b>NOT REPORTED</b>	19:51:57	0.0411	0.0556
22	,CCV-1,CCV,1,	19:52:46	0.5120	0.1892
23	,CCB-1,CCB,1,	19:53:28	0.0235	0.0506
24	,N032084-005E,SAMP,1,	19:54:17	0.5190	0.1912
25	,N032084-006E,SAMP,1,	19:54:59	0.3611	0.1464
26	,N032084-007E,SAMP,1,	19:55:49	0.3742	0.1501

			EPA 353.2 NO3 as N		
			ppm	Flags	OD
27	,N032084-008E,SAMP,1,	19:56:32	0.3615		0.1465
28	,N032084-009E,SAMP,1,	19:57:14	0.3456		0.1420
29	,N032084-010E,SAMP,1,	19:58:04	0.3770		0.1509
30	,N032084-011E,SAMP,1,	19:58:46	0.3467		0.1423
31	,N032084-012E,SAMP,1,	19:59:29	0.4165		0.1621
32	,N032084-013E,SAMP,1,	20:00:17	0.4186		0.1627
33	,BLANK, <b>NOT REPORTED</b>	20:01:01	0.0168		0.0487
34	,CCV-2,CCV,1,	20:01:44	0.4753		0.1788
35	,CCB-2,CCB,1,	20:02:32	0.0143		0.0480
36	,N032084-014E,SAMP,1,	20:03:15	0.3914		0.1550
37	,N032084-015E,SAMP,1,	20:04:03	0.4387		0.1684
38	,BLANK, <b>NOT REPORTED</b>	20:04:47	0.0199		0.0496
39	,CCV-3,CCV,1,	20:05:29	0.4919		0.1835
40	,CCB-3,CCB,1,	20:06:18	0.0157		0.0484

Nitrate/Nitrite as N by Cadmium Reduction Preparation and Runlog

**Matrix:**

Method: SM 4500-NO3-F/ EPA 353.2 Reagent ID #  
 Instrument: Easy Chem Analyzer Ammonium Chloride reagent/Buffer: R180904B  
 Color reagent: R180904C  
 2% Copper Sulfate: R180904A  
 Ammonium Hydroxide: CINV-180703A

Date Analyzed: 9/21/2018  
 Time Analyzed: 5:34 PM  
 Analyzed By: QBM

Sample ID.	Sample Wt./Vol.	Sample pH	Std Code	Spike Amt Added (mL)	Spike Conc.(PPM)	Final Volume (mL)	Dilution (F/I)	Reading & Calculations (mg/L)	Comments
N032084-001E		8.11							
N032084-002E		8.17							
N032084-003E		7.94							
N032084-004E		7.63							
N032084-005E		7.16							
N032084-006E		7.66							
N032084-007E		7.59							
N032084-008E		7.24							
N032084-009E		7.2							
N032084-010E		7.36							
N032084-011E		7.01							
N032084-012E		6.36							
N032084-013E		8.57							
N032084-014E		6.58							
N032084-015E		7.73							

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Nitrate/Nitrite by Cadmium Reduction**  
 Method Number: SM4500NO3F  
 Analysis Date(s): 10/25,2017, 10/26/2017, 10/27/2017  
 Analyst/Technician: Quennie B. Manimtim

Matrix: **Water**  
 Unit: mg/L  
 Spike Conc: 0.05 mg/L

Analyte	#1	#2	#3	#4	#5	#6	#7	Ave	SD	t <sub>(n-1)</sub> value	MDL	PQL
Nitrate/Nitrite as N	0.0573	0.0562	0.0500	0.0730	0.0698	0.0637	0.0564	0.0609	0.0082	3.143	0.0259	0.05
<b>Method Blank</b>												
Nitrate/Nitrite as N	0.0160	0.0067	0.0064	0.0204	0.0173	0.0036	0.0083	0.0112	0.0065	3.143	0.0317	0.05
<b>MDL:</b>	<b>0.0317</b>	<b>mg/L</b>										





# EPA 6010B Dissolved



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70687  
 ASSET #: N032084

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7 DISS  
 EPA 6020 / 200.8  
 EPA 7470A / 7471A/245.1  
 Other \_\_\_\_\_

Date Analyzed: 9/25/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)			X			X
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X	X	
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits		X		X	X	
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X			X	X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

%Rec of Fe in N032084-001BPS, low bias. However, LCS passed criteria.

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer [Signature] 9/26/2018

Date: 9/26/18  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## SAMPLE CALCULATION

**METHOD:** EPA 6010B  
**TEST NAME:** Heavy Metals by ICP  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Iron concentration, in ug/L, in the original sample as follows:

$$\text{Iron, ug/L} = A * DF * PF * CF$$

where:

A = mg/L, calculated concentration

DF = Dilution Factor

PF = Final Volume of Digestate, mL / Amount of Sample, mL

CF= Conversion Factor from mg/L to ug/L, 1000

For Sample **N032084-004B**, the concentration in ug/L is calculated as follows:

$$\text{Iron, ug/L} = 0.0386 * 1 * (25/25) * 1000$$

$$\text{Iron, ug/L} = 38.6$$

Reporting results in two significant figures,

$$\text{Iron, ug/L} = 39$$

# % RSD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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RSD SUMMARY: 180925A

Instrument ID: ICP-02

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Fe	0	4.19	15	PASS
Standard1	ICAL	1	Fe	0.02	2.94	15	PASS
Standard2	ICAL	1	Fe	0.05	1.024	15	PASS
Standard3	ICAL	1	Fe	2	0.68	15	PASS
Standard4	ICAL	1	Fe	5	0.38	15	PASS
Standard5	ICAL	1	Fe	7.5	0.8	15	PASS
Standard6	ICAL	1	Fe	10	0.17	15	PASS
Standard7	ICAL	1	Fe	20	0.18	15	PASS
ICV	ICV	1	Fe	10.08	0.083	15	PASS
ICB	ICB	1	Fe	0.0012	40.8	15	<PQL
LLICV1	CCV1	1	Fe	0.02	2.77	20	PASS
ICSA1	ICSA	1	Fe	181.31	0.53	15	PASS
ICSAB1	ICSAB	1	Fe	178.27	0.34	15	PASS
CCV1	CCV	1	Fe	10.077	0.05	15	PASS
CCB1	CCB	1	Fe	0.0012	90.19	15	<PQL
CCV2	CCV	1	Fe	10.14	0.16	15	PASS
CCB2	CCB	1	Fe	0.00039	88.086	15	<PQL
CCV3	CCV	1	Fe	10.11	0.044	15	PASS
CCB3	CCB	1	Fe	0.0014	23.79	15	<PQL
MB-70687	MBLK	1	Fe	-0.00003	1303.75	15	<PQL
LCS-70687	LCS	1	Fe	0.1	0.43	15	PASS
N032084-001B	SAMP	1	Fe	0.0042	5.11	15	PASS
N032084-001B	SAMP	5	Fe	0.001	32.14	15	<PQL
N032084-001B-PS	PS	1	Fe	0.12	0.31	15	PASS
N032084-001B-MS	MS	1	Fe	0.11	0.14	15	PASS
CCV4	CCV	1	Fe	10.015	0.17	15	PASS
CCB4	CCB	1	Fe	0.0019	20	15	<PQL
ICSA2	ICSA	1	Fe	181.11	0.27	15	PASS
ICSAB2	ICSAB	1	Fe	176.87	0.23	15	PASS
N032084-001B-MSD	MSD	1	Fe	0.11	0.68	15	PASS
N032084-002B	SAMP	1	Fe	0.014	3.95	15	PASS
N032084-003B	SAMP	1	Fe	0.0084	4.12	15	PASS
N032084-004B	SAMP	1	Fe	0.039	1.88	15	PASS
N032084-005B	SAMP	1	Fe	0.009	2.73	15	PASS
N032084-006B	SAMP	1	Fe	0.0078	10.17	15	PASS
N032084-007B	SAMP	1	Fe	0.0051	6.78	15	PASS
N032084-008B	SAMP	1	Fe	0.0073	2.72	15	PASS
N032084-009B	SAMP	1	Fe	0.0051	17.41	15	<PQL
N032084-010B	SAMP	1	Fe	0.0078	5.35	15	PASS
CCV5	CCV	1	Fe	10.001	0.19	15	PASS
CCB5	CCB	1	Fe	0.0025	18.7	15	<PQL
N032084-011B	SAMP	1	Fe	0.0058	7.77	15	PASS

**RSD SUMMARY: 180925A****Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
N032084-012B	SAMP	1	Fe	0.005	9.38	15	PASS
N032084-013B	SAMP	1	Fe	0.0072	2.82	15	PASS
N032084-014B	SAMP	1	Fe	0.0042	9.6	15	PASS
N032084-015B	SAMP	1	Fe	0.0092	6.13	15	PASS
CCV6	CCV	1	Fe	10.069	0.2	15	PASS
CCB6	CCB	1	Fe	0.0024	1.91	15	PASS
CCV7	CCV	1	Fe	10.11	0.13	15	PASS
CCB7	CCB	1	Fe	0.0019	30.6	15	<PQL
CCV8	CCV	1	Fe	10.04	0.05	15	PASS
CCB8	CCB	1	Fe	0.0022	27.98	15	<PQL
ICSA3	ICSA	1	Fe	182.01	0.2	15	PASS
ICSAB3	ICSAB	1	Fe	177.72	0.25	15	PASS

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INJECTION LOG: 180925A**

**Instrument ID: ICP-02**

STANDARD CODE	
Standard1	MWST-180420A,0.5<50mL
Standard2	MWST-180601F
Standard3	MWST-180601J,5<50mL
Standard4	MWST-180601J,12.5<50mL
Standard5	MWST-180601J,15<40mL
Standard6	MWST-180601J,25<50mL
Standard7	MWST-180601J
ICV	MWST-180430E
CCV	MWST-180601J,25<50mL
ICSA/ICSAB	MWST-180420F/ -180730A
Int. Std. (Y)	MSST-180420B/A
PS Spike	MWST-180517E/ -180430F/ -180601B

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	09/25/2018	07:44:30 AM
2	Standard1	ICAL	1	09/25/2018	07:49:50 AM
3	Standard2	ICAL	1	09/25/2018	07:55:09 AM
11	Standard3	ICAL	1	09/25/2018	08:00:28 AM
12	Standard4	ICAL	1	09/25/2018	08:05:49 AM
6	Standard5	ICAL	1	09/25/2018	08:11:12 AM
7	Standard6	ICAL	1	09/25/2018	08:16:31 AM
8	Standard7	ICAL	1	09/25/2018	08:21:24 AM
9	ICV	ICV	1	09/25/2018	08:24:51 AM
1	ICB	ICB	1	09/25/2018	08:31:45 AM
2	LLICV1	CCV1	1	09/25/2018	08:37:04 AM
4	ICSA1	ICSA	1	09/25/2018	08:42:22 AM
5	ICSAB1	ICSAB	1	09/25/2018	08:49:53 AM
38	MB-70629	MBLK	1	09/25/2018	08:56:57 AM
39	LCS-70629	LCS	1	09/25/2018	09:02:17 AM
40	N032065-003B	SAMP	1	09/25/2018	09:07:37 AM
41	N032065-003B	SAMP	5	09/25/2018	09:12:57 AM
42	N032065-003B-PS	PS	1	09/25/2018	09:18:18 AM
43	N032065-003B-MS	MS	1	09/25/2018	09:23:39 AM
44	N032065-003B-MSD	MSD	1	09/25/2018	09:28:59 AM
45	N032065-004B	SAMP	1	09/25/2018	09:34:20 AM
46	N032065-005B	SAMP	1	09/25/2018	09:39:42 AM
47	N032065-006B	SAMP	1	09/25/2018	09:45:02 AM
7	CCV1	CCV	1	09/25/2018	09:50:24 AM
1	CCB1	CCB	1	09/25/2018	09:57:18 AM
48	N032065-007B	SAMP	1	09/25/2018	10:02:51 AM
49	N032065-008B	SAMP	1	09/25/2018	10:08:12 AM
50	N032065-009B	SAMP	1	09/25/2018	10:13:35 AM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
51	N032065-010B	SAMP	1	09/25/2018	10:18:56 AM
52	N032065-013B	SAMP	1	09/25/2018	10:24:17 AM
53	N032065-014B	SAMP	1	09/25/2018	10:29:37 AM
54	N032065-015B	SAMP	1	09/25/2018	10:34:58 AM
55	MB-70628	MBLK	1	09/25/2018	10:40:19 AM
56	LCS-70628	LCS	1	09/25/2018	10:45:39 AM
57	N032065-003C	SAMP	1	09/25/2018	10:50:59 AM
7	CCV2	CCV	1	09/25/2018	10:56:20 AM
1	CCB2	CCB	1	09/25/2018	11:03:14 AM
58	N032065-003C	SAMP	5	09/25/2018	11:08:32 AM
59	N032065-003C-PS	PS	1	09/25/2018	11:13:53 AM
60	N032065-003C-MS	MS	1	09/25/2018	11:19:15 AM
61	N032065-003C-MSD	MSD	1	09/25/2018	11:24:38 AM
62	N032065-004C	SAMP	1	09/25/2018	11:30:01 AM
63	N032065-005C	SAMP	1	09/25/2018	11:35:37 AM
64	N032065-006C	SAMP	1	09/25/2018	11:40:58 AM
65	N032065-007C	SAMP	1	09/25/2018	11:46:20 AM
66	N032065-008C	SAMP	1	09/25/2018	11:51:42 AM
67	N032065-009C	SAMP	1	09/25/2018	11:57:04 AM
7	CCV3	CCV	1	09/25/2018	12:02:26 PM
1	CCB3	CCB	1	09/25/2018	12:09:19 PM
68	N032065-010C	SAMP	1	09/25/2018	12:14:38 PM
69	N032065-013C	SAMP	1	09/25/2018	12:20:02 PM
70	N032065-014C	SAMP	1	09/25/2018	12:25:23 PM
71	N032065-015C	SAMP	1	09/25/2018	12:30:48 PM
72	MB-70687	MBLK	1	09/25/2018	12:36:10 PM
73	LCS-70687	LCS	1	09/25/2018	12:41:31 PM
74	N032084-001B	SAMP	1	09/25/2018	12:46:52 PM
75	N032084-001B	SAMP	5	09/25/2018	12:52:14 PM
76	N032084-001B-PS	PS	1	09/25/2018	12:57:35 PM
77	N032084-001B-MS	MS	1	09/25/2018	01:02:57 PM
7	CCV4	CCV	1	09/25/2018	01:08:19 PM
1	CCB4	CCB	1	09/25/2018	01:15:13 PM
4	ICSA2	ICSA	1	09/25/2018	01:20:02 PM
5	ICSAB2	ICSAB	1	09/25/2018	01:27:33 PM
78	N032084-001B-MSD	MSD	1	09/25/2018	01:34:37 PM
79	N032084-002B	SAMP	1	09/25/2018	01:39:59 PM
80	N032084-003B	SAMP	1	09/25/2018	01:45:20 PM
81	N032084-004B	SAMP	1	09/25/2018	01:50:41 PM
82	N032084-005B	SAMP	1	09/25/2018	01:56:03 PM
83	N032084-006B	SAMP	1	09/25/2018	02:01:25 PM
84	N032084-007B	SAMP	1	09/25/2018	02:06:47 PM
85	N032084-008B	SAMP	1	09/25/2018	02:12:10 PM
86	N032084-009B	SAMP	1	09/25/2018	02:17:31 PM
87	N032084-010B	SAMP	1	09/25/2018	02:22:53 PM
7	CCV5	CCV	1	09/25/2018	02:28:16 PM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CCB5	CCB	1	09/25/2018	02:33:09 PM
88	N032084-011B	SAMP	1	09/25/2018	02:38:27 PM
89	N032084-012B	SAMP	1	09/25/2018	02:43:48 PM
90	N032084-013B	SAMP	1	09/25/2018	02:49:09 PM
91	N032084-014B	SAMP	1	09/25/2018	02:54:31 PM
92	N032084-015B	SAMP	1	09/25/2018	02:59:52 PM
93	MB-70686	MBLK	1	09/25/2018	03:05:14 PM
94	LCS-70686	LCS	1	09/25/2018	03:10:35 PM
95	N032084-001C	SAMP	1	09/25/2018	03:15:56 PM
96	N032084-001C	SAMP	5	09/25/2018	03:21:18 PM
97	N032084-001C-PS	PS	1	09/25/2018	03:26:38 PM
7	CCV6	CCV	1	09/25/2018	03:32:00 PM
1	CCB6	CCB	1	09/25/2018	03:38:53 PM
98	N032084-001C-MS	MS	1	09/25/2018	03:44:11 PM
99	N032084-001C-MSD	MSD	1	09/25/2018	03:49:34 PM
100	N032084-002C	SAMP	1	09/25/2018	03:54:56 PM
101	N032084-003C	SAMP	1	09/25/2018	04:00:18 PM
102	N032084-004C	SAMP	1	09/25/2018	04:05:41 PM
103	N032084-005C	SAMP	1	09/25/2018	04:11:03 PM
104	N032084-006C	SAMP	1	09/25/2018	04:16:26 PM
105	N032084-007C	SAMP	1	09/25/2018	04:21:48 PM
106	N032084-008C	SAMP	1	09/25/2018	04:27:11 PM
107	N032084-009C	SAMP	1	09/25/2018	04:32:37 PM
7	CCV7	CCV	1	09/25/2018	04:37:59 PM
1	CCB7	CCB	1	09/25/2018	04:44:53 PM
108	N032084-010C	SAMP	1	09/25/2018	04:50:12 PM
109	N032084-011C	SAMP	1	09/25/2018	04:55:34 PM
110	N032084-012C	SAMP	1	09/25/2018	05:00:57 PM
111	N032084-013C	SAMP	1	09/25/2018	05:06:19 PM
112	N032084-014C	SAMP	1	09/25/2018	05:11:42 PM
113	N032084-015C	SAMP	1	09/25/2018	05:17:05 PM
7	CCV8	CCV	1	09/25/2018	05:22:29 PM
1	CCB8	CCB	1	09/25/2018	05:29:23 PM
4	ICSA3	ICSA	1	09/25/2018	05:34:42 PM
5	ICSAB3	ICSAB	1	09/25/2018	05:42:14 PM

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **9/18/2018 11:01:35**  
 Prep End Date: **9/18/2018 3:30:00 P**

Reviewed/ Date: *Yummy* **9/26/2018**  
 Initials/ Date: *[Signature]* **9/26/2018**

Page: 1 of 2

Prep Batch **70687** Prep Code: **3010\_W DISS**

Technician: **Claire Ignacio** Prep Factor Units **mL / mL** Temp. (°C): **94.5** Location: **01-8**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70687	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70687	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N032084-001B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-001B-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-001B-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-002B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-003B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-004B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-005B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-006B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-007B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-008B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-009B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-010B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
10132	NITRIC ACID
10136	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-180430F	ICP Solution B	LCS,MS,MSD	0.5
MWST-180517E	ICP Solution A	LCS,MS,MSD	0.5
MWST-180601B	ICP Solution C	LCS,MS,MSD	0.5

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **9/18/2018 11:01:35**  
 Prep End Date: **9/18/2018 3:30:00 P**

Reviewed/ Date: *Manly* 9/26/2018

Page: 2 of 2

Prep Batch **70687** Prep Code: **3010\_W\_DISS**

Initials/ Date: *[Signature]* 9/26/2018  
 Technician: **Claire Ignacio**

Prep Factor Units      Temp. (°C):      Location:  
 mL / mL                      **94.5**                      **01-8**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N032084-011B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-012B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-013B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-014B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-015B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
10132	NITRIC ACID
10136	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-180430F	ICP Solution B	LCS,MS,MSD	0.5
MWST-180517E	ICP Solution A	LCS,MS,MSD	0.5
MWST-180601B	ICP Solution C	LCS,MS,MSD	0.5

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**INITIAL CALIBRATION SUMMARY: 180925A**

**Instrument ID: ICP-02**

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
<b>Iron</b>								
CalBlk	09/25/2018	07:44:30 AM	Fe	273.953	-423	0.00	mg/L	
Standard1	09/25/2018	07:49:50 AM	Fe	273.953	543	0.0200	mg/L	
Standard2	09/25/2018	07:55:09 AM	Fe	273.953	1934	0.050	mg/L	
Standard3	09/25/2018	08:00:28 AM	Fe	273.953	54835	2.000	mg/L	
Standard4	09/25/2018	08:05:49 AM	Fe	273.953	137778	5.000	mg/L	
Standard5	09/25/2018	08:11:12 AM	Fe	273.953	208671	7.500	mg/L	
Standard6	09/25/2018	08:16:31 AM	Fe	273.953	272555	10.000	mg/L	
Standard7	09/25/2018	08:21:24 AM	Fe	273.953	530345	20.000	mg/L	0.9998



# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WDPGEPBB**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151464</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10080.191	20	10000	0	101	90	110				

Sample ID <b>LLICV1</b>	SampType: <b>CCV1</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151466</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	20.100	20	20.00	0	101	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151479</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10077.270	20	10000	0	101	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151709</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10145.312	20	10000	0	101	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151721</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10104.978	20	10000	0	101	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010\_WDPGEPBB**

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151733</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron	10014.542	20	10000	0	100	90	110				
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Sample ID <b>CCV5</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152016</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron	10000.936	20	10000	0	100	90	110				
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Sample ID <b>CCV6</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152028</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron	10069.320	20	10000	0	101	90	110				
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Sample ID <b>CCV7</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152040</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron	10105.492	20	10000	0	101	90	110				
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Sample ID <b>CCV8</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152048</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron	10039.987	20	10000	0	100	90	110				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL • TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WDPGEPBB**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151465</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.226 20

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151480</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.167 20

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151710</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 0.393 20

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151722</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.353 20

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151734</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.938 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010\_WDPGPPB**

Sample ID <b>CCB5</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152017</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron	2.540	20
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Sample ID <b>CCB6</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152029</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron	2.395	20
------	-------	----

Sample ID <b>CCB7</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152041</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron	1.924	20
------	-------	----

Sample ID <b>CCB8</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152049</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron	2.194	20
------	-------	----

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WDPGEPBB**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151467</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	512534.632	50	500000	0	103	80	120				
Calcium	512266.139	500	500000	0	102	80	120				
Iron	181310.298	20	200000	0	90.7	80	120				
Magnesium	471619.155	100	500000	0	94.3	80	120				

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151468</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	546091.686	50	500000	0	109	80	120				
Calcium	537615.077	500	500000	0	108	80	120				
Iron	178272.494	20	200000	0	89.1	80	120				
Magnesium	491439.486	100	500000	0	98.3	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151735</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	511071.415	50	500000	0	102	80	120				
Calcium	489537.232	500	500000	0	97.9	80	120				
Iron	181113.701	20	200000	0	90.6	80	120				
Magnesium	415621.434	100	500000	0	83.1	80	120				

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151736</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	547107.889	50	500000	0	109	80	120				
----------	------------	----	--------	---	-----	----	-----	--	--	--	--

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010\_WDPGEPBB**

Sample ID <b>ICSAB2</b>	SampType: <b>ICSAB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151736</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	513720.470	500	500000	0	103	80	120				
Iron	176866.353	20	200000	0	88.4	80	120				
Magnesium	463516.592	100	500000	0	92.7	80	120				

Sample ID <b>ICSA3</b>	SampType: <b>ICSA</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152050</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	514857.745	50	500000	0	103	80	120				
Calcium	494133.116	500	500000	0	98.8	80	120				
Iron	182013.944	20	200000	0	91.0	80	120				
Magnesium	468342.465	100	500000	0	93.7	80	120				

Sample ID <b>ICSAB3</b>	SampType: <b>ICSAB</b>	TestCode: <b>6010_WDPG</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128807</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R128807</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152051</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	550755.999	50	500000	0	110	80	120				
Calcium	518943.166	500	500000	0	104	80	120				
Iron	177724.055	20	200000	0	88.9	80	120				
Magnesium	483705.740	100	500000	0	96.7	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# INTERNAL STANDARD SUMMARY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## INTERNAL STANDARD: 180925A

Instrument ID: ICP-02

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
CalBlk	IBLK	1	1	100	65-125	PASS
Standard1	ICAL	1	1.0047	100.47	65-125	PASS
Standard2	ICAL	1	1.033	103.34	65-125	PASS
Standard3	ICAL	1	1.012	101.2	65-125	PASS
Standard4	ICAL	1	1.0004	100.04	65-125	PASS
Standard5	ICAL	1	1.027	102.7	65-125	PASS
Standard6	ICAL	1	1.012	101.22	65-125	PASS
Standard7	ICAL	1	0.99	98.66	65-125	PASS
ICV	ICV	1	1.019	101.91	65-125	PASS
ICB	ICB	1	1.043	104.26	65-125	PASS
LLICV1	CCV1	1	1.029	102.92	65-125	PASS
ICSA1	ICSA	1	1.03	103	65-125	PASS
ICSAB1	ICSAB	1	0.89	89.053	65-125	PASS
CCV1	CCV	1	1.017	101.69	65-125	PASS
CCB1	CCB	1	1.04	103.98	65-125	PASS
CCV2	CCV	1	1.021	102.07	65-125	PASS
CCB2	CCB	1	1.041	104.1	65-125	PASS
CCV3	CCV	1	1.023	102.31	65-125	PASS
CCB3	CCB	1	1.042	104.22	65-125	PASS
MB-70687	MBLK	1	1.027	102.66	65-125	PASS
LCS-70687	LCS	1	1.08	108.01	65-125	PASS
N032084-001B	SAMP	1	1.0046	100.46	65-125	PASS
N032084-001B	SAMP	5	1.016	101.64	65-125	PASS
N032084-001B-PS	PS	1	1.02	102.05	65-125	PASS
N032084-001B-MS	MS	1	1.023	102.26	65-125	PASS
CCV4	CCV	1	1.013	101.32	65-125	PASS
CCB4	CCB	1	1.043	104.26	65-125	PASS
ICSA2	ICSA	1	0.95	94.52	65-125	PASS
ICSAB2	ICSAB	1	0.88	87.7	65-125	PASS
N032084-001B-MSD	MSD	1	1.036	103.62	65-125	PASS
N032084-002B	SAMP	1	1.039	103.91	65-125	PASS
N032084-003B	SAMP	1	1.031	103.14	65-125	PASS
N032084-004B	SAMP	1	1.036	103.63	65-125	PASS
N032084-005B	SAMP	1	1.046	104.62	65-125	PASS
N032084-006B	SAMP	1	1	99.75	65-125	PASS
N032084-007B	SAMP	1	1.044	104.36	65-125	PASS
N032084-008B	SAMP	1	1.028	102.8	65-125	PASS
N032084-009B	SAMP	1	1.034	103.43	65-125	PASS
N032084-010B	SAMP	1	1.056	105.63	65-125	PASS
CCV5	CCV	1	1.016	101.59	65-125	PASS
CCB5	CCB	1	1.037	103.71	65-125	PASS

**INTERNAL STANDARD: 180925A**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
N032084-011B	SAMP	1	1.031	103.09	65-125	PASS
N032084-012B	SAMP	1	1	99.62	65-125	PASS
N032084-013B	SAMP	1	1.0068	100.68	65-125	PASS
N032084-014B	SAMP	1	0.99	99.14	65-125	PASS
N032084-015B	SAMP	1	1.02	101.98	65-125	PASS
CCV6	CCV	1	1.023	102.27	65-125	PASS
CCB6	CCB	1	1.05	105.02	65-125	PASS
CCV7	CCV	1	1.027	102.71	65-125	PASS
CCB7	CCB	1	1.046	104.58	65-125	PASS
CCV8	CCV	1	1.03	102.98	65-125	PASS
CCB8	CCB	1	1.048	104.85	65-125	PASS
ICSA3	ICSA	1	0.95	94.91	65-125	PASS
ICSAB3	ICSAB	1	0.89	88.7	65-125	PASS

# SERIAL DILUTION/ POST DIGESTION SPIKE



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

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3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-Metals in Water**

Work Order No.: N032084  
Test Method: EPA 6010  
Analysis Date: 9/25/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70687

Instrument ID: ICP-02  
Instrument Description: Perkin Elmer Optima DV Series

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Fe. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032084-001B DT 5X	Iron	ug/L	0		0		10

Note: NA - Not applicable

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WDPGEPBB**

Sample ID	<b>N032084-001B-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>6010_WDPG</b>	Units:	<b>ug/L</b>	Prep Date:		RunNo:	<b>128807</b>		
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70687</b>	TestNo:	<b>EPA 6010B EPA 3010A</b>			Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>3151731</b>		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron		121.961		20	100.0	0	122	80	120				S

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# MDL STUDY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

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P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Metals by ICP**  
 Method Number: EPA 200.7/ 6010  
 Analysis Date(s): 10/6, 10/7,11/10/17  
 Analyst: Mary Claire Ignacio

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **ICP-02**

Acceptance Criteria: MDL < spike < 10XMDL

Analyte	Wavelength	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	MDL	PQL
Ag	328.069	0.0033	0.0031	0.0033	0.0033	0.0031	0.0030	0.0047	0.003	0.00061604	<b>0.001936</b>	0.003
Al	237.312	0.0664	0.0603	0.0656	0.0650	0.0658	0.0660	0.0946	0.050	0.01254823	<b>0.039439</b>	0.050
As	188.983	0.0131	0.0089	0.0120	0.0089	0.0060	0.0102	0.0080	0.010	0.00223806	<b>0.007034</b>	0.010
B	249.679	0.1491	0.1267	0.1281	0.1467	0.1261	0.1195	0.1015	0.100	0.01801843	<b>0.056632</b>	0.100
Ba	233.529	0.0033	0.0031	0.0033	0.0031	0.0032	0.0030	0.0024	0.003	0.00033070	<b>0.001039</b>	0.003
Be	313.104	0.0012	0.0011	0.0012	0.0012	0.0011	0.0011	0.0011	0.001	0.00006873	<b>0.000216</b>	0.001
Ca	227.546	0.2381	0.2231	0.2559	0.2299	0.2194	0.2473	0.2691	0.200	0.02202408	<b>0.069222</b>	0.200
Cd	214.437	0.0031	0.0029	0.0031	0.0032	0.0031	0.0031	0.0025	0.003	0.00027049	<b>0.000850</b>	0.003
Co	228.614	0.0030	0.0028	0.0030	0.0031	0.0031	0.0031	0.0027	0.003	0.00014491	<b>0.000455</b>	0.003
Cr	267.719	0.0009	0.0008	0.0009	0.0012	0.0012	0.0013	0.0009	0.001	0.00017120	<b>0.000538</b>	0.001
Fe	273.953	0.0255	0.0226	0.0242	0.0255	0.0252	0.0248	0.0387	0.020	0.00552308	<b>0.017359</b>	0.020
Mg	279.079	0.1124	0.1052	0.1129	0.1315	0.1305	0.1314	0.1435	0.100	0.01532024	<b>0.048152</b>	0.100
Mn	257.607	0.0119	0.0111	0.0120	0.0122	0.0121	0.0122	0.0099	0.010	0.00098403	<b>0.003093</b>	0.010
Mo	202.03	0.0079	0.0068	0.0067	0.0065	0.0065	0.0062	0.0057	0.005	0.00083918	<b>0.002638</b>	0.005
Ni	231.604	0.0061	0.0056	0.0062	0.0060	0.0060	0.0062	0.0045	0.005	0.00062690	<b>0.001970</b>	0.005
Pb	220.351	0.0124	0.0117	0.0127	0.0115	0.0120	0.0118	0.0090	0.010	0.00126325	<b>0.003970</b>	0.010
Sb	206.836	0.0102	0.0095	0.0104	0.0112	0.0117	0.0111	0.0080	0.010	0.00117407	<b>0.003690</b>	0.010
Se	196.025	0.0102	0.0087	0.0114	0.0136	0.0144	0.0136	0.0075	0.010	0.00251341	<b>0.007900</b>	0.010
Sn	189.927	0.0095	0.0084	0.0090	0.0124	0.0126	0.0129	0.0099	0.010	0.00175765	<b>0.005524</b>	0.010
Ti	334.943	0.0114	0.0106	0.0115	0.0115	0.0115	0.0115	0.0098	0.010	0.00074093	<b>0.002329</b>	0.010
Tl	190.794	0.0170	0.0150	0.0165	0.0171	0.0180	0.0168	0.0151	0.015	0.00116288	<b>0.003655</b>	0.015
V	292.404	0.0025	0.0024	0.0025	0.0032	0.0032	0.0032	0.0027	0.003	0.00038496	<b>0.001210</b>	0.003
Zn	206.201	0.0109	0.0100	0.0107	0.0125	0.0124	0.0124	0.0095	0.010	0.00123731	<b>0.003889</b>	0.010



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 P: 562.219.7435 F: 562.219.7436

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# METHOD DETECTION LIMIT 2017

Method Name: **Metals by ICP**  
 Method Number: EPA 200.7/ 6010  
 Analysis Date(s): 10/6, 10/7, 11/10/17  
 Analyst: Mary Claire Ignacio

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **ICP-02**

Analyte	ICP-02 MDL	MDL Blank	Higher MDL	LOD	PQL
Ag	0.001936	0.002362	0.002362	0.002	0.003
Al	0.039439	0.039859	0.039859	0.04	0.5
As	0.007034	0.007672	0.007672	0.0075	0.01
B	0.056632	0.074419	0.074419	0.075	0.1
Ba	0.001039	0.000433	0.001039	0.001	0.003
Be	0.000216	0.000311	0.000311	0.0005	0.003
Ca	0.069222	0.084832	0.084832	0.1	0.5
Cd	0.000850	0.000592	0.000850	0.001	0.003
Co	0.000455	0.001902	0.001902	0.001	0.003
Cr	0.000538	0.000527	0.000538	0.001	0.003
Fe	0.017359	0.017751	0.017751	0.018	0.1
Mg	0.048152	0.043017	0.048152	0.05	0.1
Mn	0.003093	0.000782	0.003093	0.005	0.5
Mo	0.002638	0.002482	0.002638	0.0025	0.005
Ni	0.001970	0.000822	0.001970	0.0025	0.005
Pb	0.003970	0.002762	0.003970	0.005	0.005
Sb	0.003690	0.004504	0.004504	0.005	0.01
Se	0.007900	0.008549	0.008549	0.008	0.01
Sn	0.005524	0.003415	0.005524	0.0075	0.05
Ti	0.002329	0.001493	0.002329	0.005	0.05
Tl	0.003655	0.005987	0.005987	0.005	0.015
V	0.001210	0.000749	0.001210	0.002	0.003
Zn	0.003889	0.007683	0.007683	0.008	0.01



# EPA 6010B



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
REV 2.1  
072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70686  
ASSET #: N032084

Instrument ID: ICPMS-02  
Analyst: CEI

Method:  
 EPA 6010B / 200.7 TOTAL  EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8  Other \_\_\_\_\_

Date Analyzed: 9/25/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)			X			X
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits	X			X		
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented			X			X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer Handy 9/26/2018

Date: 9/26/18  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## SAMPLE CALCULATION

**METHOD:** EPA 6010B  
**TEST NAME:** Heavy Metals by ICP  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Iron concentration, in ug/L, in the original sample as follows:

$$\text{Iron, ug/L} = A * DF * PF * CF$$

where:

A = mg/L, calculated concentration

DF = Dilution Factor

PF = Final Volume of Digestate, mL / Amount of Sample, mL

CF= Conversion Factor from mg/L to ug/L, 1000

For Sample **N032084-001C**, the concentration in ug/L is calculated as follows:

$$\text{Iron, ug/L} = 0.03443 * 1 * (25/25) * 1000$$

$$\text{Iron, ug/L} = 34.43$$

Reporting results in two significant figures,

$$\text{Iron, ug/L} = \mathbf{34}$$

# % RSD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**RSD SUMMARY: 180925A**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Fe	0	4.19	15	PASS
Standard1	ICAL	1	Fe	0.02	2.94	15	PASS
Standard2	ICAL	1	Fe	0.05	1.024	15	PASS
Standard3	ICAL	1	Fe	2	0.68	15	PASS
Standard4	ICAL	1	Fe	5	0.38	15	PASS
Standard5	ICAL	1	Fe	7.5	0.8	15	PASS
Standard6	ICAL	1	Fe	10	0.17	15	PASS
Standard7	ICAL	1	Fe	20	0.18	15	PASS
ICV	ICV	1	Fe	10.08	0.083	15	PASS
ICB	ICB	1	Fe	0.0012	40.8	15	<PQL
LLICV1	CCV1	1	Fe	0.02	2.77	20	PASS
ICSA1	ICSA	1	Fe	181.31	0.53	15	PASS
ICSAB1	ICSAB	1	Fe	178.27	0.34	15	PASS
CCV1	CCV	1	Fe	10.077	0.05	15	PASS
CCB1	CCB	1	Fe	0.0012	90.19	15	<PQL
CCV2	CCV	1	Fe	10.14	0.16	15	PASS
CCB2	CCB	1	Fe	0.00039	88.086	15	<PQL
CCV3	CCV	1	Fe	10.11	0.044	15	PASS
CCB3	CCB	1	Fe	0.0014	23.79	15	<PQL
CCV4	CCV	1	Fe	10.015	0.17	15	PASS
CCB4	CCB	1	Fe	0.0019	20	15	<PQL
ICSA2	ICSA	1	Fe	181.11	0.27	15	PASS
ICSAB2	ICSAB	1	Fe	176.87	0.23	15	PASS
CCV5	CCV	1	Fe	10.001	0.19	15	PASS
CCB5	CCB	1	Fe	0.0025	18.7	15	<PQL
MB-70686	MBLK	1	Fe	0.00062	66.82	15	<PQL
LCS-70686	LCS	1	Fe	0.1	0.82	15	PASS
N032084-001C	SAMP	1	Fe	0.034	3.041	15	PASS
N032084-001C	SAMP	5	Fe	0.0086	4.52	15	PASS
N032084-001C-PS	PS	1	Fe	0.13	0.38	15	PASS
CCV6	CCV	1	Fe	10.069	0.2	15	PASS
CCB6	CCB	1	Fe	0.0024	1.91	15	PASS
N032084-001C-MS	MS	1	Fe	0.14	0.69	15	PASS
N032084-001C-MSD	MSD	1	Fe	0.14	0.79	15	PASS
N032084-002C	SAMP	1	Fe	0.031	2.7	15	PASS
N032084-003C	SAMP	1	Fe	0.029	1.84	15	PASS
N032084-004C	SAMP	1	Fe	1.11	0.61	15	PASS
N032084-005C	SAMP	1	Fe	0.36	0.31	15	PASS
N032084-006C	SAMP	1	Fe	0.032	0.49	15	PASS
N032084-007C	SAMP	1	Fe	0.033	2.65	15	PASS
N032084-008C	SAMP	1	Fe	0.03	4.64	15	PASS
N032084-009C	SAMP	1	Fe	0.037	3.57	15	PASS



**RSD SUMMARY: 180925A****Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CCV7	CCV	1	Fe	10.11	0.13	15	PASS
CCB7	CCB	1	Fe	0.0019	30.6	15	<PQL
N032084-010C	SAMP	1	Fe	0.041	1.85	15	PASS
N032084-011C	SAMP	1	Fe	0.028	0.85	15	PASS
N032084-012C	SAMP	1	Fe	0.024	2.75	15	PASS
N032084-013C	SAMP	1	Fe	0.027	0.68	15	PASS
N032084-014C	SAMP	1	Fe	0.058	1.099	15	PASS
N032084-015C	SAMP	1	Fe	0.032	1.71	15	PASS
CCV8	CCV	1	Fe	10.04	0.05	15	PASS
CCB8	CCB	1	Fe	0.0022	27.98	15	<PQL
ICSA3	ICSA	1	Fe	182.01	0.2	15	PASS
ICSAB3	ICSAB	1	Fe	177.72	0.25	15	PASS

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INJECTION LOG: 180925A**

**Instrument ID: ICP-02**

<b>STANDARD CODE</b>	
Standard1	MWST-180420A,0.5<50mL
Standard2	MWST-180601F
Standard3	MWST-180601J,5<50mL
Standard4	MWST-180601J,12.5<50mL
Standard5	MWST-180601J,15<40mL
Standard6	MWST-180601J,25<50mL
Standard7	MWST-180601J
ICV	MWST-180430E
CCV	MWST-180601J,25<50mL
ICSA/ICSAB	MWST-180420F/ -180730A
Int. Std. (Y)	MSST-180420B/A
PS Spike	MWST-180517E/ -180430F/ -180601B

<b>A/S Loc</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq Date</b>	<b>Acq Time</b>
1	CalBlk	IBLK	1	09/25/2018	07:44:30 AM
2	Standard1	ICAL	1	09/25/2018	07:49:50 AM
3	Standard2	ICAL	1	09/25/2018	07:55:09 AM
11	Standard3	ICAL	1	09/25/2018	08:00:28 AM
12	Standard4	ICAL	1	09/25/2018	08:05:49 AM
6	Standard5	ICAL	1	09/25/2018	08:11:12 AM
7	Standard6	ICAL	1	09/25/2018	08:16:31 AM
8	Standard7	ICAL	1	09/25/2018	08:21:24 AM
9	ICV	ICV	1	09/25/2018	08:24:51 AM
1	ICB	ICB	1	09/25/2018	08:31:45 AM
2	LLICV1	CCV1	1	09/25/2018	08:37:04 AM
4	ICSA1	ICSA	1	09/25/2018	08:42:22 AM
5	ICSAB1	ICSAB	1	09/25/2018	08:49:53 AM
38	MB-70629	MBLK	1	09/25/2018	08:56:57 AM
39	LCS-70629	LCS	1	09/25/2018	09:02:17 AM
40	N032065-003B	SAMP	1	09/25/2018	09:07:37 AM
41	N032065-003B	SAMP	5	09/25/2018	09:12:57 AM
42	N032065-003B-PS	PS	1	09/25/2018	09:18:18 AM
43	N032065-003B-MS	MS	1	09/25/2018	09:23:39 AM
44	N032065-003B-MSD	MSD	1	09/25/2018	09:28:59 AM
45	N032065-004B	SAMP	1	09/25/2018	09:34:20 AM
46	N032065-005B	SAMP	1	09/25/2018	09:39:42 AM
47	N032065-006B	SAMP	1	09/25/2018	09:45:02 AM
7	CCV1	CCV	1	09/25/2018	09:50:24 AM
1	CCB1	CCB	1	09/25/2018	09:57:18 AM
48	N032065-007B	SAMP	1	09/25/2018	10:02:51 AM
49	N032065-008B	SAMP	1	09/25/2018	10:08:12 AM
50	N032065-009B	SAMP	1	09/25/2018	10:13:35 AM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
51	N032065-010B	SAMP	1	09/25/2018	10:18:56 AM
52	N032065-013B	SAMP	1	09/25/2018	10:24:17 AM
53	N032065-014B	SAMP	1	09/25/2018	10:29:37 AM
54	N032065-015B	SAMP	1	09/25/2018	10:34:58 AM
55	MB-70628	MBLK	1	09/25/2018	10:40:19 AM
56	LCS-70628	LCS	1	09/25/2018	10:45:39 AM
57	N032065-003C	SAMP	1	09/25/2018	10:50:59 AM
7	CCV2	CCV	1	09/25/2018	10:56:20 AM
1	CCB2	CCB	1	09/25/2018	11:03:14 AM
58	N032065-003C	SAMP	5	09/25/2018	11:08:32 AM
59	N032065-003C-PS	PS	1	09/25/2018	11:13:53 AM
60	N032065-003C-MS	MS	1	09/25/2018	11:19:15 AM
61	N032065-003C-MSD	MSD	1	09/25/2018	11:24:38 AM
62	N032065-004C	SAMP	1	09/25/2018	11:30:01 AM
63	N032065-005C	SAMP	1	09/25/2018	11:35:37 AM
64	N032065-006C	SAMP	1	09/25/2018	11:40:58 AM
65	N032065-007C	SAMP	1	09/25/2018	11:46:20 AM
66	N032065-008C	SAMP	1	09/25/2018	11:51:42 AM
67	N032065-009C	SAMP	1	09/25/2018	11:57:04 AM
7	CCV3	CCV	1	09/25/2018	12:02:26 PM
1	CCB3	CCB	1	09/25/2018	12:09:19 PM
68	N032065-010C	SAMP	1	09/25/2018	12:14:38 PM
69	N032065-013C	SAMP	1	09/25/2018	12:20:02 PM
70	N032065-014C	SAMP	1	09/25/2018	12:25:23 PM
71	N032065-015C	SAMP	1	09/25/2018	12:30:48 PM
72	MB-70687	MBLK	1	09/25/2018	12:36:10 PM
73	LCS-70687	LCS	1	09/25/2018	12:41:31 PM
74	N032084-001B	SAMP	1	09/25/2018	12:46:52 PM
75	N032084-001B	SAMP	5	09/25/2018	12:52:14 PM
76	N032084-001B-PS	PS	1	09/25/2018	12:57:35 PM
77	N032084-001B-MS	MS	1	09/25/2018	01:02:57 PM
7	CCV4	CCV	1	09/25/2018	01:08:19 PM
1	CCB4	CCB	1	09/25/2018	01:15:13 PM
4	ICSA2	ICSA	1	09/25/2018	01:20:02 PM
5	ICSAB2	ICSAB	1	09/25/2018	01:27:33 PM
78	N032084-001B-MSD	MSD	1	09/25/2018	01:34:37 PM
79	N032084-002B	SAMP	1	09/25/2018	01:39:59 PM
80	N032084-003B	SAMP	1	09/25/2018	01:45:20 PM
81	N032084-004B	SAMP	1	09/25/2018	01:50:41 PM
82	N032084-005B	SAMP	1	09/25/2018	01:56:03 PM
83	N032084-006B	SAMP	1	09/25/2018	02:01:25 PM
84	N032084-007B	SAMP	1	09/25/2018	02:06:47 PM
85	N032084-008B	SAMP	1	09/25/2018	02:12:10 PM
86	N032084-009B	SAMP	1	09/25/2018	02:17:31 PM
87	N032084-010B	SAMP	1	09/25/2018	02:22:53 PM
7	CCV5	CCV	1	09/25/2018	02:28:16 PM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CCB5	CCB	1	09/25/2018	02:33:09 PM
88	N032084-011B	SAMP	1	09/25/2018	02:38:27 PM
89	N032084-012B	SAMP	1	09/25/2018	02:43:48 PM
90	N032084-013B	SAMP	1	09/25/2018	02:49:09 PM
91	N032084-014B	SAMP	1	09/25/2018	02:54:31 PM
92	N032084-015B	SAMP	1	09/25/2018	02:59:52 PM
93	MB-70686	MBLK	1	09/25/2018	03:05:14 PM
94	LCS-70686	LCS	1	09/25/2018	03:10:35 PM
95	N032084-001C	SAMP	1	09/25/2018	03:15:56 PM
96	N032084-001C	SAMP	5	09/25/2018	03:21:18 PM
97	N032084-001C-PS	PS	1	09/25/2018	03:26:38 PM
7	CCV6	CCV	1	09/25/2018	03:32:00 PM
1	CCB6	CCB	1	09/25/2018	03:38:53 PM
98	N032084-001C-MS	MS	1	09/25/2018	03:44:11 PM
99	N032084-001C-MSD	MSD	1	09/25/2018	03:49:34 PM
100	N032084-002C	SAMP	1	09/25/2018	03:54:56 PM
101	N032084-003C	SAMP	1	09/25/2018	04:00:18 PM
102	N032084-004C	SAMP	1	09/25/2018	04:05:41 PM
103	N032084-005C	SAMP	1	09/25/2018	04:11:03 PM
104	N032084-006C	SAMP	1	09/25/2018	04:16:26 PM
105	N032084-007C	SAMP	1	09/25/2018	04:21:48 PM
106	N032084-008C	SAMP	1	09/25/2018	04:27:11 PM
107	N032084-009C	SAMP	1	09/25/2018	04:32:37 PM
7	CCV7	CCV	1	09/25/2018	04:37:59 PM
1	CCB7	CCB	1	09/25/2018	04:44:53 PM
108	N032084-010C	SAMP	1	09/25/2018	04:50:12 PM
109	N032084-011C	SAMP	1	09/25/2018	04:55:34 PM
110	N032084-012C	SAMP	1	09/25/2018	05:00:57 PM
111	N032084-013C	SAMP	1	09/25/2018	05:06:19 PM
112	N032084-014C	SAMP	1	09/25/2018	05:11:42 PM
113	N032084-015C	SAMP	1	09/25/2018	05:17:05 PM
7	CCV8	CCV	1	09/25/2018	05:22:29 PM
1	CCB8	CCB	1	09/25/2018	05:29:23 PM
4	ICSA3	ICSA	1	09/25/2018	05:34:42 PM
5	ICSAB3	ICSAB	1	09/25/2018	05:42:14 PM

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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PREP BATCH REPORT

Prep Start Date: **9/18/2018 11:01:00**  
 Prep End Date: **9/18/2018 3:30:00 P**

Reviewed/ Date: *Nancy* **9/26/2018**  
 Initials/ Date: *[Signature]* **9/26/2018**

Page: 1 of 2

Prep Batch **70686** Prep Code: **3010\_W**

Technician: **Claire Ignacio** Prep Factor Units **mL / mL** Temp. (°C): **94.5** Location: **02-37**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70686	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70686	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N032084-001C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-001C-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-001C-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-002C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-003C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-004C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-005C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-006C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-007C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-008C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-009C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-010C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
10132	NITRIC ACID
10136	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-180430F	ICP Solution B	LCS,MS,MSD	0.5
MWST-180517E	ICP Solution A	LCS,MS,MSD	0.5
MWST-180601B	ICP Solution C	LCS,MS,MSD	0.5

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **9/18/2018 11:01:00**  
 Prep End Date: **9/18/2018 3:30:00 P**

Reviewed/ Date: *Yummy* 9/26/2018

Page: 2 of 2

Prep Batch **70686** Prep Code: **3010\_W**

Initials/ Date: *[Signature]* 9/26/2018  
 Technician: **Claire Ignacio**

Prep Factor Units      Temp. (°C):      Location:  
 mL / mL                      **94.5**                      **02-37**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N032084-011C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-012C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-013C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-014C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-015C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
10132	NITRIC ACID
10136	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MWST-180430F	ICP Solution B	LCS,MS,MSD	0.5
MWST-180517E	ICP Solution A	LCS,MS,MSD	0.5
MWST-180601B	ICP Solution C	LCS,MS,MSD	0.5



# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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INITIAL CALIBRATION SUMMARY: 180925A

Instrument ID: ICP-02

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
<b>Iron</b>								
CalBlk	09/25/2018	07:44:30 AM	Fe	273.953	-423	0.00	mg/L	
Standard1	09/25/2018	07:49:50 AM	Fe	273.953	543	0.0200	mg/L	
Standard2	09/25/2018	07:55:09 AM	Fe	273.953	1934	0.050	mg/L	
Standard3	09/25/2018	08:00:28 AM	Fe	273.953	54835	2.000	mg/L	
Standard4	09/25/2018	08:05:49 AM	Fe	273.953	137778	5.000	mg/L	
Standard5	09/25/2018	08:11:12 AM	Fe	273.953	208671	7.500	mg/L	
Standard6	09/25/2018	08:16:31 AM	Fe	273.953	272555	10.000	mg/L	
Standard7	09/25/2018	08:21:24 AM	Fe	273.953	530345	20.000	mg/L	0.9998

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WPGEPB**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151558</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10080.191	20	10000	0	101	90	110				

Sample ID <b>LLICV1</b>	SampType: <b>CCV1</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151560</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	20.100	20	20.00	0	101	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151573</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10077.270	20	10000	0	101	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151585</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10145.312	20	10000	0	101	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151597</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10104.978	20	10000	0	101	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010\_WPGEPPB**

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151678</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10014.542	20	10000	0	100	90	110				

Sample ID <b>CCV5</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152130</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10000.936	20	10000	0	100	90	110				

Sample ID <b>CCV6</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152142</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10069.320	20	10000	0	101	90	110				

Sample ID <b>CCV7</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152154</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10105.492	20	10000	0	101	90	110				

Sample ID <b>CCV8</b>	SampType: <b>CCV</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152162</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Iron	10039.987	20	10000	0	100	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WPGEPPB**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151559</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.226 20

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151574</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.167 20

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151586</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 0.393 20

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151598</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.353 20

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151679</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Iron 1.938 20

**Qualifiers:**

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  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010\_WPGEPPB**

Sample ID <b>CCB5</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152131</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron	2.540	20
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Sample ID <b>CCB6</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152143</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron	2.395	20
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Sample ID <b>CCB7</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152155</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron	1.924	20
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Sample ID <b>CCB8</b>	SampType: <b>CCB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152163</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Iron	2.194	20
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**Qualifiers:**

- |   |  |  |
|---|--|--|
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- Calculations are based on raw values



# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGISTS

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WPGEPBB**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151561</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	512534.632	50	500000	0	103	80	120				
Calcium	512266.139	500	500000	0	102	80	120				
Iron	181310.298	20	200000	0	90.7	80	120				
Magnesium	471619.155	100	500000	0	94.3	80	120				

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151562</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	546091.686	50	500000	0	109	80	120				
Calcium	537615.077	500	500000	0	108	80	120				
Iron	178272.494	20	200000	0	89.1	80	120				
Magnesium	491439.486	100	500000	0	98.3	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151680</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	511071.415	50	500000	0	102	80	120				
Calcium	489537.232	500	500000	0	97.9	80	120				
Iron	181113.701	20	200000	0	90.6	80	120				
Magnesium	415621.434	100	500000	0	83.1	80	120				

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151681</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aluminum	547107.889	50	500000	0	109	80	120				
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**Qualifiers:**

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6010\_WPGEPPB**

Sample ID <b>ICSAB2</b>	SampType: <b>ICSAB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151681</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	513720.470	500	500000	0	103	80	120				
Iron	176866.353	20	200000	0	88.4	80	120				
Magnesium	463516.592	100	500000	0	92.7	80	120				

Sample ID <b>ICSA3</b>	SampType: <b>ICSA</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152164</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	514857.745	50	500000	0	103	80	120				
Calcium	494133.116	500	500000	0	98.8	80	120				
Iron	182013.944	20	200000	0	91.0	80	120				
Magnesium	468342.465	100	500000	0	93.7	80	120				

Sample ID <b>ICSAB3</b>	SampType: <b>ICSAB</b>	TestCode: <b>6010_WPGE</b>	Units: <b>ug/L</b>	Prep Date:	RunNo: <b>128810</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R128810</b>	TestNo: <b>EPA 6010B</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3152165</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	550755.999	50	500000	0	110	80	120				
Calcium	518943.166	500	500000	0	104	80	120				
Iron	177724.055	20	200000	0	88.9	80	120				
Magnesium	483705.740	100	500000	0	96.7	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## INTERNAL STANDARD: 180925A

Instrument ID: ICP-02

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
CalBlk	IBLK	1	1	100	65-125	PASS
Standard1	ICAL	1	1.0047	100.47	65-125	PASS
Standard2	ICAL	1	1.033	103.34	65-125	PASS
Standard3	ICAL	1	1.012	101.2	65-125	PASS
Standard4	ICAL	1	1.0004	100.04	65-125	PASS
Standard5	ICAL	1	1.027	102.7	65-125	PASS
Standard6	ICAL	1	1.012	101.22	65-125	PASS
Standard7	ICAL	1	0.99	98.66	65-125	PASS
ICV	ICV	1	1.019	101.91	65-125	PASS
ICB	ICB	1	1.043	104.26	65-125	PASS
LLICV1	CCV1	1	1.029	102.92	65-125	PASS
ICSA1	ICSA	1	1.03	103	65-125	PASS
ICSAB1	ICSAB	1	0.89	89.053	65-125	PASS
CCV1	CCV	1	1.017	101.69	65-125	PASS
CCB1	CCB	1	1.04	103.98	65-125	PASS
CCV2	CCV	1	1.021	102.07	65-125	PASS
CCB2	CCB	1	1.041	104.1	65-125	PASS
CCV3	CCV	1	1.023	102.31	65-125	PASS
CCB3	CCB	1	1.042	104.22	65-125	PASS
CCV4	CCV	1	1.013	101.32	65-125	PASS
CCB4	CCB	1	1.043	104.26	65-125	PASS
ICSA2	ICSA	1	0.95	94.52	65-125	PASS
ICSAB2	ICSAB	1	0.88	87.7	65-125	PASS
CCV5	CCV	1	1.016	101.59	65-125	PASS
CCB5	CCB	1	1.037	103.71	65-125	PASS
MB-70686	MBLK	1	1.021	102.11	65-125	PASS
LCS-70686	LCS	1	1.095	109.52	65-125	PASS
N032084-001C	SAMP	1	1.081	108.05	65-125	PASS
N032084-001C	SAMP	5	1.028	102.85	65-125	PASS
N032084-001C-PS	PS	1	1.0014	100.14	65-125	PASS
CCV6	CCV	1	1.023	102.27	65-125	PASS
CCB6	CCB	1	1.05	105.02	65-125	PASS
N032084-001C-MS	MS	1	1.037	103.68	65-125	PASS
N032084-001C-MSD	MSD	1	1.034	103.4	65-125	PASS
N032084-002C	SAMP	1	1.055	105.51	65-125	PASS
N032084-003C	SAMP	1	1.037	103.68	65-125	PASS
N032084-004C	SAMP	1	1.047	104.66	65-125	PASS
N032084-005C	SAMP	1	1.0057	100.57	65-125	PASS
N032084-006C	SAMP	1	1.03	102.98	65-125	PASS
N032084-007C	SAMP	1	1.025	102.46	65-125	PASS
N032084-008C	SAMP	1	1.022	102.15	65-125	PASS

**INTERNAL STANDARD: 180925A**

Instrument ID: ICP-02

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
N032084-009C	SAMP	1	1.03	103.02	65-125	PASS
CCV7	CCV	1	1.027	102.71	65-125	PASS
CCB7	CCB	1	1.046	104.58	65-125	PASS
N032084-010C	SAMP	1	1.037	103.73	65-125	PASS
N032084-011C	SAMP	1	1.036	103.58	65-125	PASS
N032084-012C	SAMP	1	1.033	103.29	65-125	PASS
N032084-013C	SAMP	1	1.021	102.11	65-125	PASS
N032084-014C	SAMP	1	1.039	103.87	65-125	PASS
N032084-015C	SAMP	1	1.025	102.48	65-125	PASS
CCV8	CCV	1	1.03	102.98	65-125	PASS
CCB8	CCB	1	1.048	104.85	65-125	PASS
ICSA3	ICSA	1	0.95	94.91	65-125	PASS
ICSAB3	ICSAB	1	0.89	88.7	65-125	PASS

# SERIAL DILUTION/ POST DIGESTION SPIKE



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

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3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**388**

**ASSET Laboratories**

**ICP-Metals in Water**

Work Order No.: N032084  
Test Method: EPA 6010  
Analysis Date: 9/25/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70686

Instrument ID: ICP-02  
Instrument Description: Perkin Elmer Optima DV Series

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Fe. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032084-001C DT 5X	Iron	ug/L	0	NA	34.43208	100.00%	10

Note: NA - Not applicable



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6010\_WPGEPBB**

Sample ID	<b>N032084-001C-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>6010_WPGE</b>	Units:	<b>ug/L</b>	Prep Date:		RunNo:	<b>128810</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70686</b>	TestNo:	<b>EPA 6010B EPA 3010A</b>			Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>3152141</b>
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual

Iron		134.595		20	100.0	34.43	100	80	120		
------	--	---------	--	----	-------	-------	-----	----	-----	--	--

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# MDL STUDY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Metals by ICP**  
 Method Number: EPA 200.7/ 6010  
 Analysis Date(s): 10/6, 10/7,11/10/17  
 Analyst: Mary Claire Ignacio

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **ICP-02**

Acceptance Criteria: MDL < spike < 10XMDL

Analyte	Wavelength	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	MDL	PQL
Ag	328.069	0.0033	0.0031	0.0033	0.0033	0.0031	0.0030	0.0047	0.003	0.00061604	<b>0.001936</b>	0.003
Al	237.312	0.0664	0.0603	0.0656	0.0650	0.0658	0.0660	0.0946	0.050	0.01254823	<b>0.039439</b>	0.050
As	188.983	0.0131	0.0089	0.0120	0.0089	0.0060	0.0102	0.0080	0.010	0.00223806	<b>0.007034</b>	0.010
B	249.679	0.1491	0.1267	0.1281	0.1467	0.1261	0.1195	0.1015	0.100	0.01801843	<b>0.056632</b>	0.100
Ba	233.529	0.0033	0.0031	0.0033	0.0031	0.0032	0.0030	0.0024	0.003	0.00033070	<b>0.001039</b>	0.003
Be	313.104	0.0012	0.0011	0.0012	0.0012	0.0011	0.0011	0.0011	0.001	0.00006873	<b>0.000216</b>	0.001
Ca	227.546	0.2381	0.2231	0.2559	0.2299	0.2194	0.2473	0.2691	0.200	0.02202408	<b>0.069222</b>	0.200
Cd	214.437	0.0031	0.0029	0.0031	0.0032	0.0031	0.0031	0.0025	0.003	0.00027049	<b>0.000850</b>	0.003
Co	228.614	0.0030	0.0028	0.0030	0.0031	0.0031	0.0031	0.0027	0.003	0.00014491	<b>0.000455</b>	0.003
Cr	267.719	0.0009	0.0008	0.0009	0.0012	0.0012	0.0013	0.0009	0.001	0.00017120	<b>0.000538</b>	0.001
Fe	273.953	0.0255	0.0226	0.0242	0.0255	0.0252	0.0248	0.0387	0.020	0.00552308	<b>0.017359</b>	0.020
Mg	279.079	0.1124	0.1052	0.1129	0.1315	0.1305	0.1314	0.1435	0.100	0.01532024	<b>0.048152</b>	0.100
Mn	257.607	0.0119	0.0111	0.0120	0.0122	0.0121	0.0122	0.0099	0.010	0.00098403	<b>0.003093</b>	0.010
Mo	202.03	0.0079	0.0068	0.0067	0.0065	0.0065	0.0062	0.0057	0.005	0.00083918	<b>0.002638</b>	0.005
Ni	231.604	0.0061	0.0056	0.0062	0.0060	0.0060	0.0062	0.0045	0.005	0.00062690	<b>0.001970</b>	0.005
Pb	220.351	0.0124	0.0117	0.0127	0.0115	0.0120	0.0118	0.0090	0.010	0.00126325	<b>0.003970</b>	0.010
Sb	206.836	0.0102	0.0095	0.0104	0.0112	0.0117	0.0111	0.0080	0.010	0.00117407	<b>0.003690</b>	0.010
Se	196.025	0.0102	0.0087	0.0114	0.0136	0.0144	0.0136	0.0075	0.010	0.00251341	<b>0.007900</b>	0.010
Sn	189.927	0.0095	0.0084	0.0090	0.0124	0.0126	0.0129	0.0099	0.010	0.00175765	<b>0.005524</b>	0.010
Ti	334.943	0.0114	0.0106	0.0115	0.0115	0.0115	0.0115	0.0098	0.010	0.00074093	<b>0.002329</b>	0.010
Tl	190.794	0.0170	0.0150	0.0165	0.0171	0.0180	0.0168	0.0151	0.015	0.00116288	<b>0.003655</b>	0.015
V	292.404	0.0025	0.0024	0.0025	0.0032	0.0032	0.0032	0.0027	0.003	0.00038496	<b>0.001210</b>	0.003
Zn	206.201	0.0109	0.0100	0.0107	0.0125	0.0124	0.0124	0.0095	0.010	0.00123731	<b>0.003889</b>	0.010



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CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

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3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

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# METHOD DETECTION LIMIT 2017

Method Name: **Metals by ICP**  
 Method Number: EPA 200.7/ 6010  
 Analysis Date(s): 10/6, 10/7,11/10/17  
 Analyst: Mary Claire Ignacio

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **ICP-02**

Analyte	ICP-02 MDL	MDL Blank	Higher MDL	LOD	PQL
Ag	0.001936	0.002362	0.002362	0.002	0.003
Al	0.039439	0.039859	0.039859	0.04	0.5
As	0.007034	0.007672	0.007672	0.0075	0.01
B	0.056632	0.074419	0.074419	0.075	0.1
Ba	0.001039	0.000433	0.001039	0.001	0.003
Be	0.000216	0.000311	0.000311	0.0005	0.003
Ca	0.069222	0.084832	0.084832	0.1	0.5
Cd	0.000850	0.000592	0.000850	0.001	0.003
Co	0.000455	0.001902	0.001902	0.001	0.003
Cr	0.000538	0.000527	0.000538	0.001	0.003
Fe	0.017359	0.017751	0.017751	0.018	0.1
Mg	0.048152	0.043017	0.048152	0.05	0.1
Mn	0.003093	0.000782	0.003093	0.005	0.5
Mo	0.002638	0.002482	0.002638	0.0025	0.005
Ni	0.001970	0.000822	0.001970	0.0025	0.005
Pb	0.003970	0.002762	0.003970	0.005	0.005
Sb	0.003690	0.004504	0.004504	0.005	0.01
Se	0.007900	0.008549	0.008549	0.008	0.01
Sn	0.005524	0.003415	0.005524	0.0075	0.05
Ti	0.002329	0.001493	0.002329	0.005	0.05
Tl	0.003655	0.005987	0.005987	0.005	0.015
V	0.001210	0.000749	0.001210	0.002	0.003
Zn	0.003889	0.007683	0.007683	0.008	0.01



# EPA 6020 Dissolved



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70685  
 ASSET #: N032084

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 9/18/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? (r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)		X			X	
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.		X			X	
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X			X		
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits	X			X		
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X			X	X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

%RSD of Se in N032084-004B / 007B / 012B failed criteria. For rerun.  
 % Rec of Se in ICV failed, high bias. Samples affected are for rerun.  
 Dilution test failed for As.

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer [Signature] 9/27/2018

Date: 9/27/18  
 Date: \_\_\_\_\_



**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70685  
 ASSET #: N032084

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 9/26/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits	X			X		
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented			X			X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

For Se rerun only.  
 %RSD of Se in LLICV failed criteria. However, %Rec of Se in LLICV passed criteria.

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer [Signature] 9/27/2018

Date: 9/27/18  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## SAMPLE CALCULATION

**METHOD:** EPA 6020  
**TEST NAME:** Heavy Metals by ICP-MS  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Manganese concentration, in ug/L in the original sample as follows:

$$\text{Manganese, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration  
DF = Dilution Factor  
PF = Final Volume of Digestate, mL / Amount of Sample, mL

For Sample **N032084-001B**, the concentration in ug/L is calculated as follows:

$$\text{Manganese, ug/L} = 1.65296 * 1 * (25/25)$$

$$\text{Manganese, ug/L} = 1.65296$$

Reporting results in two significant figures,

$$\text{Manganese, ug/L} = 1.7$$

# % RSD SUMMARY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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PERCENT RSD SUMMARY: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	137 Ba [3]				52 Cr [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.12	7.4	15	PASS	0.1	13.57	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.53	5.23	15	PASS	0.52	9.11	15	PASS
Std3-5/50 ppb	ICAL	1	5.11	1.42	15	PASS	5	1.92	15	PASS
Std4-10/100 ppb	ICAL	1	10.018	0.14	15	PASS	10	2.17	15	PASS
Std5-20/200 ppb	ICAL	1	20.24	0.85	15	PASS	20.13	0.61	15	PASS
Std6-40/400 ppb	ICAL	1	40.16	0.26	15	PASS	39.74	1.24	15	PASS
Std7-100/1000 ppb	ICAL	1	100.36	0.43	15	PASS	100.0075	0.29	15	PASS
Std8-200/2000 ppb	ICAL	1	199.76	0.88	15	PASS	200.036	0.73	15	PASS
ICV	ICV	1	10.11	0.66	15	PASS	10.11	1.27	15	PASS
ICB	ICB	1	0.055	8.87	15	PASS	0.0064	83.29	15	<PQL
LLICV	CCV1	1	1.07	2.33	20	PASS	1	2.96	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	0.061	58.2	15	<PQL
ICSAB1	ICSAB	1	18.26	1.9	15	PASS	20.69	1.85	15	PASS
LLICV	CCV1	1	1.048	2.4	20	PASS	1.0086	1.52	20	PASS
CCV1	CCV	1	20.43	0.17	15	PASS	19.81	1.41	15	PASS
CCB1	CCB	1	0.052	10.021	15	PASS	<0.000	N/A	15	<PQL
MB-70685	MBLK	1	0.087	9.085	15	PASS	<0.000	N/A	15	<PQL
CCV2	CCV	1	20.4	0.099	15	PASS	19.84	0.59	15	PASS
CCB2	CCB	1	0.052	16.13	15	<PQL	0.0021	206.86	15	<PQL
LCS-70685	LCS	1	10.09	0.69	15	PASS	9.95	2.025	15	PASS
N032084-001B	SAMP	1	108.037	0.67	15	PASS	0.001	1310.2	15	<PQL
N032084-001B	SAMP	5	22.3	0.5	15	PASS	0.0065	48.23	15	<PQL
N032084-001B-PS	PS	1	121.22	0.29	15	PASS	9.68	3.16	15	PASS
N032084-001B-MS	MS	1	118.71	0.57	15	PASS	9.69	0.68	15	PASS
N032084-001B-MSD	MSD	1	119.61	0.42	15	PASS	9.74	1.58	15	PASS
N032084-002B	SAMP	1	111.95	0.98	15	PASS	0.00025	5485.52	15	<PQL
N032084-003B	SAMP	1	109.037	0.96	15	PASS	<0.000	N/A	15	<PQL
N032084-004B	SAMP	1	110.54	0.17	15	PASS	0.029	47.87	15	<PQL
N032084-005B	SAMP	1	106.11	0.91	15	PASS	0.012	182.02	15	<PQL
CCV3	CCV	1	20.2	0.45	15	PASS	19.91	0.8	15	PASS
CCB3	CCB	1	0.055	5.33	15	PASS	<0.000	N/A	15	<PQL
N032084-006B	SAMP	1	108.076	0.13	15	PASS	0.017	37.35	15	<PQL
N032084-007B	SAMP	1	106.82	0.55	15	PASS	<0.000	N/A	15	<PQL
N032084-008B	SAMP	1	111.034	0.35	15	PASS	<0.000	N/A	15	<PQL
N032084-009B	SAMP	1	110.31	0.46	15	PASS	<0.000	N/A	15	<PQL
N032084-010B	SAMP	1	110.27	0.15	15	PASS	<0.000	N/A	15	<PQL
N032084-011B	SAMP	1	109.35	0.25	15	PASS	0.083	12.46	15	PASS
N032084-012B	SAMP	1	105.9	1.12	15	PASS	<0.000	N/A	15	<PQL
N032084-013B	SAMP	1	111.3	0.92	15	PASS	0.016	67.58	15	<PQL
N032084-014B	SAMP	1	105.068	0.34	15	PASS	0.0052	158.83	15	<PQL

PERCENT RSD SUMMARY: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	137 Ba [3]				52 Cr [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N032084-015B	SAMP	1	109.65	0.34	15	PASS	0.0075	101.7	15	<PQL
CCV4	CCV	1	20.11	1.78	15	PASS	19.99	1.049	15	PASS
CCB4	CCB	1	0.067	10.37	15	PASS	<0.000	N/A	15	<PQL
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	0.085	15.38	15	<PQL
ICSAB2	ICSAB	1	17.63	0.9	15	PASS	17.58	2.52	15	PASS

PERCENT RSD SUMMARY: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	55 Mn [2]				75 As [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.091	20.9	15	<PQL	0.11	37.64	15	NR!
Std2-0.5/5 ppb	ICAL	1	0.48	19.045	15	<PQL	0.55	16.99	15	NR!
Std3-5/50 ppb	ICAL	1	4.97	2.56	15	PASS	5.08	4.84	15	PASS
Std4-10/100 ppb	ICAL	1	9.79	0.56	15	PASS	9.79	4.29	15	PASS
Std5-20/200 ppb	ICAL	1	20.58	1.67	15	PASS	20.00088	2.5	15	PASS
Std6-40/400 ppb	ICAL	1	39.78	0.94	15	PASS	40.12	2.31	15	PASS
Std7-100/1000 ppb	ICAL	1	100.086	1.11	15	PASS	97.64	1.48	15	PASS
Std8-200/2000 ppb	ICAL	1	199.95	0.52	15	PASS	201.16	0.83	15	PASS
ICV	ICV	1	106.4	0.47	15	PASS	10.26	4.0018	15	PASS
ICB	ICB	1	0.014	152.76	15	<PQL	0.0034	1175.43	15	<PQL
LLICV	CCV1	1	0.52	8.52	20	PASS	0.087	49.46	20	<PQL
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	0.038	110.84	15	<PQL
ICSAB1	ICSAB	1	17.45	3.38	15	PASS	21.68	3.68	15	PASS
LLICV	CCV1	1	0.48	8.57	20	PASS	0.13	17.095	20	PASS
CCV1	CCV	1	19.79	2.59	15	PASS	19.38	1.68	15	PASS
CCB1	CCB	1	0.015	29.81	15	<PQL	0.024	147.54	15	<PQL
MB-70685	MBLK	1	<0.000	N/A	15	<PQL	0.0081	270.97	15	<PQL
CCV2	CCV	1	19.88	1.023	15	PASS	20.17	1.39	15	PASS
CCB2	CCB	1	0.00069	2997.66	15	<PQL	<0.000	N/A	15	<PQL
LCS-70685	LCS	1	105.69	1.52	15	PASS	9.91	1.065	15	PASS
N032084-001B	SAMP	1	1.65	7.72	15	PASS	2.61	4.68	15	PASS
N032084-001B	SAMP	5	0.38	16.34	15	<PQL	0.6	1.31	15	PASS
N032084-001B-PS	PS	1	101.42	2.19	15	PASS	12.65	1.4	15	PASS
N032084-001B-MS	MS	1	104.99	1.067	15	PASS	12.55	2.01	15	PASS
N032084-001B-MSD	MSD	1	103.21	0.7	15	PASS	12.76	1.98	15	PASS
N032084-002B	SAMP	1	1.84	5.054	15	PASS	2.75	4.46	15	PASS
N032084-003B	SAMP	1	1.8	8.034	15	PASS	2.57	3.76	15	PASS
N032084-004B	SAMP	1	14.35	3.96	15	PASS	2.68	3.96	15	PASS
N032084-005B	SAMP	1	10.99	2.44	15	PASS	2.5	2.43	15	PASS
CCV3	CCV	1	20.2	1.58	15	PASS	19.8	0.45	15	PASS
CCB3	CCB	1	0.015	84.089	15	<PQL	0.024	118.94	15	<PQL
N032084-006B	SAMP	1	1.78	3.37	15	PASS	2.56	7.57	15	PASS
N032084-007B	SAMP	1	2.07	6.9	15	PASS	2.55	3.031	15	PASS
N032084-008B	SAMP	1	2.085	8.54	15	PASS	2.69	1.7	15	PASS
N032084-009B	SAMP	1	2.018	7.74	15	PASS	2.7	1.56	15	PASS
N032084-010B	SAMP	1	1.76	9.64	15	PASS	2.6	3.97	15	PASS
N032084-011B	SAMP	1	2.92	5.33	15	PASS	2.7	2.14	15	PASS
N032084-012B	SAMP	1	2.45	3.57	15	PASS	2.59	4.57	15	PASS
N032084-013B	SAMP	1	2.21	5.76	15	PASS	2.56	4	15	PASS
N032084-014B	SAMP	1	1.47	10.43	15	PASS	2.4	2.31	15	PASS

PERCENT RSD SUMMARY: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	55 Mn [2]				75 As [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N032084-015B	SAMP	1	1.71	4.14	15	PASS	2.74	3.68	15	PASS
CCV4	CCV	1	20.29	1.92	15	PASS	19.69	3.34	15	PASS
CCB4	CCB	1	0.00063	1599.64	15	<PQL	0.017	120.46	15	<PQL
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	0.014	264.44	15	<PQL
ICSAB2	ICSAB	1	20.67	0.49	15	PASS	17.79	0.2	15	PASS

PERCENT RSD SUMMARY: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	78 Se [1]				95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.064	92.043	15	<PQL	0.092	14.24	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.46	14.085	15	PASS	0.45	15.18	15	<PQL
Std3-5/50 ppb	ICAL	1	4.74	3.34	15	PASS	4.68	0.23	15	PASS
Std4-10/100 ppb	ICAL	1	9.23	6.9	15	PASS	9.54	1.85	15	PASS
Std5-20/200 ppb	ICAL	1	19.69	1.71	15	PASS	19.22	0.57	15	PASS
Std6-40/400 ppb	ICAL	1	40.011	4.18	15	PASS	38.74	0.89	15	PASS
Std7-100/1000 ppb	ICAL	1	100.15	1.081	15	PASS	98.85	0.35	15	PASS
Std8-200/2000 ppb	ICAL	1	204.84	1.94	15	PASS	200.94	0.46	15	PASS
ICV	ICV	1	11.12	6.13	15	PASS	10.69	0.82	15	PASS
ICB	ICB	1	0.033	173.21	15	<PQL	<0.000	N/A	15	<PQL
LLICV	CCV1	1	0.45	47.098	20	<PQL	0.42	12.1	20	PASS
ICSA1	ICSA	1	0.12	34.71	15	<PQL	0.18	6.53	15	PASS
ICSAB1	ICSAB	1	20.79	2.59	15	PASS	22.027	0.94	15	PASS
LLICV	CCV1	1	0.64	17.89	20	PASS	0.58	6.72	20	PASS
CCV1	CCV	1	19.96	3.34	15	PASS	19.34	1.7	15	PASS
CCB1	CCB	1	0.11	57.17	15	<PQL	0.091	31.47	15	<PQL
MB-70685	MBLK	1	0.027	86.61	15	<PQL	0.03	35.99	15	<PQL
CCV2	CCV	1	19.89	1.74	15	PASS	19.14	1.13	15	PASS
CCB2	CCB	1	0.055	41.75	15	<PQL	0.07	19.68	15	<PQL
LCS-70685	LCS	1	10.44	12.9	15	PASS	9.9	0.73	15	PASS
N032084-001B	SAMP	1	1.45	11.53	15	PASS	4.53	1.23	15	PASS
N032084-001B	SAMP	5	0.26	46.29	15	<PQL	0.9	7.44	15	PASS
N032084-001B-PS	PS	1	11.21	5.28	15	PASS	15.57	1.093	15	PASS
N032084-001B-MS	MS	1	12.051	9.83	15	PASS	15.62	1.71	15	PASS
N032084-001B-MSD	MSD	1	11.98	2.13	15	PASS	15.89	1.69	15	PASS
N032084-002B	SAMP	1	1.7	4.63	15	PASS	4.8	3.61	15	PASS
N032084-003B	SAMP	1	1.67	3.72	15	PASS	4.55	1.18	15	PASS
N032084-004B	SAMP	1	1.63	38.85	15	NR!	4.64	1.6	15	PASS
N032084-005B	SAMP	1	1.51	10.37	15	PASS	4.67	3.45	15	PASS
CCV3	CCV	1	19.18	8.12	15	PASS	19.29	0.081	15	PASS
CCB3	CCB	1	0.085	49.55	15	<PQL	0.076	22.084	15	<PQL
N032084-006B	SAMP	1	1.68	4.017	15	PASS	4.56	2.83	15	PASS
N032084-007B	SAMP	1	1.43	20.25	15	NR!	4.36	3.29	15	PASS
N032084-008B	SAMP	1	1.86	6.38	15	PASS	4.73	1.92	15	PASS
N032084-009B	SAMP	1	1.57	12.69	15	PASS	4.68	1.16	15	PASS
N032084-010B	SAMP	1	2.0021	14.027	15	PASS	4.69	3.43	15	PASS
N032084-011B	SAMP	1	1.7	12.8	15	PASS	4.65	3.51	15	PASS
N032084-012B	SAMP	1	1.38	34.77	15	NR!	4.35	5.64	15	PASS
N032084-013B	SAMP	1	1.67	5.86	15	PASS	4.71	2.86	15	PASS
N032084-014B	SAMP	1	1.69	22.63	15	NR!	4.29	0.28	15	PASS

PERCENT RSD SUMMARY: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	78 Se [1]				95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N032084-015B	SAMP	1	1.54	8.14	15	PASS	4.72	4.59	15	PASS
CCV4	CCV	1	20.074	5.84	15	PASS	19.25	0.18	15	PASS
CCB4	CCB	1	0.03	173.21	15	<PQL	0.076	5.23	15	PASS
ICSA2	ICSA	1	0.075	68.24	15	<PQL	0.11	18.77	15	<PQL
ICSAB2	ICSAB	1	16.24	1.36	15	PASS	18.46	1.43	15	PASS



PERCENT RSD SUMMARY: 180926A

Instrument ID: ICPMS-02

Sample Name	Type	DF	78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.08	52.45	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.5	61.44	15	NR!
Std3-5/50 ppb	ICAL	1	4.94	9.88	15	PASS
Std4-10/100 ppb	ICAL	1	9.59	5.19	15	PASS
Std5-20/200 ppb	ICAL	1	20.21	5.25	15	PASS
Std6-40/400 ppb	ICAL	1	39.58	3.022	15	PASS
Std7-100/1000 ppb	ICAL	1	100.17	3.018	15	PASS
Std8-200/2000 ppb	ICAL	1	196.021	0.68	15	PASS
ICV	ICV	1	10.21	4.3	15	PASS
ICB	ICB	1	<0.000	N/A	15	<PQL
LLICV	CCV1	1	0.5	25.36	20	NR!
ICSA1	ICSA	1	0.05	93.46	15	<PQL
ICSAB1	ICSAB	1	19.27	2.49	15	PASS
CCV1	CCV	1	20.82	3.39	15	PASS
CCB1	CCB	1	0.059	119.26	15	<PQL
CCV2	CCV	1	18.84	2.39	15	PASS
CCB2	CCB	1	0.022	69.15	15	<PQL
MB-70685	MBLK	1	<0.000	N/A	15	<PQL
LCS-70685	LCS	1	10.44	1.19	15	PASS
N032084-001B	SAMP	1	1.44	18.4	15	NR!
CCV3	CCV	1	18.66	4.37	15	PASS
CCB3	CCB	1	<0.000	N/A	15	<PQL
ICSA2	ICSA	1	<0.000	0	15	PASS
ICSAB2	ICSAB	1	20.38	1.58	15	PASS
N032084-001B	SAMP	1	1.52	8.21	15	PASS
N032084-001B	SAMP	5	0.25	58.95	15	<PQL
N032084-001B-PS	PS	1	11.33	8.91	15	PASS
N032084-001B-MS	MS	1	11.11	5.27	15	PASS
N032084-001B-MSD	MSD	1	11.19	2.51	15	PASS
N032084-002B	SAMP	1	1.42	7.46	15	PASS
N032084-003B	SAMP	1	1.43	4.43	15	PASS
N032084-004B	SAMP	1	1.65	11.84	15	PASS
N032084-005B	SAMP	1	1.37	14.19	15	PASS
N032084-006B	SAMP	1	1.5	28.34	15	NR!
CCV4	CCV	1	20.34	3.15	15	PASS
CCB4	CCB	1	0.026	227.46	15	<PQL
N032084-007B	SAMP	1	1.67	6.84	15	PASS
N032084-008B	SAMP	1	1.53	1.039	15	PASS
N032084-009B	SAMP	1	1.64	19.54	15	NR!
N032084-010B	SAMP	1	1.55	18.97	15	NR!

PERCENT RSD SUMMARY: 180926A

Instrument ID: ICPMS-02

Sample Name	Type	DF	78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment
N032084-011B	SAMP	1	1.46	19.19	15	NR!
N032084-012B	SAMP	1	1.5	7.19	15	PASS
N032084-013B	SAMP	1	1.66	8.43	15	PASS
N032084-014B	SAMP	1	1.53	12.011	15	PASS
N032084-015B	SAMP	1	1.47	22.37	15	NR!
N032084-006B	SAMP	1	1.51	10.78	15	PASS
CCV5	CCV	1	19.47	2.7	15	PASS
CCB5	CCB	1	0.029	155.62	15	<PQL
N032084-009B	SAMP	1	1.73	2.42	15	PASS
N032084-010B	SAMP	1	1.52	12.69	15	PASS
N032084-011B	SAMP	1	1.38	4.39	15	PASS
N032084-015B	SAMP	1	1.5	24.04	15	NR!
N032084-011B	SAMP	1	1.67	27.58	15	NR!
N032084-015B	SAMP	1	1.65	38	15	NR!
N032084-015B	SAMP	1	1.68	14.99	15	PASS
CCV6	CCV	1	19.45	4.35	15	PASS
CCB6	CCB	1	0.019	239.14	15	<PQL
ICSA3	ICSA	1	0.029	158.41	15	<PQL
ICSAB3	ICSAB	1	19.98	1.88	15	PASS

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**INJECTION LOG: 180918B**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
B0918001.D	RINSE	RINSE	1	09/18/18 11:33 PM
B0918002.D	Cal Blank	IBLK	1	09/18/18 11:38 PM
B0918003.D	Std1-0.1/1 ppb	ICAL	1	09/18/18 11:44 PM
B0918004.D	Std2-0.5/5 ppb	ICAL	1	09/18/18 11:50 PM
B0918005.D	Std3-5/50 ppb	ICAL	1	09/18/18 11:55 PM
B0918006.D	Std4-10/100 ppb	ICAL	1	09/19/18 12:01 AM
B0918007.D	Std5-20/200 ppb	ICAL	1	09/19/18 12:06 AM
B0918008.D	Std6-40/400 ppb	ICAL	1	09/19/18 12:12 AM
B0918009.D	Std7-100/1000 ppb	ICAL	1	09/19/18 12:17 AM
B0918010.D	Std8-200/2000 ppb	ICAL	1	09/19/18 12:23 AM
B0918011.D	ICV	ICV	1	09/19/18 12:29 AM
B0918012.D	ICB	ICB	1	09/19/18 12:33 AM
B0918013.D	LLICV	CCV1	1	09/19/18 12:39 AM
B0918014.D	ICSA1	ICSA	1	09/19/18 12:45 AM
B0918015.D	ICSAB1	ICSAB	1	09/19/18 12:51 AM
B0918016.D	LLICV	CCV1	1	09/19/18 12:56 AM
B0918017.D	MB-70627	MBLK	1	09/19/18 1:02 AM
B0918018.D	LCS-70627	LCS	1	09/19/18 1:08 AM
B0918019.D	N032065-003B	SAMP	1	09/19/18 1:13 AM
B0918020.D	N032065-003B	SAMP	5	09/19/18 1:19 AM
B0918021.D	N032065-003B-PS	PS	1	09/19/18 1:24 AM
B0918022.D	N032065-003B-MS	MS	1	09/19/18 1:30 AM
B0918023.D	N032065-003B-MSD	MSD	1	09/19/18 1:35 AM
B0918024.D	N032065-004B	SAMP	1	09/19/18 1:41 AM
B0918025.D	N032065-005B	SAMP	1	09/19/18 1:47 AM
B0918026.D	N032065-006B	SAMP	1	09/19/18 1:52 AM
B0918027.D	CCV1	CCV	1	09/19/18 1:58 AM
B0918028.D	CCB1	CCB	1	09/19/18 2:03 AM
B0918029.D	N032065-007B	SAMP	1	09/19/18 2:11 AM
B0918030.D	N032065-008B	SAMP	1	09/19/18 2:15 AM
B0918031.D	N032065-009B	SAMP	1	09/19/18 2:21 AM
B0918032.D	N032065-010B	SAMP	1	09/19/18 2:26 AM
B0918033.D	N032065-011B	SAMP	1	09/19/18 2:31 AM
B0918034.D	N032065-012B	SAMP	1	09/19/18 2:37 AM
B0918035.D	N032065-013B	SAMP	1	09/19/18 2:42 AM
B0918036.D	N032065-014B	SAMP	1	09/19/18 2:48 AM
B0918037.D	N032065-015B	SAMP	1	09/19/18 2:53 AM
B0918038.D	MB-70685	MBLK	1	09/19/18 2:59 AM
B0918039.D	CCV2	CCV	1	09/19/18 3:04 AM
B0918040.D	CCB2	CCB	1	09/19/18 3:10 AM
B0918041.D	LCS-70685	LCS	1	09/19/18 3:16 AM
B0918042.D	N032084-001B	SAMP	1	09/19/18 3:22 AM

**INJECTION LOG: 180918B**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
B0918043.D	N032084-001B	SAMP	5	09/19/18 3:27 AM
B0918044.D	N032084-001B-PS	PS	1	09/19/18 3:32 AM
B0918045.D	N032084-001B-MS	MS	1	09/19/18 3:38 AM
B0918046.D	N032084-001B-MSD	MSD	1	09/19/18 3:44 AM
B0918047.D	N032084-002B	SAMP	1	09/19/18 3:49 AM
B0918048.D	N032084-003B	SAMP	1	09/19/18 3:55 AM
B0918049.D	N032084-004B	SAMP	1	09/19/18 4:00 AM
B0918050.D	N032084-005B	SAMP	1	09/19/18 4:05 AM
B0918051.D	CCV3	CCV	1	09/19/18 4:12 AM
B0918052.D	CCB3	CCB	1	09/19/18 4:17 AM
B0918053.D	N032084-006B	SAMP	1	09/19/18 4:23 AM
B0918054.D	N032084-007B	SAMP	1	09/19/18 4:30 AM
B0918055.D	N032084-008B	SAMP	1	09/19/18 4:34 AM
B0918056.D	N032084-009B	SAMP	1	09/19/18 4:40 AM
B0918057.D	N032084-010B	SAMP	1	09/19/18 4:45 AM
B0918058.D	N032084-011B	SAMP	1	09/19/18 4:51 AM
B0918059.D	N032084-012B	SAMP	1	09/19/18 4:56 AM
B0918060.D	N032084-013B	SAMP	1	09/19/18 5:02 AM
B0918061.D	N032084-014B	SAMP	1	09/19/18 5:07 AM
B0918062.D	N032084-015B	SAMP	1	09/19/18 5:13 AM
B0918063.D	CCV4	CCV	1	09/19/18 5:19 AM
B0918064.D	CCB4	CCB	1	09/19/18 5:24 AM
B0918065.D	ICSA2	ICSA	1	09/19/18 5:30 AM
B0918066.D	ICSAB2	ICSAB	1	09/19/18 5:43 AM

**INJECTION LOG: 180926A**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A0926001.D	RINSE	RINSE	1	09/26/18 9:21 AM
A0926002.D	Cal Blank	IBLK	1	09/26/18 9:26 AM
A0926003.D	Std1-0.1/1 ppb	ICAL	1	09/26/18 9:32 AM
A0926004.D	Std2-0.5/5 ppb	ICAL	1	09/26/18 9:37 AM
A0926005.D	Std3-5/50 ppb	ICAL	1	09/26/18 9:43 AM
A0926006.D	Std4-10/100 ppb	ICAL	1	09/26/18 9:48 AM
A0926007.D	Std5-20/200 ppb	ICAL	1	09/26/18 9:54 AM
A0926008.D	Std6-40/400 ppb	ICAL	1	09/26/18 10:00 AM
A0926009.D	Std7-100/1000 ppb	ICAL	1	09/26/18 10:05 AM
A0926010.D	Std8-200/2000 ppb	ICAL	1	09/26/18 10:11 AM
A0926011.D	ICV	ICV	1	09/26/18 10:17 AM
A0926012.D	ICB	ICB	1	09/26/18 10:23 AM
A0926013.D	LLICV	CCV1	1	09/26/18 10:28 AM
A0926014.D	ICSA1	ICSA	1	09/26/18 10:34 AM
A0926015.D	ICSAB1	ICSAB	1	09/26/18 10:40 AM
A0926016.D	MB-70627	MBLK	1	09/26/18 10:45 AM
A0926017.D	LCS-70627	LCS	1	09/26/18 10:50 AM
A0926018.D	N032065-003B	SAMP	1	09/26/18 10:56 AM
A0926019.D	N032065-003B	SAMP	5	09/26/18 11:01 AM
A0926020.D	N032065-003B-PS	PS	1	09/26/18 11:08 AM
A0926021.D	N032065-003B-MS	MS	1	09/26/18 11:13 AM
A0926022.D	N032065-003B-MSD	MSD	1	09/26/18 11:19 AM
A0926023.D	N032065-004B	SAMP	1	09/26/18 11:24 AM
A0926024.D	N032065-005B	SAMP	1	09/26/18 11:30 AM
A0926025.D	N032065-006B	SAMP	1	09/26/18 11:35 AM
A0926026.D	CCV1	CCV	1	09/26/18 11:42 AM
A0926027.D	CCB1	CCB	1	09/26/18 11:47 AM
A0926028.D	N032065-007B	SAMP	1	09/26/18 11:52 AM
A0926029.D	N032065-008B	SAMP	1	09/26/18 11:58 AM
A0926030.D	N032065-009B	SAMP	1	09/26/18 12:03 PM
A0926031.D	N032065-010B	SAMP	1	09/26/18 12:09 PM
A0926032.D	N032065-011B	SAMP	1	09/26/18 12:14 PM
A0926033.D	N032065-012B	SAMP	1	09/26/18 12:20 PM
A0926034.D	N032065-013B	SAMP	1	09/26/18 12:25 PM
A0926035.D	N032065-014B	SAMP	1	09/26/18 12:31 PM
A0926036.D	N032065-015B	SAMP	1	09/26/18 12:37 PM
A0926037.D	N032065-005B	SAMP	1	09/26/18 12:42 PM
A0926038.D	CCV2	CCV	1	09/26/18 12:48 PM
A0926039.D	CCB2	CCB	1	09/26/18 12:53 PM
A0926040.D	N032065-007B	SAMP	1	09/26/18 12:59 PM
A0926041.D	N032065-009B	SAMP	1	09/26/18 1:04 PM
A0926042.D	N032065-012B	SAMP	1	09/26/18 1:10 PM

**INJECTION LOG: 180926A**

**Instrument ID: ICPMS-02**

NR

Data File	Sample Name	Type	DF	Acq. Date-Time
A0926043.D	N032065-013B	SAMP	1	09/26/18 1:17 PM
A0926044.D	N032065-005B	SAMP	1	09/26/18 1:22 PM
A0926045.D	N032065-007B	SAMP	1	09/26/18 1:28 PM
A0926046.D	N032065-007B	SAMP	1	09/26/18 1:33 PM
A0926047.D	MB-70685	MBLK	1	09/26/18 1:39 PM
A0926048.D	LCS-70685	LCS	1	09/26/18 1:45 PM
A0926049.D	N032084-001B	SAMP	1	09/26/18 1:50 PM
A0926050.D	CCV3	CCV	1	09/26/18 1:56 PM
A0926051.D	CCB3	CCB	1	09/26/18 2:01 PM
A0926052.D	ICSA2	ICSA	1	09/26/18 2:07 PM
A0926053.D	ICSAB2	ICSAB	1	09/26/18 2:12 PM
A0926054.D	N032084-001B	SAMP	1	09/26/18 2:18 PM
A0926055.D	N032084-001B	SAMP	5	09/26/18 2:23 PM
A0926056.D	N032084-001B-PS	PS	1	09/26/18 2:29 PM
A0926057.D	N032084-001B-MS	MS	1	09/26/18 2:34 PM
A0926058.D	N032084-001B-MSD	MSD	1	09/26/18 2:40 PM
A0926059.D	N032084-002B	SAMP	1	09/26/18 2:46 PM
A0926060.D	N032084-003B	SAMP	1	09/26/18 2:51 PM
A0926061.D	N032084-004B	SAMP	1	09/26/18 2:57 PM
A0926062.D	N032084-005B	SAMP	1	09/26/18 3:02 PM
A0926063.D	N032084-006B	SAMP	1	09/26/18 3:08 PM
A0926064.D	CCV4	CCV	1	09/26/18 3:13 PM
A0926065.D	CCB4	CCB	1	09/26/18 3:19 PM
A0926066.D	N032084-007B	SAMP	1	09/26/18 3:25 PM
A0926067.D	N032084-008B	SAMP	1	09/26/18 3:30 PM
A0926068.D	N032084-009B	SAMP	1	09/26/18 3:36 PM
A0926069.D	N032084-010B	SAMP	1	09/26/18 3:41 PM
A0926070.D	N032084-011B	SAMP	1	09/26/18 3:47 PM
A0926071.D	N032084-012B	SAMP	1	09/26/18 3:53 PM
A0926072.D	N032084-013B	SAMP	1	09/26/18 3:58 PM
A0926073.D	N032084-014B	SAMP	1	09/26/18 4:04 PM
A0926074.D	N032084-015B	SAMP	1	09/26/18 4:09 PM
A0926075.D	N032084-006B	SAMP	1	09/26/18 4:15 PM
A0926076.D	CCV5	CCV	1	09/26/18 4:21 PM
A0926077.D	CCB5	CCB	1	09/26/18 4:26 PM
A0926078.D	N032084-009B	SAMP	1	09/26/18 4:32 PM
A0926079.D	N032084-010B	SAMP	1	09/26/18 4:37 PM
A0926080.D	N032084-011B	SAMP	1	09/26/18 4:43 PM
A0926081.D	N032084-015B	SAMP	1	09/26/18 4:48 PM
A0926082.D	N032084-011B	SAMP	1	09/26/18 4:54 PM
A0926083.D	N032084-015B	SAMP	1	09/26/18 5:00 PM
A0926084.D	N032084-015B	SAMP	1	09/26/18 5:05 PM

**INJECTION LOG: 180926A**

**Instrument ID: ICPMS-02**

<b>Data File</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq. Date-Time</b>
A0926085.D	CCV6	CCV	1	09/26/18 5:11 PM
A0926086.D	CCB6	CCB	1	09/26/18 5:16 PM
A0926087.D	ICSA3	ICSA	1	09/26/18 5:22 PM
A0926088.D	ICSAB3	ICSAB	1	09/26/18 5:27 PM



# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 9/18/2018 11:00:38

Reviewed/ Date: *MM* 9/27/2018

Page: 1 of 2

Prep End Date: 9/18/2018 3:30:00

Initials/ Date: *CS* 9/27/2018

Prep Factor Units  
mL / mL

Temp. (°C):  
94.8

Location:  
02-10

Prep Batch 70685 Prep Code: 3010\_W\_MSDI

Technician Claire Ignacio

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70685	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70685	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N032084-001B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-001B-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-001B-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-002B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-003B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-004B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-005B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-006B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-007B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-008B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-009B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-010B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **9/18/2018 11:00:38**

Prep End Date: **9/18/2018 3:30:00**

Reviewed/ Date: *Manny* 9/27/2018

Page: 2 of 2

Initials/ Date: *[Signature]* 9/27/2018

Prep Factor Units  
mL / mL

Temp. (°C):  
**94.8**

Location:  
**02-10**

Prep Batch **70685** Prep Code: **3010\_W\_MSDI**

Technician **Claire Ignacio**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N032084-011B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-012B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-013B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-014B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032084-015B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

# INSTRUMENT TUNING CHECK



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 18 Sep 2018 08:50:23 am  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	141967.00	0.00	
24 Mg	438951.00	0.00	
25 Mg	57112.80	0.00	
26 Mg	64457.90	0.00	
59 Co	351745.00	0.00	
115 In	534958.00	0.00	
206 Pb	168054.00	0.00	
207 Pb	146818.00	0.00	
208 Pb	363000.00	0.00	

## RSD (%)

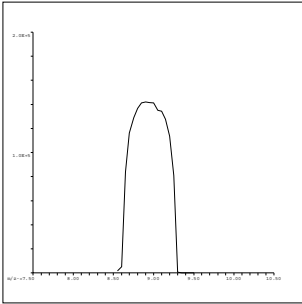
Element	Actual	Required	Flag
9 Be	0.68	5.00	
24 Mg	0.73	5.00	
25 Mg	1.26	5.00	
26 Mg	0.54	5.00	
59 Co	0.96	5.00	
115 In	1.48	5.00	
206 Pb	1.12	5.00	
207 Pb	1.81	5.00	
208 Pb	0.74	5.00	

## Ion Ratio

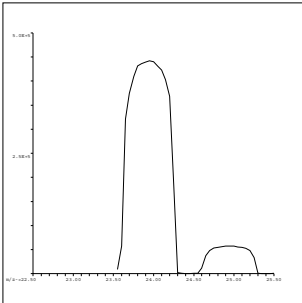
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

## Maximum Bkg. Count (CPS)

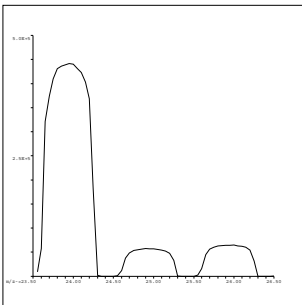
Element	Actual	Required	Flag
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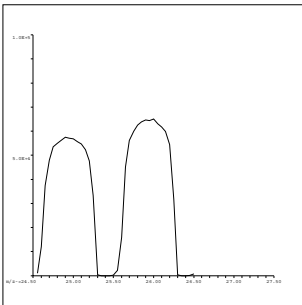
9 Be  
Mass Calib.  
Actual: 8.90  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



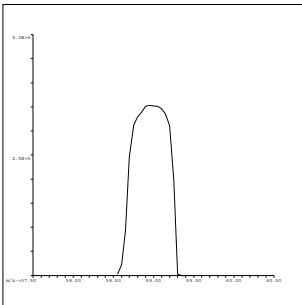
24 Mg  
Mass Calib.  
Actual: 23.90  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



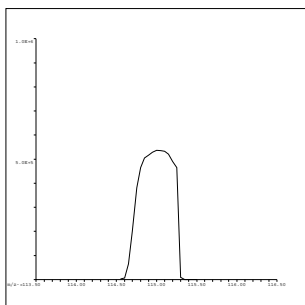
25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



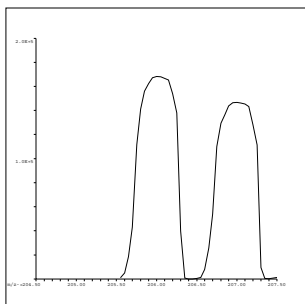
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



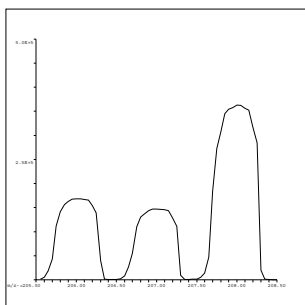
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



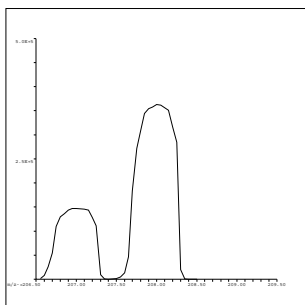
115 In  
Mass Calib.  
Actual: 115.05  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.05  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.00  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 208.00  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:

QC Tune Result:Pass

## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 26 Sep 2018 09:09:25 am  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	100982.00	0.00	
24 Mg	400890.00	0.00	
25 Mg	51782.90	0.00	
26 Mg	58963.00	0.00	
59 Co	342044.00	0.00	
115 In	582881.00	0.00	
206 Pb	206785.00	0.00	
207 Pb	181601.00	0.00	
208 Pb	448014.00	0.00	

## RSD (%)

Element	Actual	Required	Flag
9 Be	0.82	5.00	
24 Mg	0.69	5.00	
25 Mg	0.75	5.00	
26 Mg	0.24	5.00	
59 Co	0.97	5.00	
115 In	1.14	5.00	
206 Pb	1.40	5.00	
207 Pb	1.33	5.00	
208 Pb	1.56	5.00	

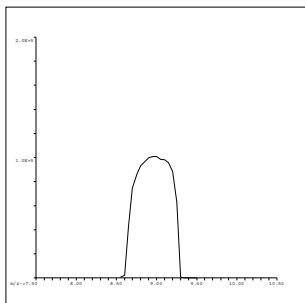
## Ion Ratio

Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

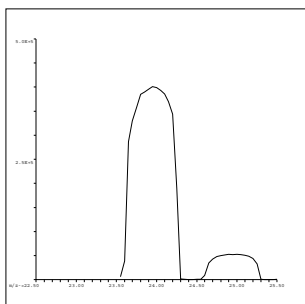
## Maximum Bkg. Count (CPS)

Element	Actual	Required	Flag
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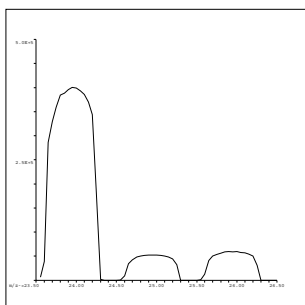




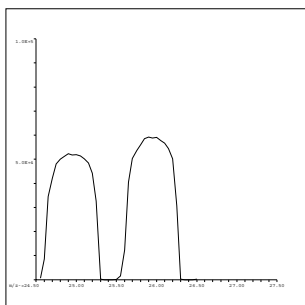
9 Be  
Mass Calib.  
Actual: 9.00  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



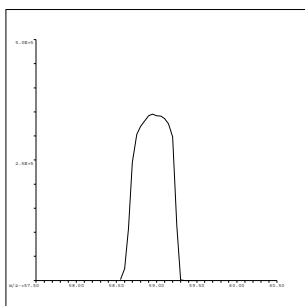
24 Mg  
Mass Calib.  
Actual: 23.95  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



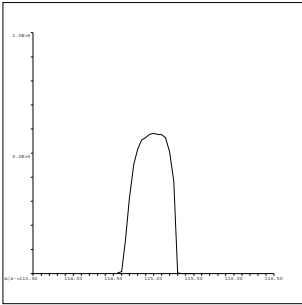
25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



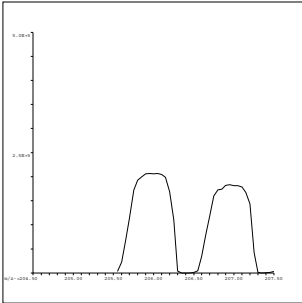
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



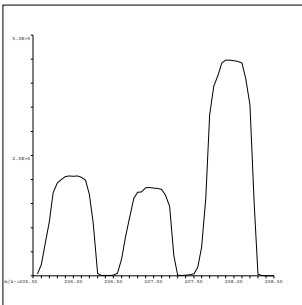
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



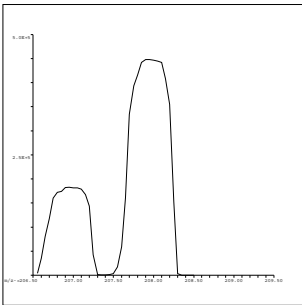
115 In  
Mass Calib.  
Actual: 115.00  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.00  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.00  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 207.95  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

QC Tune Result:Pass

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

INITIAL CALIBRATION SUMMARY: 180918B

Instrument ID: ICPMS-02

Analyte	Data File	B0918002.D	B0918003.D	B0918004.D	B0918005.D	B0918006.D	B0918007.D	B0918008.D	B0918009.D	B0918010.D	R
	Acq. Date-Time	09/18/2018 11:38 PM	09/18/2018 11:44 PM	09/18/2018 11:50 PM	09/18/2018 11:55 PM	09/19/2018 12:01 AM	09/19/2018 12:06 AM	09/19/2018 12:12 AM	09/19/2018 12:17 AM	09/19/2018 12:23 AM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	2	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std1-0.1/1 ppb	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.1/1 ug/L	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L		
45 Sc (ISTD) [ 2 ]	CPS	43988.8		44148.1	44492.3	44235	41736.6	43371.8	41452.3	41069.2	
55 Mn [ 2 ]	CPS	80.3		809.4	7760.8	15138	29924.9	60060.5	144294	285578.1	1.0000
52 Cr [ 2 ]	CPS	162.2		1838.2	16506.6	32675	61907.6	126849.9	304900.2	604127.4	1.0000
72 Ge (ISTD) [ 1 ]	CPS	23642.2		25163.4	25762.2	25719.8	24467.9	23287.2	22389.3	21735.1	
78 Se [ 1 ]	CPS	0		41.1	433.4	841.2	1707.9	3303.8	7945.6	15773.7	1.0000
72 Ge (ISTD) [ 2 ]	CPS	27533.9	28224	28132.6	27989.1	27718.6	26606.8	27142.2	26733.7	25885.5	
75 As [ 2 ]	CPS	21.8	60.4	210.2	1757.9	3337.7	6520	13317.9	31902.1	63619.4	0.9999
103 Rh (ISTD) [ 2 ]	CPS	789683.9		810355.2	808955.2	802309.5	770505.4	784014.8	751464.6	738069.2	
95 Mo [ 2 ]	CPS	75.6		911.2	8838.3	17773.8	34328.6	70323.2	171892.2	343078.6	1.0000
159 Tb (ISTD) [ 3 ]	CPS	3013541.9		2881100.7	3115108.2	3095144.8	3050381.7	3009629.7	2979658.5	2931675.9	
137 Ba [ 3 ]	CPS	-211.2		2081.8	23537.6	46017.7	91829.9	180026.8	445686.7	873055.2	1.0000

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MWST-180618C

Calibration Acceptance Criteria: > 0.995 Correlation

INITIAL CALIBRATION SUMMARY: 180926A

Instrument ID: ICPMS-02

Analyte	Data File	A0926002.D	A0926004.D	A0926005.D	A0926006.D	A0926007.D	A0926008.D	A0926009.D	A0926010.D	
	Acq. Date-Time	09/26/2018 09:26 AM	09/26/2018 09:37 AM	09/26/2018 09:43 AM	09/26/2018 09:48 AM	09/26/2018 09:54 AM	09/26/2018 10:00 AM	09/26/2018 10:05 AM	09/26/2018 10:11 AM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L	R	
72 Ge ( ISTD ) [ 1 ]	CPS	31695	35308.9	35231	35775.6	35340.1	35842.3	33613.2	34363.6	
78 Se [ 1 ]	CPS	2.2	63.3	597.8	1176.8	2445.8	4858.7	11525.6	23060.5	1.0000

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MWST-180618C

Calibration Acceptance Criteria: > 0.995 Correlation

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145714</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	10.257	0.10	10.00	0	103	90	110				
Barium	10.107	1.0	10.00	0	101	90	110				
Manganese	106.395	0.50	100.0	0	106	90	110				
Molybdenum	10.685	0.50	10.00	0	107	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145716</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	0.087	0.10	0.1000	0	87.4	80	120				
Barium	1.070	1.0	1.000	0	107	80	120				
Manganese	0.516	0.50	0.5000	0	103	80	120				
Molybdenum	0.424	0.50	0.5000	0	84.7	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145730</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	19.380	0.10	20.00	0	96.9	90	110				
Barium	20.433	1.0	20.00	0	102	90	110				
Manganese	19.795	0.50	20.00	0	99.0	90	110				
Molybdenum	19.343	0.50	20.00	0	96.7	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145742</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	20.171	0.10	20.00	0	101	90	110				
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145742</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	20.399	1.0	20.00	0	102	90	110				
Manganese	19.882	0.50	20.00	0	99.4	90	110				
Molybdenum	19.140	0.50	20.00	0	95.7	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145754</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.800	0.10	20.00	0	99.0	90	110				
Barium	20.197	1.0	20.00	0	101	90	110				
Manganese	20.196	0.50	20.00	0	101	90	110				
Molybdenum	19.290	0.50	20.00	0	96.5	90	110				

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145766</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.694	0.10	20.00	0	98.5	90	110				
Barium	20.114	1.0	20.00	0	101	90	110				
Manganese	20.288	0.50	20.00	0	101	90	110				
Molybdenum	19.252	0.50	20.00	0	96.3	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152568</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	106.932	0.50	100.0	0	107	90	110				
Selenium	10.205	0.50	10.00	0	102	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152570</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.575	0.50	0.5000	0	115	80	120				
Selenium	0.504	0.50	0.5000	0	101	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152583</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.323	0.50	20.00	0	102	90	110				
Selenium	20.822	0.50	20.00	0	104	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152595</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	19.890	0.50	20.00	0	99.5	90	110				
Selenium	18.837	0.50	20.00	0	94.2	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152607</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.301	0.50	20.00	0	102	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152607</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	18.658	0.50	20.00	0	93.3	90	110				

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152951</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.385	0.50	20.00	0	102	90	110				
Selenium	20.338	0.50	20.00	0	102	90	110				

Sample ID <b>CCV5</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152963</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	19.877	0.50	20.00	0	99.4	90	110				
Selenium	19.469	0.50	20.00	0	97.3	90	110				

Sample ID <b>CCV6</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152972</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.071	0.50	20.00	0	100	90	110				
Selenium	19.454	0.50	20.00	0	97.3	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145770</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.109	1.0	10.00	0	101	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145772</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	0.997	1.0	1.000	0	99.7	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145786</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	19.807	1.0	20.00	0	99.0	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145798</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	19.843	1.0	20.00	0	99.2	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145810</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	19.907	1.0	20.00	0	99.5	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b> Units: <b>µg/L</b>				Prep Date:			RunNo: <b>127741</b>		
Client ID: <b>CCV</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>				Analysis Date: <b>9/19/2018</b>			SeqNo: <b>3145822</b>		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	19.986	1.0	20.00	0	99.9	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145715</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Barium	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145731</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Barium	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145743</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Barium	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145755</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145755</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145767</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Barium	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>
Client ID: <b>ICB</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152589</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152584</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152596</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152608</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152952</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152952</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Selenium ND 0.50

Sample ID <b>CCB5</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152964</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50  
Selenium ND 0.50

Sample ID <b>CCB6</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152973</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50  
Selenium ND 0.50

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145771</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145787</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145799</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145811</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145823</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145717</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Barium	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145718</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	21.680	0.10	20.00	0	108	80	120				
Barium	18.263	1.0	20.00	0	91.3	80	120				
Manganese	17.451	0.50	20.00	0	87.3	80	120				
Molybdenum	22.027	0.50	20.00	0	110	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145768</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Barium	ND	1.0									
Manganese	ND	0.50									
Molybdenum	ND	0.50									

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145769</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	17.789	0.10	20.00	0	88.9	80	120				
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	ICSAB2	SampType:	ICSAB	TestCode:	6020_DIS	Units:	µg/L	Prep Date:		RunNo:	127741												
Client ID:	ICSAB	Batch ID:	R127741	TestNo:	EPA 6020			Analysis Date:	9/19/2018	SeqNo:	3145769												
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual	
Barium		17.626		1.0		20.00		0		88.1		80		120									
Manganese		20.667		0.50		20.00		0		103		80		120									
Molybdenum		18.461		0.50		20.00		0		92.3		80		120									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152571</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152572</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	18.205	0.50	20.00	0	91.0	80	120				
Selenium	19.273	0.50	20.00	0	96.4	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152609</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152610</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	17.998	0.50	20.00	0	90.0	80	120				
Selenium	20.384	0.50	20.00	0	102	80	120				

Sample ID <b>ICSA3</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152974</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICSA3</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152974</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Selenium	ND	0.50
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Sample ID <b>ICSAB3</b>	SampType: <b>ICSAB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128842</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R128842</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152975</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Manganese	17.617	0.50	20.00	0	88.1	80	120
Selenium	19.978	0.50	20.00	0	99.9	80	120

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145773</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145773</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	20.695	1.0	20.00	0	103	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145824</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>127741</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R127741</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>9/19/2018</b>	SeqNo: <b>3145825</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	17.576	1.0	20.00	0	87.9	80	120				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## INTERNAL STANDARD: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	159 Tb ( ISTD ) [ 3 ]					45 Sc ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	3013541.9	3013541.9	100	PASS	70-125	43988.8	43988.8	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	3150652.2	3013541.9	104.55	PASS	70-125	44958.3	43988.8	102.2	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	2881100.7	3013541.9	95.61	PASS	70-125	44148.1	43988.8	100.36	PASS	70-125
Std3-5/50 ppb	ICAL	1	3115108.2	3013541.9	103.37	PASS	70-125	44492.3	43988.8	101.14	PASS	70-125
Std4-10/100 ppb	ICAL	1	3095144.8	3013541.9	102.71	PASS	70-125	44235	43988.8	100.56	PASS	70-125
Std5-20/200 ppb	ICAL	1	3050381.7	3013541.9	101.22	PASS	70-125	41736.6	43988.8	94.88	PASS	70-125
Std6-40/400 ppb	ICAL	1	3009629.7	3013541.9	99.87	PASS	70-125	43371.8	43988.8	98.6	PASS	70-125
Std7-100/1000 ppb	ICAL	1	2979658.5	3013541.9	98.88	PASS	70-125	41452.3	43988.8	94.23	PASS	70-125
Std8-200/2000 ppb	ICAL	1	2931675.9	3013541.9	97.28	PASS	70-125	41069.2	43988.8	93.36	PASS	70-125
ICV	ICV	1	2901855.4	3013541.9	96.29	PASS	70-125	38221.2	43988.8	86.89	PASS	70-125
ICB	ICB	1	2660272	3013541.9	88.28	PASS	70-125	37232.5	43988.8	84.64	PASS	70-125
LLICV	CCV1	1	2724146.5	3013541.9	90.4	PASS	70-125	38487.4	43988.8	87.49	PASS	70-125
ICSA1	ICSA	1	3203630.6	3013541.9	106.31	PASS	70-125	45497.4	43988.8	103.43	PASS	70-125
ICSAB1	ICSAB	1	2568017.4	3013541.9	85.22	PASS	70-125	36471.8	43988.8	82.91	PASS	70-125
LLICV	CCV1	1	3097169.3	3013541.9	102.78	PASS	70-125	41961.4	43988.8	95.39	PASS	70-125
CCV1	CCV	1	3148253.7	3013541.9	104.47	PASS	70-125	44288.5	43988.8	100.68	PASS	70-125
CCB1	CCB	1	3062664.3	3013541.9	101.63	PASS	70-125	40983.3	43988.8	93.17	PASS	70-125
MB-70685	MBLK	1	3046032.2	3013541.9	101.08	PASS	70-125	42070.6	43988.8	95.64	PASS	70-125
CCV2	CCV	1	3081321.1	3013541.9	102.25	PASS	70-125	42081.7	43988.8	95.66	PASS	70-125
CCB2	CCB	1	2967415.5	3013541.9	98.47	PASS	70-125	39279.3	43988.8	89.29	PASS	70-125
LCS-70685	LCS	1	2903252.2	3013541.9	96.34	PASS	70-125	38409.4	43988.8	87.32	PASS	70-125
N032084-001B	SAMP	1	3004927.8	3013541.9	99.71	PASS	70-125	37651.1	43988.8	85.59	PASS	70-125
N032084-001B	SAMP	5	2920014.1	3013541.9	96.9	PASS	70-125	37235.7	43988.8	84.65	PASS	70-125
N032084-001B-PS	PS	1	3105194.8	3013541.9	103.04	PASS	70-125	42219.8	43988.8	95.98	PASS	70-125
N032084-001B-MS	MS	1	3189854.1	3013541.9	105.85	PASS	70-125	41600.4	43988.8	94.57	PASS	70-125
N032084-001B-MSD	MSD	1	3201379.5	3013541.9	106.23	PASS	70-125	42520.6	43988.8	96.66	PASS	70-125
N032084-002B	SAMP	1	3070485.9	3013541.9	101.89	PASS	70-125	41306.4	43988.8	93.9	PASS	70-125
N032084-003B	SAMP	1	3146935.5	3013541.9	104.43	PASS	70-125	41522.4	43988.8	94.39	PASS	70-125
N032084-004B	SAMP	1	2655197.4	3013541.9	88.11	PASS	70-125	32743	43988.8	74.43	PASS	70-125
N032084-005B	SAMP	1	2792801.7	3013541.9	92.68	PASS	70-125	35454.1	43988.8	80.6	PASS	70-125
CCV3	CCV	1	3084737.2	3013541.9	102.36	PASS	70-125	41608.3	43988.8	94.59	PASS	70-125
CCB3	CCB	1	2992872.6	3013541.9	99.31	PASS	70-125	38898.3	43988.8	88.43	PASS	70-125
N032084-006B	SAMP	1	2991867.6	3013541.9	99.28	PASS	70-125	38038.7	43988.8	86.47	PASS	70-125
N032084-007B	SAMP	1	2685303.8	3013541.9	89.11	PASS	70-125	32836.4	43988.8	74.65	PASS	70-125
N032084-008B	SAMP	1	3052722	3013541.9	101.3	PASS	70-125	39880.5	43988.8	90.66	PASS	70-125
N032084-009B	SAMP	1	2745911	3013541.9	91.12	PASS	70-125	33764.9	43988.8	76.76	PASS	70-125
N032084-010B	SAMP	1	2956909.8	3013541.9	98.12	PASS	70-125	39318.4	43988.8	89.38	PASS	70-125
N032084-011B	SAMP	1	2981581.7	3013541.9	98.94	PASS	70-125	35574.2	43988.8	80.87	PASS	70-125
N032084-012B	SAMP	1	2822496.9	3013541.9	93.66	PASS	70-125	34830.6	43988.8	79.18	PASS	70-125
N032084-013B	SAMP	1	2880591.8	3013541.9	95.59	PASS	70-125	38841.6	43988.8	88.3	PASS	70-125
N032084-014B	SAMP	1	2786458.7	3013541.9	92.46	PASS	70-125	34172.4	43988.8	77.68	PASS	70-125

INTERNAL STANDARD: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	159 Tb ( ISTD ) [ 3 ]					45 Sc ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
N032084-015B	SAMP	1	2759549	3013541.9	91.57	PASS	70-125	34219.2	43988.8	77.79	PASS	70-125
CCV4	CCV	1	3011496.8	3013541.9	99.93	PASS	70-125	40675.8	43988.8	92.47	PASS	70-125
CCB4	CCB	1	2890616	3013541.9	95.92	PASS	70-125	37239.1	43988.8	84.66	PASS	70-125
ICSA2	ICSA	1	2771099.8	3013541.9	91.95	PASS	70-125	36396.1	43988.8	82.74	PASS	70-125
ICSAB2	ICSAB	1	2488311.8	3013541.9	82.57	PASS	70-125	33790.6	43988.8	76.82	PASS	70-125

## INTERNAL STANDARD: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 1 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	27533.9	27533.9	100	PASS	70-125	23642.2	23642.2	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	28224	27533.9	102.51	PASS	70-125	24190.8	23642.2	102.32	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	28132.6	27533.9	102.17	PASS	70-125	25163.4	23642.2	106.43	PASS	70-125
Std3-5/50 ppb	ICAL	1	27989.1	27533.9	101.65	PASS	70-125	25762.2	23642.2	108.97	PASS	70-125
Std4-10/100 ppb	ICAL	1	27718.6	27533.9	100.67	PASS	70-125	25719.8	23642.2	108.79	PASS	70-125
Std5-20/200 ppb	ICAL	1	26606.8	27533.9	96.63	PASS	70-125	24467.9	23642.2	103.49	PASS	70-125
Std6-40/400 ppb	ICAL	1	27142.2	27533.9	98.58	PASS	70-125	23287.2	23642.2	98.5	PASS	70-125
Std7-100/1000 ppb	ICAL	1	26733.7	27533.9	97.094	PASS	70-125	22389.3	23642.2	94.7	PASS	70-125
Std8-200/2000 ppb	ICAL	1	25885.5	27533.9	94.013	PASS	70-125	21735.1	23642.2	91.93	PASS	70-125
ICV	ICV	1	24353.2	27533.9	88.45	PASS	70-125	20447.8	23642.2	86.49	PASS	70-125
ICB	ICB	1	24128.4	27533.9	87.63	PASS	70-125	19372.1	23642.2	81.94	PASS	70-125
LLICV	CCV1	1	24607	27533.9	89.37	PASS	70-125	23124.7	23642.2	97.81	PASS	70-125
ICSA1	ICSA	1	27761.1	27533.9	100.83	PASS	70-125	23218.2	23642.2	98.21	PASS	70-125
ICSAB1	ICSAB	1	22626.3	27533.9	82.18	PASS	70-125	19365.4	23642.2	81.91	PASS	70-125
LLICV	CCV1	1	26870.6	27533.9	97.59	PASS	70-125	24102.9	23642.2	101.95	PASS	70-125
CCV1	CCV	1	28247.4	27533.9	102.59	PASS	70-125	26172.8	23642.2	110.7	PASS	70-125
CCB1	CCB	1	26634.6	27533.9	96.73	PASS	70-125	22911.2	23642.2	96.91	PASS	70-125
MB-70685	MBLK	1	27066.4	27533.9	98.3	PASS	70-125	23782.4	23642.2	100.59	PASS	70-125
CCV2	CCV	1	26484.4	27533.9	96.19	PASS	70-125	23227.1	23642.2	98.24	PASS	70-125
CCB2	CCB	1	25696.4	27533.9	93.33	PASS	70-125	22599.6	23642.2	95.59	PASS	70-125
LCS-70685	LCS	1	24906.3	27533.9	90.46	PASS	70-125	21428	23642.2	90.63	PASS	70-125
N032084-001B	SAMP	1	24078.4	27533.9	87.45	PASS	70-125	22732	23642.2	96.15	PASS	70-125
N032084-001B	SAMP	5	24502.3	27533.9	88.99	PASS	70-125	23154.8	23642.2	97.94	PASS	70-125
N032084-001B-PS	PS	1	26580	27533.9	96.54	PASS	70-125	23380.6	23642.2	98.89	PASS	70-125
N032084-001B-MS	MS	1	27092	27533.9	98.4	PASS	70-125	22667.4	23642.2	95.88	PASS	70-125
N032084-001B-MSD	MSD	1	27036.5	27533.9	98.19	PASS	70-125	22740.9	23642.2	96.19	PASS	70-125
N032084-002B	SAMP	1	25934.6	27533.9	94.19	PASS	70-125	22340.3	23642.2	94.49	PASS	70-125
N032084-003B	SAMP	1	27079.8	27533.9	98.35	PASS	70-125	23236.1	23642.2	98.28	PASS	70-125
N032084-004B	SAMP	1	21304.4	27533.9	77.38	PASS	70-125	19113.9	23642.2	80.85	PASS	70-125
N032084-005B	SAMP	1	23049	27533.9	83.71	PASS	70-125	21151	23642.2	89.46	PASS	70-125
CCV3	CCV	1	27070.8	27533.9	98.32	PASS	70-125	24010.5	23642.2	101.56	PASS	70-125
CCB3	CCB	1	25394.9	27533.9	92.23	PASS	70-125	21944.2	23642.2	92.82	PASS	70-125
N032084-006B	SAMP	1	24767.2	27533.9	89.95	PASS	70-125	20843.9	23642.2	88.16	PASS	70-125
N032084-007B	SAMP	1	21630.4	27533.9	78.56	PASS	70-125	18593.3	23642.2	78.64	PASS	70-125
N032084-008B	SAMP	1	25571.8	27533.9	92.87	PASS	70-125	22033.2	23642.2	93.19	PASS	70-125
N032084-009B	SAMP	1	21946.4	27533.9	79.71	PASS	70-125	19610.1	23642.2	82.95	PASS	70-125
N032084-010B	SAMP	1	24936.3	27533.9	90.57	PASS	70-125	22195.8	23642.2	93.88	PASS	70-125
N032084-011B	SAMP	1	22778.7	27533.9	82.73	PASS	70-125	21036.3	23642.2	88.98	PASS	70-125
N032084-012B	SAMP	1	22412.6	27533.9	81.4	PASS	70-125	19671.3	23642.2	83.2	PASS	70-125
N032084-013B	SAMP	1	25338.4	27533.9	92.026	PASS	70-125	21602.7	23642.2	91.37	PASS	70-125
N032084-014B	SAMP	1	22242.4	27533.9	80.78	PASS	70-125	19484.3	23642.2	82.41	PASS	70-125

INTERNAL STANDARD: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 1 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
N032084-015B	SAMP	1	22007.6	27533.9	79.93	PASS	70-125	19063.9	23642.2	80.64	PASS	70-125
CCV4	CCV	1	26451	27533.9	96.067	PASS	70-125	24095.2	23642.2	101.92	PASS	70-125
CCB4	CCB	1	24513.5	27533.9	89.03	PASS	70-125	21205.5	23642.2	89.69	PASS	70-125
ICSA2	ICSA	1	23181.5	27533.9	84.19	PASS	70-125	20897.3	23642.2	88.39	PASS	70-125
ICSAB2	ICSAB	1	21318.9	27533.9	77.43	PASS	70-125	19309.6	23642.2	81.67	PASS	70-125

## INTERNAL STANDARD: 180918B

## Instrument ID: ICPMS-02

Sample Name	Type	DF	103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	789683.9	789683.9	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	817149.1	789683.9	103.48	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	810355.2	789683.9	102.62	PASS	70-125
Std3-5/50 ppb	ICAL	1	808955.2	789683.9	102.44	PASS	70-125
Std4-10/100 ppb	ICAL	1	802309.5	789683.9	101.6	PASS	70-125
Std5-20/200 ppb	ICAL	1	770505.4	789683.9	97.57	PASS	70-125
Std6-40/400 ppb	ICAL	1	784014.8	789683.9	99.28	PASS	70-125
Std7-100/1000 ppb	ICAL	1	751464.6	789683.9	95.16	PASS	70-125
Std8-200/2000 ppb	ICAL	1	738069.2	789683.9	93.46	PASS	70-125
ICV	ICV	1	706600.1	789683.9	89.48	PASS	70-125
ICB	ICB	1	681069	789683.9	86.25	PASS	70-125
LLICV	CCV1	1	712631.8	789683.9	90.24	PASS	70-125
ICSA1	ICSA	1	761493.7	789683.9	96.43	PASS	70-125
ICSAB1	ICSAB	1	611318.4	789683.9	77.41	PASS	70-125
LLICV	CCV1	1	777474	789683.9	98.45	PASS	70-125
CCV1	CCV	1	797234	789683.9	100.96	PASS	70-125
CCB1	CCB	1	765824.7	789683.9	96.98	PASS	70-125
MB-70685	MBLK	1	769082	789683.9	97.39	PASS	70-125
CCV2	CCV	1	763662.2	789683.9	96.7	PASS	70-125
CCB2	CCB	1	726869.8	789683.9	92.046	PASS	70-125
LCS-70685	LCS	1	715087.2	789683.9	90.55	PASS	70-125
N032084-001B	SAMP	1	655731.6	789683.9	83.037	PASS	70-125
N032084-001B	SAMP	5	676475.9	789683.9	85.66	PASS	70-125
N032084-001B-PS	PS	1	710279.3	789683.9	89.94	PASS	70-125
N032084-001B-MS	MS	1	717641.8	789683.9	90.88	PASS	70-125
N032084-001B-MSD	MSD	1	719485.1	789683.9	91.11	PASS	70-125
N032084-002B	SAMP	1	693739.9	789683.9	87.85	PASS	70-125
N032084-003B	SAMP	1	719020.2	789683.9	91.052	PASS	70-125
N032084-004B	SAMP	1	588967.1	789683.9	74.58	PASS	70-125
N032084-005B	SAMP	1	621448.1	789683.9	78.7	PASS	70-125
CCV3	CCV	1	764766.3	789683.9	96.84	PASS	70-125
CCB3	CCB	1	723839.5	789683.9	91.66	PASS	70-125
N032084-006B	SAMP	1	659982.6	789683.9	83.58	PASS	70-125
N032084-007B	SAMP	1	590868.1	789683.9	74.82	PASS	70-125
N032084-008B	SAMP	1	686734.8	789683.9	86.96	PASS	70-125
N032084-009B	SAMP	1	601653	789683.9	76.19	PASS	70-125
N032084-010B	SAMP	1	669728.7	789683.9	84.81	PASS	70-125
N032084-011B	SAMP	1	630782.5	789683.9	79.88	PASS	70-125
N032084-012B	SAMP	1	610580.5	789683.9	77.32	PASS	70-125
N032084-013B	SAMP	1	662329.8	789683.9	83.87	PASS	70-125
N032084-014B	SAMP	1	603608.3	789683.9	76.44	PASS	70-125

INTERNAL STANDARD: 180918B

Instrument ID: ICPMS-02

Sample Name	Type	DF	103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria
N032084-015B	SAMP	1	597456.3	789683.9	75.66	PASS	70-125
CCV4	CCV	1	754444.4	789683.9	95.54	PASS	70-125
CCB4	CCB	1	694214.5	789683.9	87.91	PASS	70-125
ICSA2	ICSA	1	631194.8	789683.9	79.93	PASS	70-125
ICSAB2	ICSAB	1	578336.7	789683.9	73.24	PASS	70-125

INTERNAL STANDARD: 180926A

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	31695	31695	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	35353.4	31695	111.54	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	35308.9	31695	111.4	PASS	70-125
Std3-5/50 ppb	ICAL	1	35231	31695	111.16	PASS	70-125
Std4-10/100 ppb	ICAL	1	35775.6	31695	112.87	PASS	70-125
Std5-20/200 ppb	ICAL	1	35340.1	31695	111.5	PASS	70-125
Std6-40/400 ppb	ICAL	1	35842.3	31695	113.09	PASS	70-125
Std7-100/1000 ppb	ICAL	1	33613.2	31695	106.05	PASS	70-125
Std8-200/2000 ppb	ICAL	1	34363.6	31695	108.42	PASS	70-125
ICV	ICV	1	26418.7	31695	83.35	PASS	70-125
ICB	ICB	1	31829.6	31695	100.42	PASS	70-125
LLICV	CCV1	1	33960.4	31695	107.15	PASS	70-125
ICSA1	ICSA	1	32188	31695	101.56	PASS	70-125
ICSAB1	ICSAB	1	32818.2	31695	103.54	PASS	70-125
CCV1	CCV	1	27714.2	31695	87.44	PASS	70-125
CCB1	CCB	1	36619.7	31695	115.54	PASS	70-125
CCV2	CCV	1	35097.4	31695	110.73	PASS	70-125
CCB2	CCB	1	37994.8	31695	119.88	PASS	70-125
MB-70685	MBLK	1	31601.3	31695	99.7	PASS	70-125
LCS-70685	LCS	1	31674.8	31695	99.94	PASS	70-125
N032084-001B	SAMP	1	32790.3	31695	103.46	PASS	70-125
CCV3	CCV	1	30854.3	31695	97.35	PASS	70-125
CCB3	CCB	1	35427	31695	111.77	PASS	70-125
ICSA2	ICSA	1	36633	31695	115.58	PASS	70-125
ICSAB2	ICSAB	1	33096.5	31695	104.42	PASS	70-125
N032084-001B	SAMP	1	33811.2	31695	106.68	PASS	70-125
N032084-001B	SAMP	5	35131.6	31695	110.84	PASS	70-125
N032084-001B-PS	PS	1	34501.6	31695	108.86	PASS	70-125
N032084-001B-MS	MS	1	33995	31695	107.26	PASS	70-125
N032084-001B-MSD	MSD	1	33772.4	31695	106.55	PASS	70-125
N032084-002B	SAMP	1	33305.9	31695	105.08	PASS	70-125
N032084-003B	SAMP	1	34221.1	31695	107.97	PASS	70-125
N032084-004B	SAMP	1	32715.7	31695	103.22	PASS	70-125
N032084-005B	SAMP	1	32722.3	31695	103.24	PASS	70-125
N032084-006B	SAMP	1	32938.3	31695	103.92	PASS	70-125
CCV4	CCV	1	31110.4	31695	98.16	PASS	70-125
CCB4	CCB	1	34667.6	31695	109.38	PASS	70-125
N032084-007B	SAMP	1	30577.1	31695	96.47	PASS	70-125
N032084-008B	SAMP	1	31631.3	31695	99.8	PASS	70-125
N032084-009B	SAMP	1	32203.5	31695	101.6	PASS	70-125
N032084-010B	SAMP	1	30489.2	31695	96.2	PASS	70-125

NR



INTERNAL STANDARD: 180926A

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]				
			CPS	REF	%REC	Comment	Criteria
N032084-011B	SAMP	1	32385.1	31695	102.18	PASS	70-125
N032084-012B	SAMP	1	30593.8	31695	96.53	PASS	70-125
N032084-013B	SAMP	1	30095.1	31695	94.95	PASS	70-125
N032084-014B	SAMP	1	29922.5	31695	94.41	PASS	70-125
N032084-015B	SAMP	1	29256.9	31695	92.31	PASS	70-125
N032084-006B	SAMP	1	29095.4	31695	91.8	PASS	70-125
CCV5	CCV	1	28996.5	31695	91.49	PASS	70-125
CCB5	CCB	1	32588.8	31695	102.82	PASS	70-125
N032084-009B	SAMP	1	29419.5	31695	92.82	PASS	70-125
N032084-010B	SAMP	1	29497.3	31695	93.066	PASS	70-125
N032084-011B	SAMP	1	27328	31695	86.22	PASS	70-125
N032084-015B	SAMP	1	28898.6	31695	91.18	PASS	70-125
N032084-011B	SAMP	1	30492.6	31695	96.21	PASS	70-125
N032084-015B	SAMP	1	28703.7	31695	90.56	PASS	70-125
N032084-015B	SAMP	1	28864	31695	91.068	PASS	70-125
CCV6	CCV	1	28435.4	31695	89.72	PASS	70-125
CCB6	CCB	1	32090.1	31695	101.25	PASS	70-125
ICSA3	ICSA	1	32682.2	31695	103.11	PASS	70-125
ICSAB3	ICSAB	1	31641.4	31695	99.83	PASS	70-125

# SERIAL DILUTION/ POST DIGESTION SPIKE



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ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N032084  
Test Method: 6020  
Analysis Date: 9/18/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70685

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to several analytes. The calculated concentration is <25RL.

Dilution test failed for As. However, PS passed criteria.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032084-001B DT 5X	Arsenic	ug/L	2.982769	FAIL	2.607053	14.41%	10
N032084-001B DT 5X	Barium	ug/L	111.4786	PASS	108.0373	3.19%	10
N032084-001B DT 5X	Chromium	ug/L	0	NA	0.001	100.00%	10
N032084-001B DT 5X	Manganese	ug/L	1.878135	NA	1.652957	13.62%	10
N032084-001B DT 5X	Molybdenum	ug/L	4.482815	NA	4.533977	1.13%	10

Note: NA - Not applicable

**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N032084  
Test Method: 6020  
Analysis Date: 9/26/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70685

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Se. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032084-001B DT 5X	Selenium	ug/L	0	NA	1.515693	100.00%	10

Note: NA - Not applicable

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID	<b>N032084-001B-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>127741</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70685</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>9/19/2018</b>	SeqNo:	<b>3145747</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic		12.646		0.10	10.00	2.607		100	80	120				
Barium		121.224		1.0	10.00	108.0		132	80	120				S
Manganese		101.419		0.50	100.0	1.653		99.8	80	120				
Molybdenum		15.569		0.50	10.00	4.534		110	80	120				

Sample ID	<b>N032084-001B-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>128842</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70685</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>9/26/2018</b>	SeqNo:	<b>3152943</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Selenium		11.327		0.50	10.00	1.516		98.1	80	120				
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032084  
**Project:** PG&E Topock - RMP, RC000753.0801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 6020DIS\_CrPGE

Sample ID	<b>N032084-001B-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>6020DIS_CrP</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>127741</b>		
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70685</b>	TestNo:	<b>EPA 6020</b>	<b>EPA 3010A</b>		Analysis Date:	<b>9/19/2018</b>	SeqNo:	<b>3145803</b>		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		9.681		1.0	10.00	0	96.8	80	120				

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

# MDL STUDY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Amount of Sample:** 25 mL  
**Units:** ug/L

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	LOD	PQL
ANTIMONY	0.50	0.525	0.514	0.473	0.500	0.492	0.486	0.530	0.0210	0.0660	0.100	0.50
ARSENIC	0.10	0.099	0.104	0.087	0.048	0.060	0.069	0.120	0.0259	0.0813	0.080	0.10
BARIUM	1.00	1.041	1.059	1.052	1.011	0.967	0.957	1.023	0.0403	0.1264	0.250	1.00
BERYLLIUM	0.50	0.469	0.476	0.473	0.495	0.480	0.488	0.507	0.0135	0.0424	0.100	0.50
CADMIUM	0.50	0.515	0.513	0.492	0.534	0.499	0.483	0.508	0.0168	0.0527	0.100	0.50
CHROMIUM	1.00	0.979	0.986	0.940	0.990	0.946	0.978	0.977	0.0197	0.0618	0.250	1.00
COBALT	0.50	0.499	0.489	0.486	0.488	0.465	0.502	0.505	0.0135	0.0424	0.100	0.50
COPPER	1.00	1.110	0.667	1.039	1.060	1.006	1.099	1.075	0.1544	0.4850	0.500	1.00
IRON	10.00	10.873	10.802	10.142	9.991	9.846	9.852	10.596	0.4463	1.4014	2.500	10.00
LEAD	1.00	0.928	0.931	0.899	0.996	0.990	0.987	0.997	0.0406	0.1274	0.250	1.00
MANGANESE	0.50	0.577	0.588	0.561	0.566	0.517	0.541	0.520	0.0276	0.0866	0.100	0.50
MOLYBDENUM	0.50	0.514	0.504	0.467	0.478	0.456	0.433	0.527	0.0338	0.1061	0.250	0.50
NICKEL	1.00	0.961	0.965	0.977	0.907	0.914	0.962	1.075	0.0551	0.1731	0.250	1.00
SELENIUM	0.50	0.450	0.478	0.419	0.693	0.707	0.495	0.555	0.1155	0.3628	0.400	0.50
SILVER	0.50	0.558	0.511	0.490	0.542	0.458	0.490	0.684	0.0745	0.2340	0.250	0.50
THALLIUM	0.50	0.437	0.428	0.408	0.538	0.446	0.438	0.525	0.0504	0.1583	0.250	0.50
URANIUM	0.50	0.478	0.467	0.461	0.517	0.510	0.521	0.521	0.0267	0.0838	0.100	0.50
VANADIUM	1.00	0.950	0.969	0.900	0.844	0.829	0.848	1.053	0.0820	0.2574	0.500	1.00
ZINC	10.00	11.259	11.279	10.915	9.620	9.849	9.745	10.241	0.7235	2.2717	2.500	10.00



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CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 ELAP Cert 2921

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Units:** ug/L

Analyte	MDLs	MDLb	MDL	LOD	PQL
ANTIMONY	0.0660	0.1564	0.1564	0.300	0.50
ARSENIC	0.0813	0.0387	0.0813	0.080	0.10
BARIUM	0.1264	0.1497	0.1497	0.300	1.00
BERYLLIUM	0.0424	0.0153	0.0424	0.100	0.50
CADMIUM	0.0527	0.0060	0.0527	0.100	0.50
CHROMIUM	0.0618	0.1298	0.1298	0.300	1.00
COBALT	0.0424	0.0339	0.0424	0.100	0.50
COPPER	0.4850	0.5459	0.5459	0.600	1.00
IRON	1.4014	4.3484	4.3484	5.000	10.00
LEAD	0.1274	0.1008	0.1274	0.300	1.00
MANGANESE	0.0866	0.2552	0.2552	0.300	0.50
MOLYBDENUM	0.1061	0.2149	0.2149	0.300	0.50
NICKEL	0.1731	0.2606	0.2606	0.300	1.00
SELENIUM	0.3628	0.0953	0.3628	0.400	0.50
SILVER	0.2340	0.2023	0.2340	0.250	0.50
THALLIUM	0.1583	0.1924	0.1924	0.300	0.50
URANIUM	0.0838	0.0020	0.0838	0.100	0.50
VANADIUM	0.2574	0.2768	0.2768	0.600	1.00
ZINC	2.2717	0.4511	2.2717	3.000	10.00



October 08, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032205

RE: PG&E Topock - GMP, RC000753.801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 24, 2018 by ASSET Laboratories .  
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in  
accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Nancy Libucos for*

Quennie Manimtim  
Laboratory Director

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032205

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**CASE NARRATIVE****SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

**Analytical Comments for EPA 218.6:**

Dilution was necessary for sample N032205-003 due to matrix interference. Sample was analyzed at lower dilution however matrix spike recovery and retention time criteria were not met indicating possible matrix interference. Sample was reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.

**Analytical Comments for 6020\_Dissolved:**

Matrix Spike Duplicate (MSD) is outside recovery criteria for Molybdenum in QC sample N032205-001D-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

**Analytical Comments for SM 4500-NO3F:**

Matrix Spike Duplicate (MSD) is outside recovery criteria in QC sample N032205-004CMSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



**ASSET Laboratories**

Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032205  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032205-001A	MW-63-065-Q318	Groundwater	9/24/2018 12:48:00 PM	9/24/2018	10/8/2018
N032205-001B	MW-63-065-Q318	Groundwater	9/24/2018 12:48:00 PM	9/24/2018	10/8/2018
N032205-001C	MW-63-065-Q318	Groundwater	9/24/2018 12:48:00 PM	9/24/2018	10/8/2018
N032205-001D	MW-63-065-Q318	Groundwater	9/24/2018 12:48:00 PM	9/24/2018	10/8/2018
N032205-002A	MW-901-Q318	Groundwater	9/24/2018 12:58:00 PM	9/24/2018	10/8/2018
N032205-002B	MW-901-Q318	Groundwater	9/24/2018 12:58:00 PM	9/24/2018	10/8/2018
N032205-002C	MW-901-Q318	Groundwater	9/24/2018 12:58:00 PM	9/24/2018	10/8/2018
N032205-002D	MW-901-Q318	Groundwater	9/24/2018 12:58:00 PM	9/24/2018	10/8/2018
N032205-003A	MW-64BR-Q318	Groundwater	9/24/2018 1:58:00 PM	9/24/2018	10/8/2018
N032205-003B	MW-64BR-Q318	Groundwater	9/24/2018 1:58:00 PM	9/24/2018	10/8/2018
N032205-003C	MW-64BR-Q318	Groundwater	9/24/2018 1:58:00 PM	9/24/2018	10/8/2018
N032205-003D	MW-64BR-Q318	Groundwater	9/24/2018 1:58:00 PM	9/24/2018	10/8/2018
N032205-004A	MW-73-080-Q318	Groundwater	9/24/2018 3:11:00 PM	9/24/2018	10/8/2018
N032205-004B	MW-73-080-Q318	Groundwater	9/24/2018 3:11:00 PM	9/24/2018	10/8/2018
N032205-004C	MW-73-080-Q318	Groundwater	9/24/2018 3:11:00 PM	9/24/2018	10/8/2018
N032205-004D	MW-73-080-Q318	Groundwater	9/24/2018 3:11:00 PM	9/24/2018	10/8/2018
N032205-005A	MW-701-Q318	Groundwater	9/24/2018 3:45:00 PM	9/24/2018	10/8/2018



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

<b>CLIENT:</b>	ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b>	MW-63-065-Q318
<b>Lab Order:</b>	N032205	<b>Collection Date:</b>	9/24/2018 12:48:00 PM
<b>Project:</b>	PG&E Topock - GMP, RC000753.801D	<b>Matrix:</b>	GROUNDWATER
<b>Lab ID:</b>	N032205-001		

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180925C</b>	QC Batch: <b>R128815</b>			PrepDate		Analyst: <b>LR</b>
Specific Conductance	5400	0.10	0.10	umhos/cm	1	9/25/2018 09:35 AM

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	ND	Not Detected at the Reporting Limit
	S	Spike/Surrogate outside of limits due to matrix interference		Results are wet unless otherwise specified
	DO	Surrogate Diluted Out		



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-002

**Client Sample ID:** MW-901-Q318  
**Collection Date:** 9/24/2018 12:58:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180925C</b>	QC Batch: <b>R128815</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	5400	0.10	0.10		umhos/cm	1	9/25/2018 09:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-003

**Client Sample ID:** MW-64BR-Q318  
**Collection Date:** 9/24/2018 1:58:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180925C</b>	QC Batch: <b>R128815</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	12000	0.10	0.10		umhos/cm	1	9/25/2018 09:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-004

**Client Sample ID:** MW-73-080-Q318  
**Collection Date:** 9/24/2018 3:11:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180925C</b>	QC Batch: <b>R128815</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	9600	0.10	0.10		umhos/cm	1	9/25/2018 09:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID	<b>N032205-003BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>120.1_WPGE</b>	Units:	<b>umhos/cm</b>	Prep Date:		RunNo:	<b>128815</b>											
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R128815</b>	TestNo:	<b>EPA 120.1</b>			Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>3151769</b>											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual
Specific Conductance		11490.000		0.10										11500				0.0870			2	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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# ANALYTICAL RESULTS

## ASSET Laboratories

Print Date: 08-Oct-18

<b>CLIENT:</b> ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b> MW-63-065-Q318
<b>Lab Order:</b> N032205	<b>Collection Date:</b> 9/24/2018 12:48:00 PM
<b>Project:</b> PG&E Topock - GMP, RC000753.801D	<b>Matrix:</b> GROUNDWATER
<b>Lab ID:</b> N032205-001	

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_180925A	QC Batch: R128817				PrepDate		Analyst: RAB
Hexavalent Chromium	1.0	0.033	0.20		µg/L	1	9/25/2018 10:39 AM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181002C	QC Batch: 70807				PrepDate	9/27/2018	Analyst: CEI
Chromium	1.4	0.13	1.0		µg/L	1	10/2/2018 12:11 PM

<b>Qualifiers:</b> B Analyte detected in the associated Method Blank H Holding times for preparation or analysis exceeded S Spike/Surrogate outside of limits due to matrix interference DO Surrogate Diluted Out	E Value above quantitation range ND Not Detected at the Reporting Limit Results are wet unless otherwise specified
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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-002

**Client Sample ID:** MW-901-Q318  
**Collection Date:** 9/24/2018 12:58:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_180925A	QC Batch: R128817				PrepDate		Analyst: RAB
Hexavalent Chromium	1.0	0.033	0.20		µg/L	1	9/25/2018 11:00 AM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181002C	QC Batch: 70807				PrepDate	9/27/2018	Analyst: CEI
Chromium	1.5	0.13	1.0		µg/L	1	10/2/2018 12:39 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-003

**Client Sample ID:** MW-64BR-Q318  
**Collection Date:** 9/24/2018 1:58:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_180925A	QC Batch: R128817			PrepDate	Analyst: RAB		
Hexavalent Chromium	ND	0.17	1.0	µg/L	5	9/25/2018 12:35 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI	
Chromium	ND	0.13	1.0	µg/L	1	10/2/2018 12:56 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-004

**Client Sample ID:** MW-73-080-Q318  
**Collection Date:** 9/24/2018 3:11:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180925A</b>	QC Batch: <b>R128817</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	36	0.33	2.0		µg/L	10	9/25/2018 11:38 AM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>
Chromium	39	0.13	1.0		µg/L	1	10/2/2018 01:02 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-005

**Client Sample ID:** MW-701-Q318  
**Collection Date:** 9/24/2018 3:45:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180925A</b>	QC Batch: <b>R128817</b>			PrepDate			Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/25/2018 12:16 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>MB-R128817</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>
Client ID: <b>PBW</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151780</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>LCS-R128817</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151781</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.180	0.20	5.000	0	104 90 110

Sample ID <b>N032205-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151783</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	2.048	0.20	1.000	1.028	102 90 110

Sample ID <b>N032205-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151785</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	2.004	0.20	1.000	1.005	99.9 90 110

Sample ID <b>N032205-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151787</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	86.916	2.0	50.00	35.96	102 90 110

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



**ASSET LABORATORIES**  
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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032205-005AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151791</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.063	0.20	1.000	0.06590	99.7	90	110				

Sample ID <b>N032205-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151793</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.894	1.0	5.000	0	97.9	90	110				

Sample ID <b>N032205-004ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151794</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	35.116	2.0						35.96	2.37	20	

Sample ID <b>N032205-004AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151795</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	85.158	2.0	50.00	35.96	98.4	90	110	86.92	2.04	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



**ASSET LABORATORIES**  
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"Serving Clients with Passion and Professionalism"



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>MB-70807</b>	SampType: <b>MBLK</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159830</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>LCS-70807</b>	SampType: <b>LCS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159831</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	10.546	1.0	10.00	0	105	85	115				
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Sample ID <b>N032205-001D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159835</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	12.134	1.0	10.00	1.419	107	75	125				
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Sample ID <b>N032205-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159836</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	12.005	1.0	10.00	1.419	106	75	125	12.13	1.07	20	
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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 EPA ID CA01638

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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-001

**Client Sample ID:** MW-63-065-Q318  
**Collection Date:** 9/24/2018 12:48:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	1.0	0.032	0.050	mg/L	1		10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 ELAP Cert 2921  
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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-002

**Client Sample ID:** MW-901-Q318  
**Collection Date:** 9/24/2018 12:58:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	1.1	0.032	0.050		mg/L	1	10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-003

**Client Sample ID:** MW-64BR-Q318  
**Collection Date:** 9/24/2018 1:58:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	ND	0.032	0.050	mg/L	1		10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-004

**Client Sample ID:** MW-73-080-Q318  
**Collection Date:** 9/24/2018 3:11:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	3.0	0.16	0.25		mg/L	5	10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 EPA ID CA01638

**NEVADA** | P:702.307.2659 F:702.307.2691  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R129025</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161938</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R129025</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161939</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.481	0.050	0.5000	0	96.2 85 115

Sample ID <b>N032205-004CMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161942</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	6.037	0.25	2.500	2.971	123 75 125

Sample ID <b>N032205-004CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161943</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	6.162	0.25	2.500	2.971	128 75 125 6.037 2.05 20 S

Sample ID <b>N032205-002CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161946</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	1.111	0.050			1.136 2.20 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



**ASSET LABORATORIES**  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-001

**Client Sample ID:** MW-63-065-Q318  
**Collection Date:** 9/24/2018 12:48:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	1.6	0.081	0.10	µg/L	1	10/2/2018 12:11 PM
Manganese	ND	0.26	0.50	µg/L	1	10/2/2018 12:11 PM
Molybdenum	16	0.21	0.50	µg/L	1	10/2/2018 12:11 PM
Selenium	1.0	0.36	0.50	µg/L	1	10/2/2018 12:11 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



**ASSET LABORATORIES**  
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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-002

**Client Sample ID:** MW-901-Q318  
**Collection Date:** 9/24/2018 12:58:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	1.5	0.081	0.10	µg/L	1	10/2/2018 12:39 PM
Manganese	ND	0.26	0.50	µg/L	1	10/2/2018 12:39 PM
Molybdenum	17	0.21	0.50	µg/L	1	10/2/2018 12:39 PM
Selenium	1.2	0.36	0.50	µg/L	1	10/2/2018 03:22 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-003

**Client Sample ID:** MW-64BR-Q318  
**Collection Date:** 9/24/2018 1:58:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	4.0	0.081	0.10	µg/L	1	10/2/2018 12:56 PM
Manganese	920	2.6	5.0	µg/L	10	10/2/2018 02:20 PM
Molybdenum	65	0.21	0.50	µg/L	1	10/2/2018 12:56 PM
Selenium	ND	0.36	0.50	µg/L	1	10/2/2018 12:56 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



**ASSET LABORATORIES**  
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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-004

**Client Sample ID:** MW-73-080-Q318  
**Collection Date:** 9/24/2018 3:11:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

RunID: NV00922-ICP7_181002C	EPA 3010A			EPA 6020		
	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	1.4	0.081	0.10	µg/L	1	10/2/2018 01:02 PM
Manganese	24	0.26	0.50	µg/L	1	10/2/2018 01:02 PM
Molybdenum	27	0.21	0.50	µg/L	1	10/2/2018 01:02 PM
Selenium	3.9	0.36	0.50	µg/L	1	10/2/2018 01:02 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>MB-70807</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>
Client ID: <b>PBW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159620</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>LCS-70807</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159621</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	9.987	0.10	10.00	0	99.9 85 115
Manganese	106.685	0.50	100.0	0	107 85 115
Molybdenum	9.797	0.50	10.00	0	98.0 85 115
Selenium	10.086	0.50	10.00	0	101 85 115

Sample ID <b>N032205-001D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159625</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	13.112	0.10	10.00	1.558	116 75 125
Manganese	114.507	0.50	100.0	0	115 75 125
Molybdenum	28.778	0.50	10.00	16.37	124 75 125
Selenium	11.109	0.50	10.00	1.017	101 75 125

Sample ID <b>N032205-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159626</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	13.254	0.10	10.00	1.558	117 75 125 13.11 1.08 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



**ASSET LABORATORIES**  
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EPA ID CA01638

**NEVADA** | P:702.307.2659 F:702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118  
ELAP Cert 2676 | NV Cert NVO0922  
ORELAP/NELAP Cert 4046

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	<b>N032205-001D-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128979</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70807</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/2/2018</b>	SeqNo:	<b>3159626</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	113.674	0.50	100.0	0	114	75	125	114.5	0.730	20	
Molybdenum	28.930	0.50	10.00	16.37	126	75	125	28.78	0.528	20	S
Selenium	10.661	0.50	10.00	1.017	96.4	75	125	11.11	4.12	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



**ASSET LABORATORIES**  
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**CALIFORNIA** | P:562.219.7435 F:562.219.7436  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 ELAP Cert 2921  
 EPA ID CA01638

**NEVADA** | P:702.307.2659 F:702.307.2691  
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Contact us:  
Nevada: 3151 W. Post Road, Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691  
California: 11060 Artesia Blvd., Ste C, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436  
[www.assetlaboratories.com](http://www.assetlaboratories.com)

Client: Arcadis		Report to: Dan Bush	Bill to: Marty Bloes		EDD Requirement		QA/QC		Sample Receipt Condition			
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis	Address:		Excel EDD		RTNE		1. Chilled			
Address: Roseville, CA 95661		Email: dan.bush@arcadis.com daniel.moore@crti@arc.com	Address:		Geotracker		RWQCB		2. Headspace			
Phone: 916-786-3302	Fax:	Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661	Email to: mbloes@pivox.com		LabSpec		LEVEL III		3. Container Intact			
Submitted By: Ganit Jeffers		Phone: 949-727-1400, ext 200		P.O.#		Others		LEVEL IV		4. Seal Present		
Title: Geologist II		Phone: 916-786-3302	Fax:		Specify:		RWQCB		Regulatory		5. IR number	
Signature: [Signature] Date: 9/24/2018		Sampled By: Jason Mahn		Global ID:		Specify State:		6. Method of Cooling:		10		
Project Name: PG&E Topock - GMP		Signature: [Signature] Date: 9/24/2018		Ground		Matrix		Sample Temp: 20C		Courier:		
Project Number: RC000753.801D		I attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action.		Potable		250 mL poly		Tracking No.:		Remarks		
Matrix		NPDES		1 liter poly		1 liter poly		Turn Around Time		No. of Container		
Surface		Other Solid		1 liter poly		1 liter poly		Container Type		PRESERVATION		
Sample Date		Sample Time		Others		Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH		Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH		Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH		
Sample Date		Sample Time		Others		Alkalinity, Total as CaCO3 (SM2320B)		Alkalinity, Total as CaCO3 (SM2320B)		Alkalinity, Total as CaCO3 (SM2320B)		
Sample Date		Sample Time		Others		Bromide, Sulfate, Chloride (EPA 300.0)		Bromide, Sulfate, Chloride (EPA 300.0)		Bromide, Sulfate, Chloride (EPA 300.0)		
Sample Date		Sample Time		Others		Specific Conductance (EPA 120.1)		Specific Conductance (EPA 120.1)		Specific Conductance (EPA 120.1)		
Sample Date		Sample Time		Others		Total Dissolved Solids (SM2540C)		Total Dissolved Solids (SM2540C)		Total Dissolved Solids (SM2540C)		
Sample Date		Sample Time		Others		Nitrate/Nitrite (SM4500N03 F) Nitrate; H2SO4		Nitrate/Nitrite (SM4500N03 F) Nitrate; H2SO4		Nitrate/Nitrite (SM4500N03 F) Nitrate; H2SO4		
Sample Date		Sample Time		Others		Metals Dissolved (SW6020A FF) (As, Cr, Mn, Mo, Se); HNO3		Metals Dissolved (SW6020A FF) (As, Cr, Mn, Mo, Se); HNO3		Metals Dissolved (SW6020A FF) (As, Cr, Mn, Mo, Se); HNO3		
Sample Date		Sample Time		Others		Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3		Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3		Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3		
Sample Date		Sample Time		Others		Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3		Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3		Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3		
Sample Date		Sample Time		Others		Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3		Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3		Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3		
1	N032205-01	MW-63-065-Q318	9/24/2018	12:48		X	X	X	X	X	E 4 P	6/25
2	-02	MW-901-Q318	9/24/2018	12:58		X	X	X	X	X	E 4 P	6/25
3	-03	MW-64BR-Q318	9/24/2018	13:58		X	X	X	X	X	E 4 P	6/25
4	-04	MW-73-080-Q318	9/24/2018	15:11		X	X	X	X	X	E 4 P	6/25
5	-05	MW-701-Q318	9/24/2018	15:45		X					E 1 P	6/25
6												
7												
8												
9												
10												

Relinquished by (Signature and Printed Name): [Signature] Date/Time: 9/24/18 15503	Relinquished by (Signature and Printed Name): [Signature] Date/Time: 9/26/18 1573
Relinquished by (Signature and Printed Name): [Signature] Date/Time: 9/25/18 1528	Relinquished by (Signature and Printed Name): [Signature] Date/Time: 9/26/18 1620
Relinquished by (Signature and Printed Name): [Signature] Date/Time:	Relinquished by (Signature and Printed Name): [Signature] Date/Time:

**Turn Around Time (TAT)**

A < 24 Hrs or Same Day TAT  
 B = Next Workday  
 C = 2 Workdays  
 D = 3 Workdays  
 E = Routine 5-7 Workdays

**Special Instruction:**  
 Title 22 Metals - Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Ti, V, Zn, K, Na

TAT Starts at 8 AM the following day if samples received after 3:00PM.

<b>Terms</b>				<b>Container Type:</b>			
1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report.				H=HCL			
2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis				N=HNO3			
Less than 24 Hrs =>200% Next Day=100% 2 Workdays=50% 3 Workdays=35% 4 Workdays=20%				S=H2SO4			
3. Custom EDD formats will be an additional 3% of the total project price.				C=4°C			
4. Add 10% surcharge for Level II Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.				T=Tube			
5. Trip Blanks and Equipment Blanks are billable sample.				J=Jar			
6. Asset Laboratories is not responsible for samples collected using incorrect methodology.				B=Tedlar			
7. Terms are net 30 days.				V=VOA			
8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed.				P=Plint			
9. For subcontract analysis, TAT and Surcharges will vary.				G=Glass			
Others/Specify: B (NH4)2SO4/NH4OH				M=Metal			
				C=Can			

White=Laboratory Copy

Yellow=Customer's Copy

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.


If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 9/24/2018 Workorder: N032205  
 Rep sample Temp (Deg C): 2.6 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |   |                             |   |
|---|---|-----------------------------|---|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/>            |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 11. All samples received within holding time?   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/>                     |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/>          |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/>                     |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/>                     |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/>          |
|   | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/>          |

Comments:

Checklist Completed By: YR  9/25/2018

Reviewed By:  LG 093018

# ASSET Laboratories

## WORK ORDER Summary

25-Sep-18

**WorkOrder:** N032205

**Client ID:** ARCUS02

**Project:** PG&E Topock - GMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 9/24/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032205-001A	MW-63-065-Q318	9/24/2018 12:48:00 PM	10/8/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-001B			10/8/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-001C			10/8/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-001D			10/8/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/8/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/8/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-002A	MW-901-Q318	9/24/2018 12:58:00 PM	10/8/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-002B			10/8/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-002C			10/8/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-002D			10/8/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/8/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/8/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-003A	MW-64BR-Q318	9/24/2018 1:58:00 PM	10/8/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-003B			10/8/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-003C			10/8/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-003D			10/8/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/8/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/8/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-004A	MW-73-080-Q318	9/24/2018 3:11:00 PM	10/8/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-004B			10/8/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-004C			10/8/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

25-Sep-18

**WorkOrder:** N032205

**Client ID:** ARCUS02

**Project:** PG&E Topock - GMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 9/24/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032205-004D	MW-73-080-Q318	9/24/2018 3:11:00 PM	10/8/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/8/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/8/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-005A	MW-701-Q318	9/24/2018 3:45:00 PM	10/8/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-006A	FOLDER	10/8/2018	10/8/2018		EDD	RWQCB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/8/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/8/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB



# ***ARCADIS***

Project: PG&E Topock - GMP

Project No.: RC000753.801D

ASSET Laboratories Work Order:  
N032205

## ***ANALYTICAL and QC RESULTS SAMPLE RECEIVING ITEMS***

***PRIVILEGED AND CONFIDENTIAL***



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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October 08, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032205

RE: PG&E Topock - GMP, RC000753.801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 24, 2018 by ASSET Laboratories .  
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in  
accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Nancy Libucos for*

Quennie Manimtim  
Laboratory Director

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NEVADA | P:702.307.2659 F:702.307.2691  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032205

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**CASE NARRATIVE****SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

**Analytical Comments for EPA 218.6:**

Dilution was necessary for sample N032205-003 due to matrix interference. Sample was analyzed at lower dilution however matrix spike recovery and retention time criteria were not met indicating possible matrix interference. Sample was reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.

**Analytical Comments for 6020\_Dissolved:**

Matrix Spike Duplicate (MSD) is outside recovery criteria for Molybdenum in QC sample N032205-001D-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

**Analytical Comments for SM 4500-NO3F:**

Matrix Spike Duplicate (MSD) is outside recovery criteria in QC sample N032205-004CMSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



**ASSET Laboratories**

Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032205  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032205-001A	MW-63-065-Q318	Groundwater	9/24/2018 12:48:00 PM	9/24/2018	10/8/2018
N032205-001B	MW-63-065-Q318	Groundwater	9/24/2018 12:48:00 PM	9/24/2018	10/8/2018
N032205-001C	MW-63-065-Q318	Groundwater	9/24/2018 12:48:00 PM	9/24/2018	10/8/2018
N032205-001D	MW-63-065-Q318	Groundwater	9/24/2018 12:48:00 PM	9/24/2018	10/8/2018
N032205-002A	MW-901-Q318	Groundwater	9/24/2018 12:58:00 PM	9/24/2018	10/8/2018
N032205-002B	MW-901-Q318	Groundwater	9/24/2018 12:58:00 PM	9/24/2018	10/8/2018
N032205-002C	MW-901-Q318	Groundwater	9/24/2018 12:58:00 PM	9/24/2018	10/8/2018
N032205-002D	MW-901-Q318	Groundwater	9/24/2018 12:58:00 PM	9/24/2018	10/8/2018
N032205-003A	MW-64BR-Q318	Groundwater	9/24/2018 1:58:00 PM	9/24/2018	10/8/2018
N032205-003B	MW-64BR-Q318	Groundwater	9/24/2018 1:58:00 PM	9/24/2018	10/8/2018
N032205-003C	MW-64BR-Q318	Groundwater	9/24/2018 1:58:00 PM	9/24/2018	10/8/2018
N032205-003D	MW-64BR-Q318	Groundwater	9/24/2018 1:58:00 PM	9/24/2018	10/8/2018
N032205-004A	MW-73-080-Q318	Groundwater	9/24/2018 3:11:00 PM	9/24/2018	10/8/2018
N032205-004B	MW-73-080-Q318	Groundwater	9/24/2018 3:11:00 PM	9/24/2018	10/8/2018
N032205-004C	MW-73-080-Q318	Groundwater	9/24/2018 3:11:00 PM	9/24/2018	10/8/2018
N032205-004D	MW-73-080-Q318	Groundwater	9/24/2018 3:11:00 PM	9/24/2018	10/8/2018
N032205-005A	MW-701-Q318	Groundwater	9/24/2018 3:45:00 PM	9/24/2018	10/8/2018



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-001

**Client Sample ID:** MW-63-065-Q318  
**Collection Date:** 9/24/2018 12:48:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180925C</b>	QC Batch: <b>R128815</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	5400	0.10	0.10		umhos/cm	1	9/25/2018 09:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-002

**Client Sample ID:** MW-901-Q318  
**Collection Date:** 9/24/2018 12:58:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180925C</b>	QC Batch: <b>R128815</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	5400	0.10	0.10		umhos/cm	1	9/25/2018 09:35 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

<b>CLIENT:</b> ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b> MW-64BR-Q318
<b>Lab Order:</b> N032205	<b>Collection Date:</b> 9/24/2018 1:58:00 PM
<b>Project:</b> PG&E Topock - GMP, RC000753.801D	<b>Matrix:</b> GROUNDWATER
<b>Lab ID:</b> N032205-003	

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180925C</b>	QC Batch: <b>R128815</b>			PrepDate		Analyst: <b>LR</b>
Specific Conductance	12000	0.10	0.10	umhos/cm	1	9/25/2018 09:35 AM

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	ND Not Detected at the Reporting Limit
	S Spike/Surrogate outside of limits due to matrix interference	Results are wet unless otherwise specified
	DO Surrogate Diluted Out	



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-004

**Client Sample ID:** MW-73-080-Q318  
**Collection Date:** 9/24/2018 3:11:00 PM  
**Matrix:** GROUNDWATER

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Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180925C</b>	QC Batch: <b>R128815</b>			PrepDate		Analyst: <b>LR</b>
Specific Conductance	9600	0.10	0.10	umhos/cm	1	9/25/2018 09:35 AM

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**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID	<b>N032205-003BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>120.1_WPGE</b>	Units:	<b>umhos/cm</b>	Prep Date:		RunNo:	<b>128815</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R128815</b>	TestNo:	<b>EPA 120.1</b>			Analysis Date:	<b>9/25/2018</b>	SeqNo:	<b>3151769</b>
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC	
Specific Conductance		11490.000		0.10						11500	0.0870
											2

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-001

**Client Sample ID:** MW-63-065-Q318  
**Collection Date:** 9/24/2018 12:48:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180925A</b>	QC Batch: <b>R128817</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	1.0	0.033	0.20		µg/L	1	9/25/2018 10:39 AM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>
Chromium	1.4	0.13	1.0		µg/L	1	10/2/2018 12:11 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

<b>CLIENT:</b> ARCADIS U.S., Inc. - California	<b>Client Sample ID:</b> MW-901-Q318
<b>Lab Order:</b> N032205	<b>Collection Date:</b> 9/24/2018 12:58:00 PM
<b>Project:</b> PG&E Topock - GMP, RC000753.801D	<b>Matrix:</b> GROUNDWATER
<b>Lab ID:</b> N032205-002	

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_180925A	QC Batch: R128817			PrepDate	Analyst: RAB		
Hexavalent Chromium	1.0	0.033	0.20		µg/L	1	9/25/2018 11:00 AM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI	
Chromium	1.5	0.13	1.0		µg/L	1	10/2/2018 12:39 PM

<b>Qualifiers:</b>	B Analyte detected in the associated Method Blank	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	ND Not Detected at the Reporting Limit
	S Spike/Surrogate outside of limits due to matrix interference	Results are wet unless otherwise specified
	DO Surrogate Diluted Out	



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-003

**Client Sample ID:** MW-64BR-Q318  
**Collection Date:** 9/24/2018 1:58:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_180925A	QC Batch: R128817			PrepDate	Analyst: RAB		
Hexavalent Chromium	ND	0.17	1.0	µg/L	5	9/25/2018 12:35 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI	
Chromium	ND	0.13	1.0	µg/L	1	10/2/2018 12:56 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-004

**Client Sample ID:** MW-73-080-Q318  
**Collection Date:** 9/24/2018 3:11:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_180925A	QC Batch: R128817			PrepDate	Analyst: RAB		
Hexavalent Chromium	36	0.33	2.0	µg/L	10	9/25/2018 11:38 AM	
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI	
Chromium	39	0.13	1.0	µg/L	1	10/2/2018 01:02 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-005

**Client Sample ID:** MW-701-Q318  
**Collection Date:** 9/24/2018 3:45:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180925A</b>	QC Batch: <b>R128817</b>			PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20	µg/L	1	9/25/2018 12:16 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>MB-R128817</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>
Client ID: <b>PBW</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151780</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>LCS-R128817</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151781</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.180	0.20	5.000	0	104 90 110

Sample ID <b>N032205-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151783</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	2.048	0.20	1.000	1.028	102 90 110

Sample ID <b>N032205-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151785</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	2.004	0.20	1.000	1.005	99.9 90 110

Sample ID <b>N032205-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151787</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	86.916	2.0	50.00	35.96	102 90 110

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032205-005AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151791</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.063	0.20	1.000	0.06590	99.7	90	110				

Sample ID <b>N032205-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151793</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.894	1.0	5.000	0	97.9	90	110				

Sample ID <b>N032205-004ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151794</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	35.116	2.0						35.96	2.37	20	

Sample ID <b>N032205-004AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151795</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	85.158	2.0	50.00	35.96	98.4	90	110	86.92	2.04	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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EPA ID CA01638

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3151 W. Post Rd., Las Vegas, NV 89118  
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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>MB-70807</b>	SampType: <b>MBLK</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159830</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>LCS-70807</b>	SampType: <b>LCS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159831</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium 10.546 1.0 10.00 0 105 85 115

Sample ID <b>N032205-001D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159835</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium 12.134 1.0 10.00 1.419 107 75 125

Sample ID <b>N032205-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159836</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium 12.005 1.0 10.00 1.419 106 75 125 12.13 1.07 20

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-001

**Client Sample ID:** MW-63-065-Q318  
**Collection Date:** 9/24/2018 12:48:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	1.0	0.032	0.050		mg/L	1	10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 EPA ID CA01638

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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-002

**Client Sample ID:** MW-901-Q318  
**Collection Date:** 9/24/2018 12:58:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	1.1	0.032	0.050		mg/L	1	10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-003

**Client Sample ID:** MW-64BR-Q318  
**Collection Date:** 9/24/2018 1:58:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	ND	0.032	0.050	mg/L	1		10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-004

**Client Sample ID:** MW-73-080-Q318  
**Collection Date:** 9/24/2018 3:11:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	3.0	0.16	0.25		mg/L	5	10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R129025</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161938</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R129025</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161939</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.481	0.050	0.5000	0	96.2 85 115

Sample ID <b>N032205-004CMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161942</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	6.037	0.25	2.500	2.971	123 75 125

Sample ID <b>N032205-004CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161943</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	6.162	0.25	2.500	2.971	128 75 125 6.037 2.05 20 S

Sample ID <b>N032205-002CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161946</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	1.111	0.050			1.136 2.20 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-001

**Client Sample ID:** MW-63-065-Q318  
**Collection Date:** 9/24/2018 12:48:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	1.6	0.081	0.10	µg/L	1	10/2/2018 12:11 PM
Manganese	ND	0.26	0.50	µg/L	1	10/2/2018 12:11 PM
Molybdenum	16	0.21	0.50	µg/L	1	10/2/2018 12:11 PM
Selenium	1.0	0.36	0.50	µg/L	1	10/2/2018 12:11 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-002

**Client Sample ID:** MW-901-Q318  
**Collection Date:** 9/24/2018 12:58:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	1.5	0.081	0.10	µg/L	1	10/2/2018 12:39 PM
Manganese	ND	0.26	0.50	µg/L	1	10/2/2018 12:39 PM
Molybdenum	17	0.21	0.50	µg/L	1	10/2/2018 12:39 PM
Selenium	1.2	0.36	0.50	µg/L	1	10/2/2018 03:22 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-003

**Client Sample ID:** MW-64BR-Q318  
**Collection Date:** 9/24/2018 1:58:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	4.0	0.081	0.10	µg/L	1	10/2/2018 12:56 PM
Manganese	920	2.6	5.0	µg/L	10	10/2/2018 02:20 PM
Molybdenum	65	0.21	0.50	µg/L	1	10/2/2018 12:56 PM
Selenium	ND	0.36	0.50	µg/L	1	10/2/2018 12:56 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 08-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032205-004

**Client Sample ID:** MW-73-080-Q318  
**Collection Date:** 9/24/2018 3:11:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	1.4	0.081	0.10	µg/L	1	10/2/2018 01:02 PM
Manganese	24	0.26	0.50	µg/L	1	10/2/2018 01:02 PM
Molybdenum	27	0.21	0.50	µg/L	1	10/2/2018 01:02 PM
Selenium	3.9	0.36	0.50	µg/L	1	10/2/2018 01:02 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>MB-70807</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>
Client ID: <b>PBW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159620</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>LCS-70807</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159621</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	9.987	0.10	10.00	0	99.9 85 115
Manganese	106.685	0.50	100.0	0	107 85 115
Molybdenum	9.797	0.50	10.00	0	98.0 85 115
Selenium	10.086	0.50	10.00	0	101 85 115

Sample ID <b>N032205-001D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159625</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	13.112	0.10	10.00	1.558	116 75 125
Manganese	114.507	0.50	100.0	0	115 75 125
Molybdenum	28.778	0.50	10.00	16.37	124 75 125
Selenium	11.109	0.50	10.00	1.017	101 75 125

Sample ID <b>N032205-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159626</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	13.254	0.10	10.00	1.558	117 75 125 13.11 1.08 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



**ASSET LABORATORIES**  
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3151 W. Post Rd., Las Vegas, NV 89118  
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ORELAP/NELAP Cert 4046

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	<b>N032205-001D-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128979</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70807</b>	TestNo:	<b>EPA 6020</b>	<b>EPA 3010A</b>		Analysis Date:	<b>10/2/2018</b>	SeqNo:	<b>3159626</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	113.674	0.50	100.0	0	114	75	125	114.5	0.730	20	
Molybdenum	28.930	0.50	10.00	16.37	126	75	125	28.78	0.528	20	S
Selenium	10.661	0.50	10.00	1.017	96.4	75	125	11.11	4.12	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



**ASSET LABORATORIES**  
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# SAMPLE RECEIVING ITEMS



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P: 562.219.7435 F: 562.219.7436

NEVADA  
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P: 702.307.2659 F: 702.307.2691

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### CHAIN OF CUSTODY RECORD

Contact us:  
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P: 702.307.2659 F: 702.307.2691  
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P: 562.219.7435 F: 562.219.7436  
[www.assetlaboratories.com](http://www.assetlaboratories.com)

Client: Arcadis		Report to: Dan Bush		Bill to: Marty Bloes		EDD Requirement			QA/QC			Sample Receipt Condition		
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis		Address:		Excel EDD	RTNE			1. Chilled <input type="checkbox"/> Y N				
Address: Roseville, CA 95681		Email: dan.bush@arcadis.com		Address:		Geotracker	RWQCB <input checked="" type="checkbox"/>			2. Headspace <input type="checkbox"/>				
Phone: 916-786-3302		Email: daniel.moore@crti.usam.com		Address:		Labspec	CalTrans			3. Container Intact <input type="checkbox"/>				
Submitted By: Ganit Jeffers		Address: 1410 Rocky Ridge Dr # 330		Email to: mbloes@pivox.com		Others	LEVEL III <input checked="" type="checkbox"/>			4. Seal Present <input type="checkbox"/>				
Title: Geologist II		Address: 1410 Rocky Ridge Dr # 330		P.O.#		Specify:	LEVEL IV			5. IR number <input type="checkbox"/>				
Signature: <i>[Signature]</i>		Address: Roseville, CA 95661		Phone: 949-727-1400, ext 200		RWQCB	Regulatory			6. Method of Cooling: <i>LC</i>				
Date: 9/24/2018		Signature: Jason Mahn		Fax:		Global ID:	Specify State:			Sample Temp: <i>26°C</i>				
Project Name: PG&E Topock - GMP		Signature: <i>[Signature]</i>		Date: 9/24/2018		Matrix			Tracking No.:					
Project Number: RC000753.801D		Date: 9/24/2018		Date: 9/24/2018		Ground			Remarks					
		Date: 9/24/2018		Date: 9/24/2018		x Sediment								
		Date: 9/24/2018		Date: 9/24/2018		Potable Soil								
		Date: 9/24/2018		Date: 9/24/2018		NPDES Other Solid								
		Date: 9/24/2018		Date: 9/24/2018		Surface								

Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	Cr(VI) FF (E218.6)	(NH4)2, SO4, NH4, OH	Alkalinity, Total as CaCO3 (SM2320B)	Bromide, Sulfate, Chloride (EPA 300.0)	Specific Conductance (EPA 120.1)	Total Dissolved Solids (SM2540C)	Nitrate/Nitrite (SM4500N03 F) Nitrate: H2SO4	Metals Dissolved (SW6020A FF) (As, Cr, Mn, Mo, Se); HNO3	Dissolved metals (SW6010B FF) (Cr, Mo, Se); HNO3	Dissolved metals (SW6010B FF) (Cr; HNO3)	Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1	N032205-01	MW-63-065-Q318	9/24/2018	12:48		X					X	X	X				E 4 P	3	5	5	
2	-02	MW-901-Q318	9/24/2018	12:58		X					X	X	X				E 4 P	3	5	5	
3	-03	MW-64BR-Q318	9/24/2018	13:58		X					X	X	X				E 4 P	3	5	5	
4	-04	MW-73-080-Q318	9/24/2018	15:11		X					X	X	X				E 4 P	3	5	5	
5	-05	MW-701-Q318	9/24/2018	15:45		X											E 1 P	3	5	5	

Relinquished by (Signature and Printed Name): *[Signature]* Date/Time: 9/24/18 15:03  
 Relinquished by (Signature and Printed Name): *[Signature]* Date/Time: 9/24/18 15:28  
 Relinquished by (Signature and Printed Name): *[Signature]* Date/Time: 9/24/18 15:33  
 Relinquished by (Signature and Printed Name): *[Signature]* Date/Time: 9/24/18 15:33  
 Relinquished by (Signature and Printed Name): *[Signature]* Date/Time: 9/24/18 15:33  
 Relinquished by (Signature and Printed Name): *[Signature]* Date/Time: 9/24/18 15:33

**Turn Around Time (TAT)**

- A < 24 Hrs or Same Day TAT
- B = Next Workday
- C = 2 Workdays
- D = 3 Workdays
- E = Routine 5-7 Workdays

**Special Instruction:**  
Title 22 Metals - Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Ti, V, Zn, K, Na

TAT Starts at 8 AM the following day if samples received after 3:00PM.

**Terms**  
 1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report.  
 2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis.  
 3. Custom EDD formats will be an additional 3% of the total project price.  
 4. Add 10% surcharge for Level II Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.  
 5. Trip Blanks and Equipment Blanks are billable sample.  
 6. Asset Laboratories is not responsible for samples collected using incorrect methodology.  
 7. Terms are not retroactive.  
 8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed.  
 9. For subcontract analysis, TAT and Surcharges will vary.

**Preservatives:** H=HCL N=HNO3 S=H2SO4 C=4°C  
 Z=Zn(AC)2 O=NaOH T=Na2S2O3  
**Others/Specify:** B (NH4)2SO4/NH4OH

**Container Type:** T=Tube V=VOA P=Plint  
 J=Jar B=Tedlar G=Glass  
 M=Metal M=Metal C=Can

White=Laboratory Copy

Yellow=Customer's Copy

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.


If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

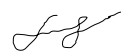
Cooler Received/Opened On: 9/24/2018 Workorder: N032205  
 Rep sample Temp (Deg C): 2.6 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |  |  |  |
|---|--|--|--|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>   |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                                  |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                                  |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 11. All samples received within holding time?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>   |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input type="checkbox"/><br>Yes <input type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input checked="" type="checkbox"/><br>NA <input checked="" type="checkbox"/> |

Comments:

Checklist Completed By: YR  9/25/2018

Reviewed By:  LG 093018



# ASSET Laboratories

## WORK ORDER Summary

25-Sep-18

WorkOrder: N032205

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801D

QC Level: Level IV

Date Received: 9/24/2018

Comments: Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032205-001A	MW-63-065-Q318	9/24/2018 12:48:00 PM	10/8/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-001B			10/8/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-001C			10/8/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-001D			10/8/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/8/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/8/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-002A	MW-901-Q318	9/24/2018 12:58:00 PM	10/8/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-002B			10/8/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-002C			10/8/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-002D			10/8/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/8/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/8/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-003A	MW-64BR-Q318	9/24/2018 1:58:00 PM	10/8/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-003B			10/8/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-003C			10/8/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-003D			10/8/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/8/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/8/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-004A	MW-73-080-Q318	9/24/2018 3:11:00 PM	10/8/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-004B			10/8/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-004C			10/8/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

**ASSET Laboratories**

**WORK ORDER Summary**

25-Sep-18

**WorkOrder:** N032205

**Client ID:** ARCUS02

**Project:** PG&E Topock - GMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 9/24/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032205-004D	MW-73-080-Q318	9/24/2018 3:11:00 PM	10/8/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/8/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/8/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-005A	MW-701-Q318	9/24/2018 3:45:00 PM	10/8/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032205-006A	FOLDER	10/8/2018	10/8/2018		EDD	RWQCB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/8/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/8/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

## List of Analysts

### ASSET Laboratories Work Order: N032205

NAME	TEST METHOD
Quennie Manimtim	SM 4500-NO3F
Claire Ignacio	EPA 6020_Dissolved
Ria Abes	EPA 218.6
Lilia Ramit	EPA 120.1



# EPA 120.1



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R128815

Analyst: LSR

ASSET #: N032205

Date Analyzed: 25-Sep

Method: EPA 120.1

Initial Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
Continuing Calibration						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
Sample Information						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
QC Items						
10. Method blank values are below 1/2 the reporting limit.			X			
11. LCS compounds within control limits.			X			
12. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
Preliminary Report						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Julia Ramit

Date: 9/26/2018

2nd Level Reviewer Nancy 10/8/2018

Date:

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

3151 W. Post Road, Las Vegas, NV 89118 P: 702.307.2659 F: 702.307.2659  
[www.assetlaboratories.com](http://www.assetlaboratories.com)

# Conductivity Logbook

Date: 9/14/18  
 Analyst: LSR

CONTO

Standard	Std ID	Reading	Comments
9.91 <sup>us/cm</sup>	CON-180731G	9.58 @ 23.5°C	% Rec: (90-110%)
1413	180575C	1406 @ 23.8°C	
9988	180731H	10160 @ 23.8°C	
99031	180515D	99900 @ 24.0°C	

Sample ID	Matrix	Reading	Comments
1 N032084-011D	H <sub>2</sub> O	873 @ 23.3°C	
2 110 Dup		875 @ 23.2°C	
3 12D		865 @ 23.3°C	
4 13D		863 @ 23.4°C	
5 14D		858 @ 23.2°C	
6 15D		874 @ 23.5°C	
7			
8			
9 1413 <sup>us/cm</sup>	CON-180417B	1401 @ 24.2°C	
10 10000	180516A	1970 @ 24.5°C	
Dup 99601	180521A	97300 @ 24.0°C	Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Date: 9/25/18 935  
 Analyst: LSR

9/24/18

Standard	Std ID	Reading	Comments
9.91 <sup>us/cm</sup>	CON-180731G	10.02 @ 22.5°C	% Rec: (90-110%)
1413	180515C	1412 @ 22.6°C	
9988	180731H	10140 @ 22.6°C	
99921	180515D	100700 @ 22.8°C	

Sample ID	Matrix	Reading	Comments
1 N032205-001B	H <sub>2</sub> O	5410 @ 20.9°C	
2 2B		5450 @ 20.6°C	
3 3B		11500 @ 20.8°C	
4 3B Dup		11490 @ 20.8°C	
5 4B		9550 @ 20.8°C	
6			Jula Ramit
7			9/26/2018
8 1413 <sup>us/cm</sup>	CON-CON-180417B	1405 @ 22.5°C	
9 10000	180516A	10010 @ 23.0°C	
10 99601	180521B	99100 @ 23.2°C	2% flush H <sub>2</sub> O
Dup			Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Logbook # 6



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 ANALYTICAL SERVICES FOR ENVIRONMENTAL & CHEMICAL

CALIFORNIA | P: 562.219.7435 F: 562.219.7436  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 ELAP Cert 2921

NEVADA | P: 702.307.2659 F: 702.307.2691  
 3151 W. Post Rd., Las Vegas, NV 89118  
 ELAP Cert 2675 | NV Cert NV00922

# EPA 218.6



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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IC Technical Batch Review Checklist (ARCUS02)  
ASSET LABORATORIES - LAS VEGAS

IC ARCUS  
REV 2.0  
011416

QC Batch Number: R128817  
ASSET #: N032205

Instrument ID: IC-07  
Analyst: RBA  
Date Analyzed: 9/25/2018

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)	X					
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?	X					
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?	X					
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)	X					
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X					
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?	X					
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)	X					
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X					
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments:

Dilution was necessary for N032205-003A due to matrix interference.

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer RBA

Date: 9/30/2018

2nd Level Reviewer Thermy 10/8/2018

Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 218.6  
**TEST NAME:** HEXAVALENT CHROMIUM BY IC  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Hexavalent Chromium concentration, in  $\mu\text{g/L}$ , in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

A =  $\mu\text{g/L}$ , IC Cr+6 calculated concentration

DF = dilution factor

For Sample **N032205-001A**, the concentration in  $\mu\text{g/L}$  is calculated as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = 1.0283 * 1$$

$$\text{Cr}^{+6}, \mu\text{g/L} = 1.0283$$

Reporting results in two significant figures,

$$\text{Cr}^{+6}, \mu\text{g/L} = 1.0$$

*rba* 9/30/2018

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INJECTION LOG: 180921A**

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	ICV	ICV	1	Hexavalent Chromium	09/21/18 4:09 PM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/21/18 4:18 PM	Reported
11	ICB	ICB	1	Hexavalent Chromium	09/21/18 4:28 PM	Reported

## Injection Log Summary

### Sequence Details

Name:	IC-07_180921A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	25/Sep/18 09:28:56
No. of Injections:	14	Updated By:	ics 5000

### Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	ICV.ICV,1,	10	1000	Unknown		09/21/2018 16:09	Finished	ICV @5ppb, IWST-180622B
10	PQL@0.2ppb.CCV2,	11	1000	Unknown		09/21/2018 16:18	Finished	PQL @ 0.2ppb
11	ICB.ICB,1,	12	1000	Unknown		09/21/2018 16:28	Finished	ICB R180919A
12	SHUTDOWN	14	1000	Unknown		09/21/2018 16:45	Finished	
13	Eluent: R180917A	14	1000	Unknown		n.a.	Finished	Eluent
14	PCR: R180921A	15	1000	Unknown		n.a.	Finished	Post-Column Reagent

**INJECTION LOG: 180925A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	09/25/18 9:30 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	09/25/18 9:41 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	09/25/18 9:50 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/25/18 10:00 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	09/25/18 10:09 AM	Reported
14	MB-R128817	MBLK	1	Hexavalent Chromium	09/25/18 10:18 AM	Reported
15	LCS-R128817	LCS	1	Hexavalent Chromium	09/25/18 10:28 AM	Reported
16	N032205-001A	SAMP	1	Hexavalent Chromium	09/25/18 10:39 AM	Reported
17	N032205-001AMS	MS	1	Hexavalent Chromium	09/25/18 10:51 AM	Reported
18	N032205-002A	SAMP	1	Hexavalent Chromium	09/25/18 11:00 AM	Reported
19	N032205-002AMS	MS	1	Hexavalent Chromium	09/25/18 11:10 AM	Reported
20	N032205-003A	SAMP	1	Hexavalent Chromium	09/25/18 11:19 AM	Not Reported
21	N032205-003AMS	MS	1	Hexavalent Chromium	09/25/18 11:29 AM	Not Reported
22	N032205-004A	SAMP	10	Hexavalent Chromium	09/25/18 11:38 AM	Reported
23	N032205-004AMS	MS	10	Hexavalent Chromium	09/25/18 11:47 AM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	09/25/18 11:57 AM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	09/25/18 12:06 PM	Reported
26	N032205-005A	SAMP	1	Hexavalent Chromium	09/25/18 12:16 PM	Reported
27	N032205-005AMS	MS	1	Hexavalent Chromium	09/25/18 12:25 PM	Reported
28	N032205-003A	SAMP	5	Hexavalent Chromium	09/25/18 12:35 PM	Reported
29	N032205-003AMS	MS	5	Hexavalent Chromium	09/25/18 12:44 PM	Reported
30	N032205-004ADUP	DUP	10	Hexavalent Chromium	09/25/18 1:14 PM	Reported
31	N032205-004AMSD	MSD	10	Hexavalent Chromium	09/25/18 1:26 PM	Reported
32	N032115-003A	SAMP	1	Hexavalent Chromium	09/25/18 1:50 PM	Reported
33	N032115-004A	SAMP	1	Hexavalent Chromium	09/25/18 2:01 PM	Reported
34	CCV-3	CCV	1	Hexavalent Chromium	09/25/18 2:11 PM	Reported
35	CCB-3	CCB	1	Hexavalent Chromium	09/25/18 2:20 PM	Reported

### Injection Log Summary

**Sequence Details**

Name:	IC-07_180925A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	25/Sep/18 15:39:31
No. of Injections:	38	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume $\mu$ L	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	BLANK	1	1000	Unknown		09/25/2018 09:30	Finished	BLANK
10	BLANK	2	1000	Unknown		09/25/2018 09:41	Finished	BLANK
11	CCV-1.CCV.1.	3	1000	Unknown		09/25/2018 09:50	Finished	CCV @5ppb, IWST-180622A
12	PQL@0.2ppb.CCV2.	4	1000	Unknown		09/25/2018 10:00	Finished	PQL @ 0.2ppb
13	CCB-1.CCB.1.	5	1000	Unknown		09/25/2018 10:09	Finished	CCB R180919A
14	MB-H2O.MBLK.1.	6	1000	Unknown		09/25/2018 10:18	Finished	MB R180919A
15	LCS-H2O.LCS.1.	7	1000	Unknown		09/25/2018 10:28	Finished	LCS @5ppb, IWST-180622B
16	N032205-001A.SAMP	9	1000	Unknown		09/25/2018 10:39	Finished	SAMP,10mL
17	N032205-001AMS.MS	10	1000	Unknown		09/25/2018 10:51	Finished	MS (1ppb), IWST-180622B,10
18	N032205-002A.SAMP	11	1000	Unknown		09/25/2018 11:00	Finished	SAMP,10mL
19	N032205-002AMS.MS	12	1000	Unknown		09/25/2018 11:10	Finished	MS (1ppb), IWST-180622B,10
20	N032205-003A.SAMP	13	1000	Unknown		09/25/2018 11:19	Finished	SAMP,10mL
21	N032205-003AMS.MS	14	1000	Unknown		09/25/2018 11:29	Finished	MS (1ppb), IWST-180622B,10
22	N032205-004A.SAMP	15	1000	Unknown		09/25/2018 11:38	Finished	SAMP,1>10mL
23	N032205-004AMS.MS	16	1000	Unknown		09/25/2018 11:47	Finished	MS (5ppb), IWST-180622B,1>
24	CCV-2.CCV1.1.	17	1000	Unknown		09/25/2018 11:57	Finished	CCV @10ppb, IWST-180622A
25	CCB-2.CCB.1.	18	1000	Unknown		09/25/2018 12:06	Finished	CCB R180919A
26	N032205-005A.SAMP	19	1000	Unknown		09/25/2018 12:16	Finished	SAMP,10mL
27	N032205-005AMS.MS	20	1000	Unknown		09/25/2018 12:25	Finished	MS (1ppb), IWST-180622B,10
28	N032205-003A.SAMP	21	1000	Unknown		09/25/2018 12:35	Finished	SAMP,2>10mL
29	N032205-003AMS.MS	22	1000	Unknown		09/25/2018 12:44	Finished	MS (1ppb), IWST-180622B,2>
30	N032205-004ADUP.D	24	1000	Unknown		09/25/2018 13:14	Finished	DUP,1>10mL
31	N032205-004AMSD.N	25	1000	Unknown		09/25/2018 13:26	Finished	MSD (5ppb), IWST-180622B,1>
32	N032115-003A.SAMP	27	1000	Unknown		09/25/2018 13:50	Finished	SAMP,10mL
33	N032115-004A.SAMP	28	1000	Unknown		09/25/2018 14:01	Finished	SAMP,10mL
34	CCV-3.CCV.1.	29	1000	Unknown		09/25/2018 14:11	Finished	CCV @5ppb, IWST-180622A
35	CCB-3.CCB.1.	30	1000	Unknown		09/25/2018 14:20	Finished	CCB R180919A
36	SHUTDOWN	31	1000	Unknown		09/25/2018 14:29	Finished	
37	Eluent: R180924B	32	1000	Unknown		n.a.	Finished	Eluent
38	PCR: R180921A	33	1000	Unknown		n.a.	Finished	Post-Column Reagent



# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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### Hexavalent Chromium Preparation and Runlog

#### Sample Preparation

Date Prepared: 9/17/18      slope: 98.72  
 Time Prepared: 10:04H      pH: 4.40 @ 25.0°C  
 Prepared By: MJA      7.70 @ 25.0°C  
     10.00 @ 25.0°C

Reagent ID:  
 Sulfuric Acid: 10704  
 Diphenylcarbazide: CANV-160576B  
 NH<sub>4</sub>OH + NH<sub>4</sub>SO<sub>4</sub> eluent: M80917A  
 NH<sub>4</sub>OH + NH<sub>4</sub>SO<sub>4</sub> buffer: direct prepared

Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1) N072117-01A	8.74		~50 ml			
2)   2A	8.71	preserved	~50 ml			
3)   3A	8.72		~120 ml			
4)   4A	8.72		~50 ml			
5)						
6)						
7)						
8)						
9)						
10)						NO 11/24/18
11)						
12)						
13)						
14)						
15)						

#### Sample Preparation

Date Prepared: 9/25/18      slope: 97.86  
 Time Prepared: 08:57H      pH: 9.09 @ 25.0°C  
 Prepared By: MJA      7.70 @ 25.0°C  
     10.00 @ 25.0°C

Reagent ID:  
 Sulfuric Acid: 10704  
 Diphenylcarbazide: CANV-160576B  
 NH<sub>4</sub>OH + NH<sub>4</sub>SO<sub>4</sub> eluent: M80924K  
 NH<sub>4</sub>OH + NH<sub>4</sub>SO<sub>4</sub> buffer: M80919A

Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1) N072205-001A	9.04	9.47	~250 ml	~250 ml	+4 drops 6N NaOH	
2)   2A	9.09	9.40			+3 " "	
3)   3A	9.33	-				
4)   4A	9.32	-				
5)   5A	9.62	-				
6)						
7)						
8)						
9)						
10)						
11)						
12)						
13)						
14)						
15)						

Logbook No. 15

nba 9/30/2018



**ASSET LABORATORIES**

CALIFORNIA | P: 562.219.7435 F: 562.219.7436  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 ELAP Cert 2921

NEVADA | P: 702.307.2659 F: 702.307.2691  
 3151 W. Post Rd., Las Vegas, NV 89118  
 ELAP Cert 2676 | NV Cert 10922  
 ORELAP/NELAP Cert 4046

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07  
Date Calibrated: 9/21/2018

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R <sup>2</sup>
Area,mAU*min	0.0462	0.2400	1.2761	2.5253	3.8020	5.0460	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST-170814H	IWST-180622A

Calibration Acceptance Criteria: > 0.999 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3151774</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.047	0.20	5.000	0	101	90	110				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3151775</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.187	0.20	0.2000	0	93.2	80	120				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151777</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.978	0.20	5.000	0	99.6	95	105				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151778</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.212	0.20	0.2000	0	106	80	120				

Sample ID <b>CCV-2</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151788</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.121	0.20	10.00	0	101	95	105				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151798</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.056	0.20	5.000	0	101	95	105				

**Qualifiers:**

- |    |   |   |                                      |   |  |
|----|---|---|--------------------------------------|---|--|
| B  | Analyte detected in the associated Method Blank | E | Value above quantitation range       | H | Holding times for preparation or analysis exceeded           |
| ND | Not Detected at the Reporting Limit             | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>
Client ID: <b>ICB</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3151776</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151779</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151789</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128817</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128817</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3151799</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGISTS

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 9/25/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.115	
CCV-1	4.115	
CCV-2	4.115	
CCV-3	4.115	

**Average** 4.115  
**Actual RT Window** 4.035 - 4.195  
**Applied RT Window** 3.915 - 4.315

MB-R128817	N.A.	N.A.
LCS-R128817	4.115	PASS
N032205-001A	3.998	PASS
N032205-001AMS	3.998	PASS
N032205-002A	3.998	PASS
N032205-002AMS	3.998	PASS
N032205-003A	N.A.	N.A.
N032205-003AMS	N.A.	N.A.
N032205-004A	4.090	PASS
N032205-004AMS	4.098	PASS
N032205-005A	4.098	PASS
N032205-005AMS	4.115	PASS
N032205-003A	N.A.	N.A.
N032205-003AMS	4.065	PASS
N032205-004ADUP	4.098	PASS
N032205-004AMSD	4.098	PASS
N032115-003A	4.098	PASS
N032115-004A	4.106	PASS

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**  
 Method Number: EPA 218.6  
 Analysis Date(s): 5/5/2017, 5/8/2017, 5/9/2017, 5/10/2017, 5/11/2017, 5/12/2017, 5/15/2017  
 Analyst: Ria Abes

Matrix: **WATER**  
 Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

	Datafile	170505	170508	170509	170510	170511	170512	170515						
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	t <sub>(n-1)</sub> value	MDL	PQL	Remarks	
Hexavalent Chromium	0.1949	0.2135	0.1840	0.1828	0.2011	0.1936	0.1911	0.20	0.0105	3.143	<b>0.0331</b>	<b>0.20</b>	OK,meets criteria	

Students' t Values at 99% CL

#	t <sub>(n-1)</sub>
10	2.821
9	2.896
8	2.998
7	3.143



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL MONITORING

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

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## LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Hexavalent Chromium by IC**                      Matrix: **WATER**  
 Method Number: EPA Method 218.6/7199                      Unit:  $\mu\text{g/L}$   
 Analysis Date(s): 3/21/2018  
 Analyst: Ria Abes  
  
 Instrument Name: **IC-07**

Compound	MDL	LOD Spike Conc., $\mu\text{g/L}$	LOD actual Conc., $\mu\text{g/L}$
Hexavalent Chromium	0.0331	0.100	0.116

Compound	PQL	PQL Spike Conc., $\mu\text{g/L}$	PQL actual Conc., $\mu\text{g/L}$	% Recovery
Hexavalent Chromium	0.200	0.200	0.201	<u>100</u>



# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436



NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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# INITIAL CALIBRATION



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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INJECTION LOG: 180921A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	ICV	ICV	1	Hexavalent Chromium	09/21/18 4:09 PM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/21/18 4:18 PM	Reported
11	ICB	ICB	1	Hexavalent Chromium	09/21/18 4:28 PM	Reported

*rba* 9/30/2018

*Nancy* 10/8/2018

IC7 RBA 9/26/2018 8:55 AM

## Injection Log Summary

## Sequence Details

Name:	IC-07_180921A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	25/Sep/18 09:28:56
No. of Injections:	14	Updated By:	ics 5000

## Injection Details

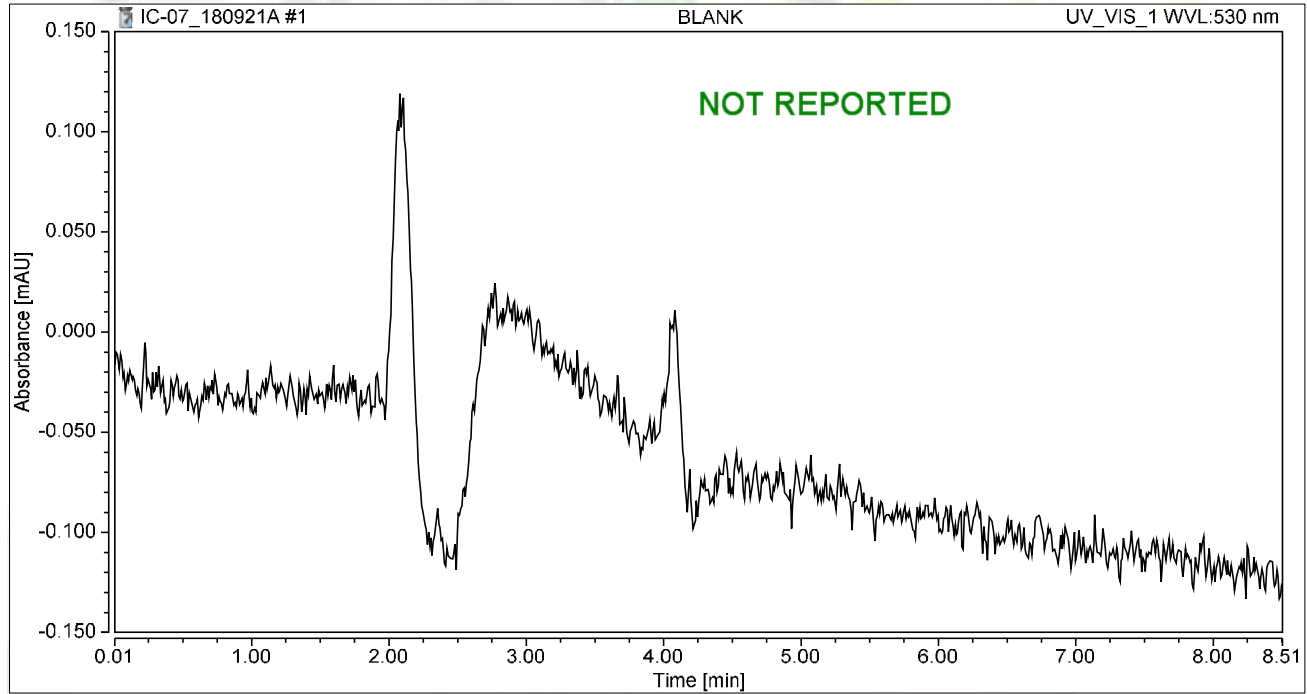
No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	ICV,ICV,1,	10	1000	Unknown		09/21/2018 16:09	Finished	ICV @5ppb, IWST-180622B
10	PQL@0.2ppb,CCV2,	11	1000	Unknown		09/21/2018 16:18	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	12	1000	Unknown		09/21/2018 16:28	Finished	ICB R180919A
12	SHUTDOWN	14	1000	Unknown		09/21/2018 16:45	Finished	
13	Eluent: R180917A	14	1000	Unknown		n.a.	Finished	Eluent
14	PCR: R180921A	15	1000	Unknown		n.a.	Finished	Post-Column Reagent

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

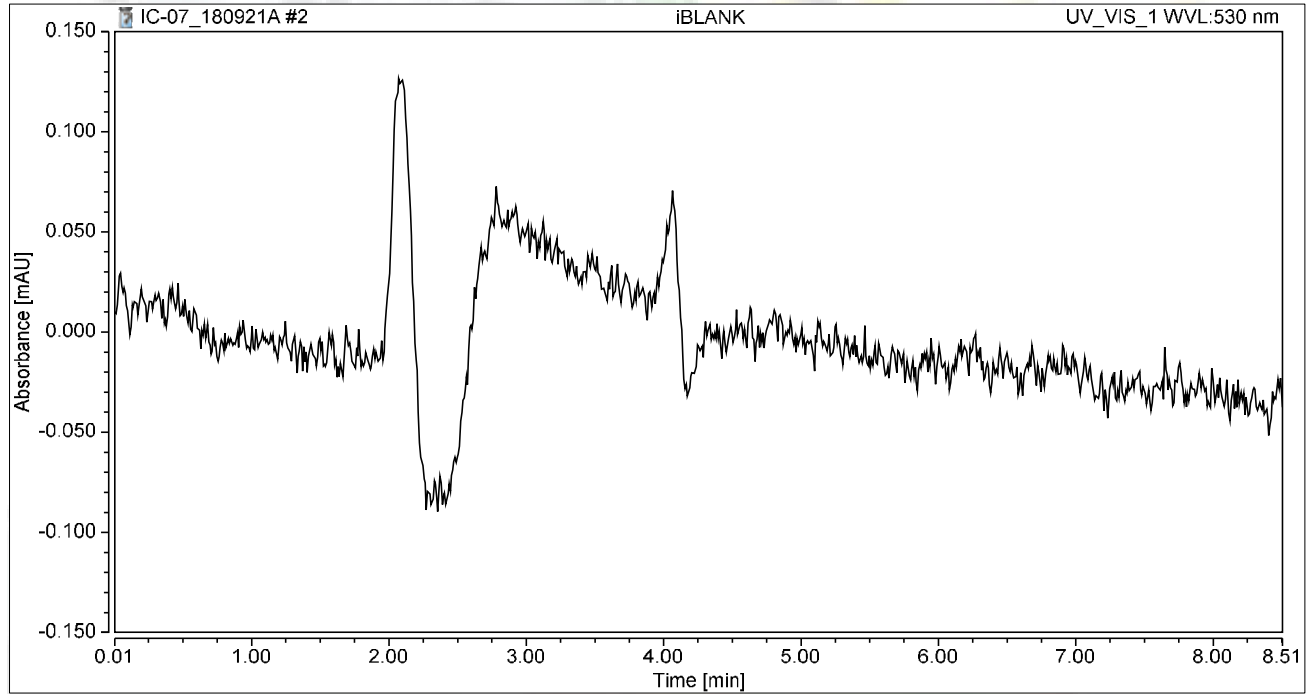
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	iBLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

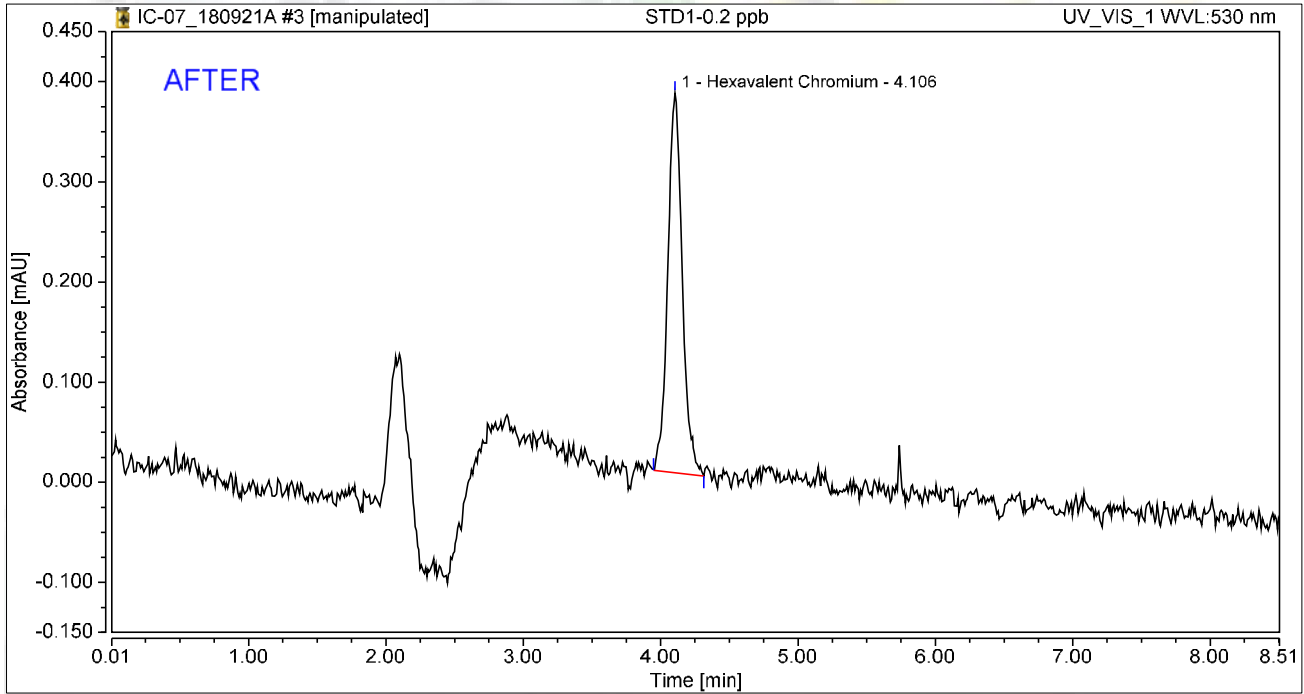
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.046	0.379	100.00	100.00	0.1830
<b>Total:</b>			<b>0.046</b>	<b>0.379</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/30/2018

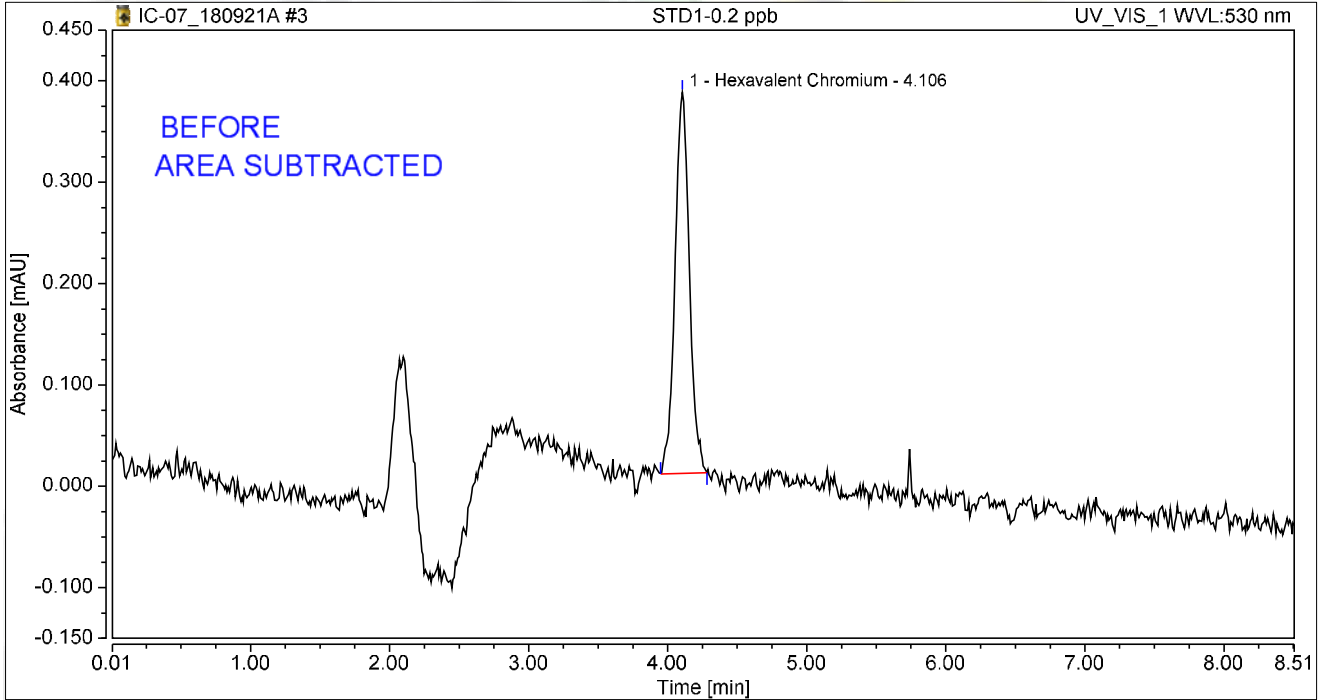
Reviewed by:  
*Murray* 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.045	0.376	100.00	100.00	0.1723
<b>Total:</b>			<b>0.045</b>	<b>0.376</b>	<b>100.00</b>	<b>100.00</b>	

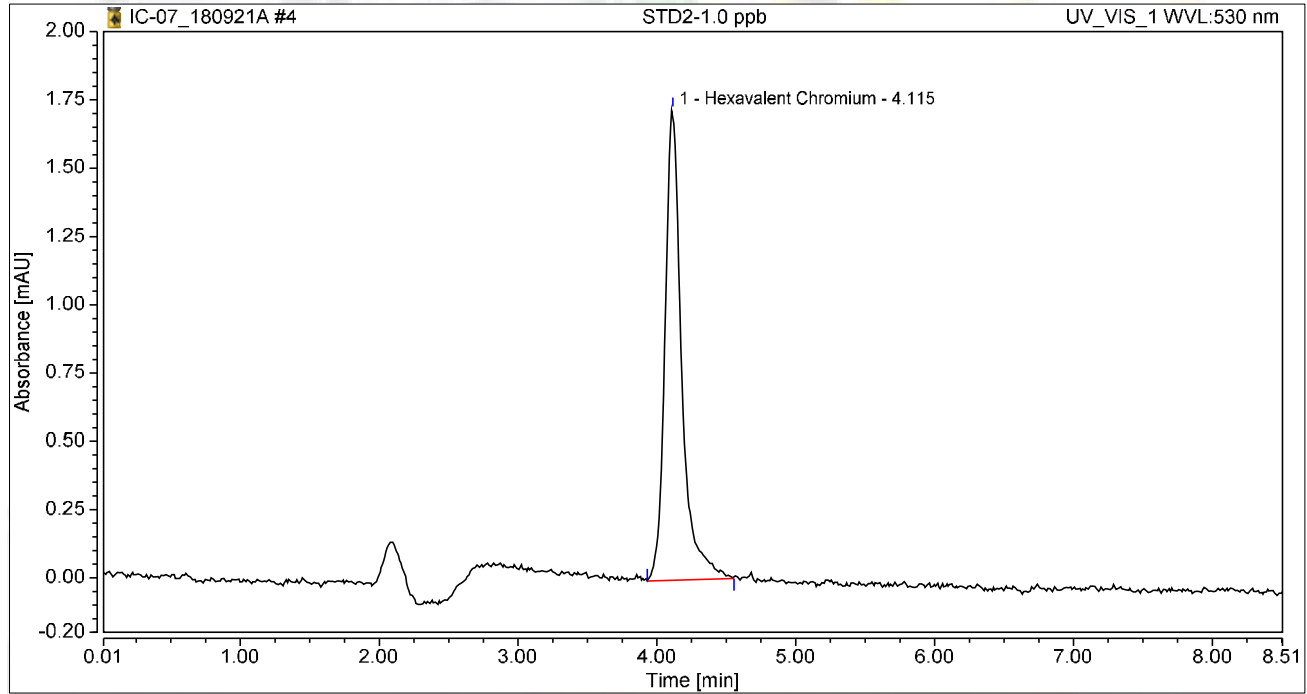
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD2-1.0 ppb	Run Time (min):	8.49
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	02	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:47	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

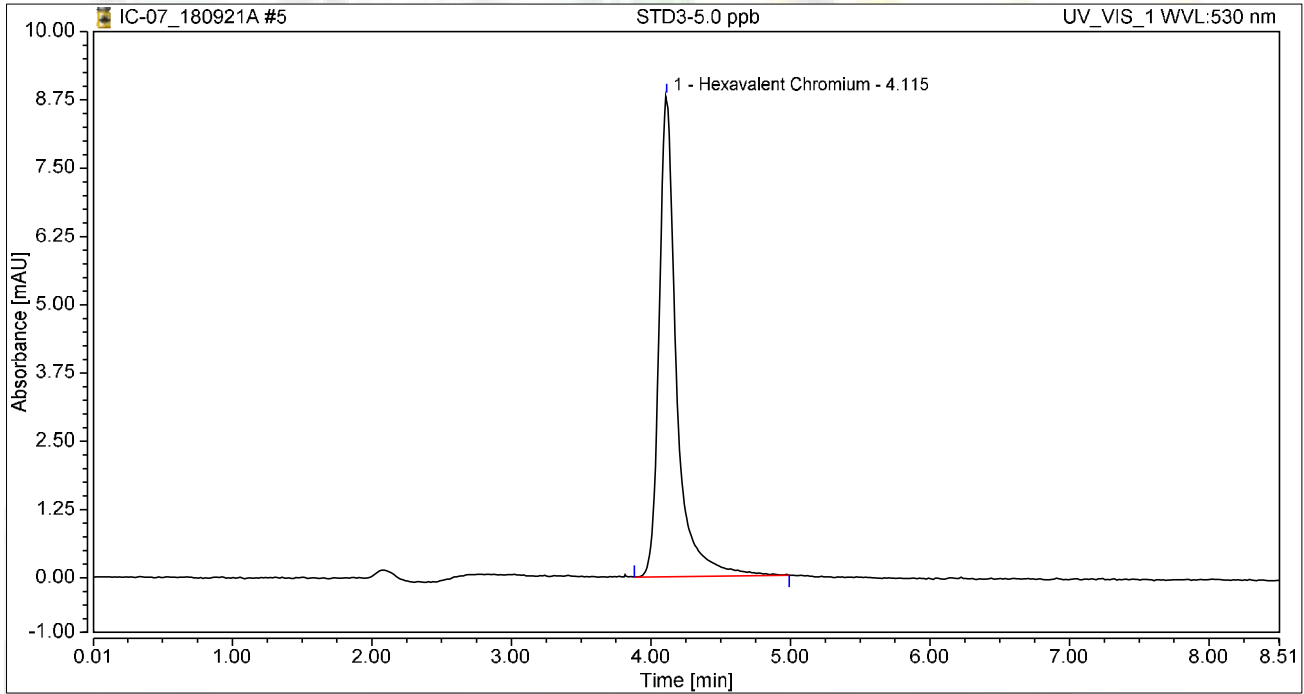
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.240	1.724	100.00	100.00	0.9494
<b>Total:</b>			<b>0.240</b>	<b>1.724</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD3-5.0 ppb	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	03	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.276	8.809	100.00	100.00	5.0487
<b>Total:</b>			<b>1.276</b>	<b>8.809</b>	<b>100.00</b>	<b>100.00</b>	

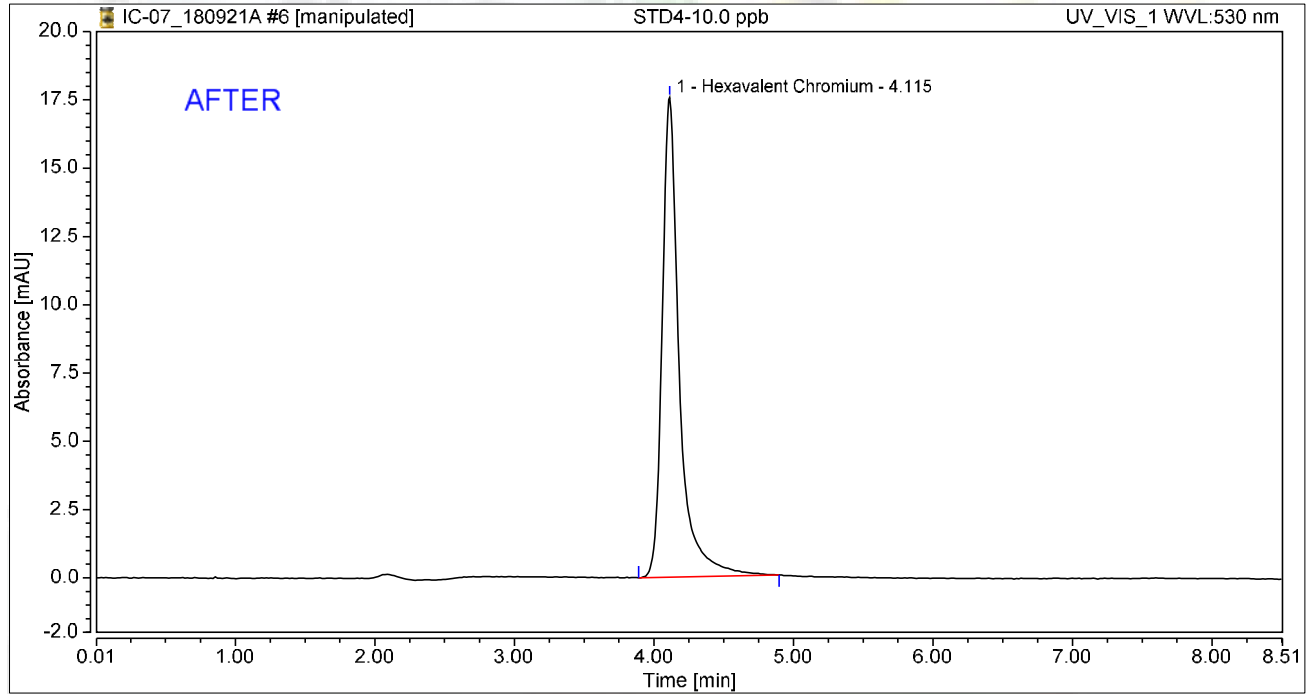


### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.525	17.564	100.00	100.00	9.9908
<b>Total:</b>			<b>2.525</b>	<b>17.564</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Reviewed by:

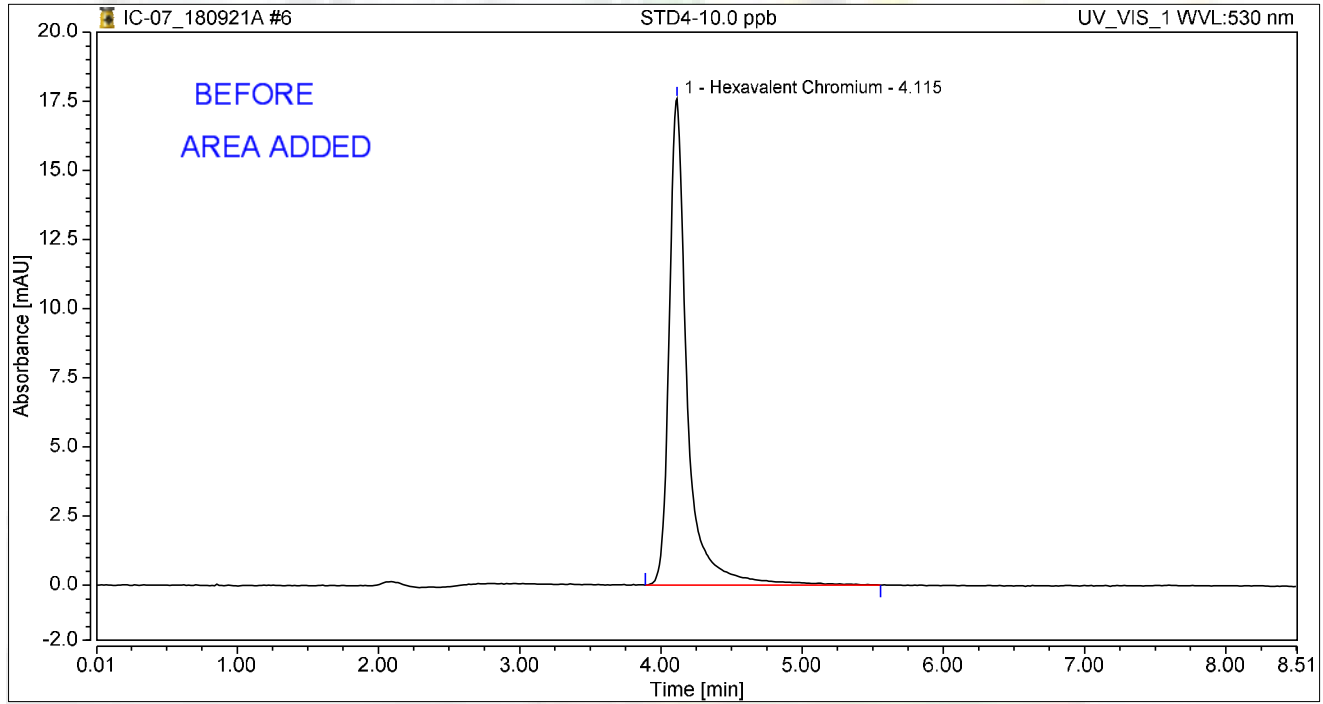
My first record integration  
Newby 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.611	17.589	100.00	100.00	10.0182
<b>Total:</b>			<b>2.611</b>	<b>17.589</b>	<b>100.00</b>	<b>100.00</b>	

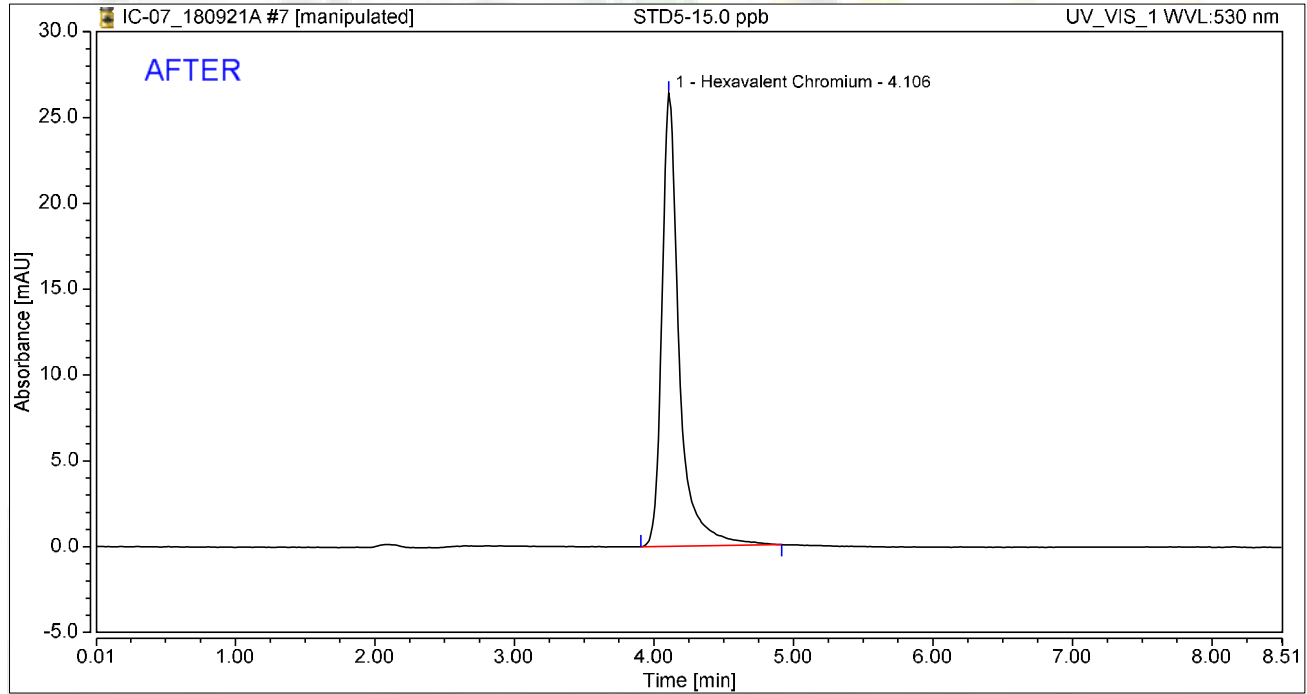
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	3.802	26.404	100.00	100.00	15.0421
<b>Total:</b>			<b>3.802</b>	<b>26.404</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

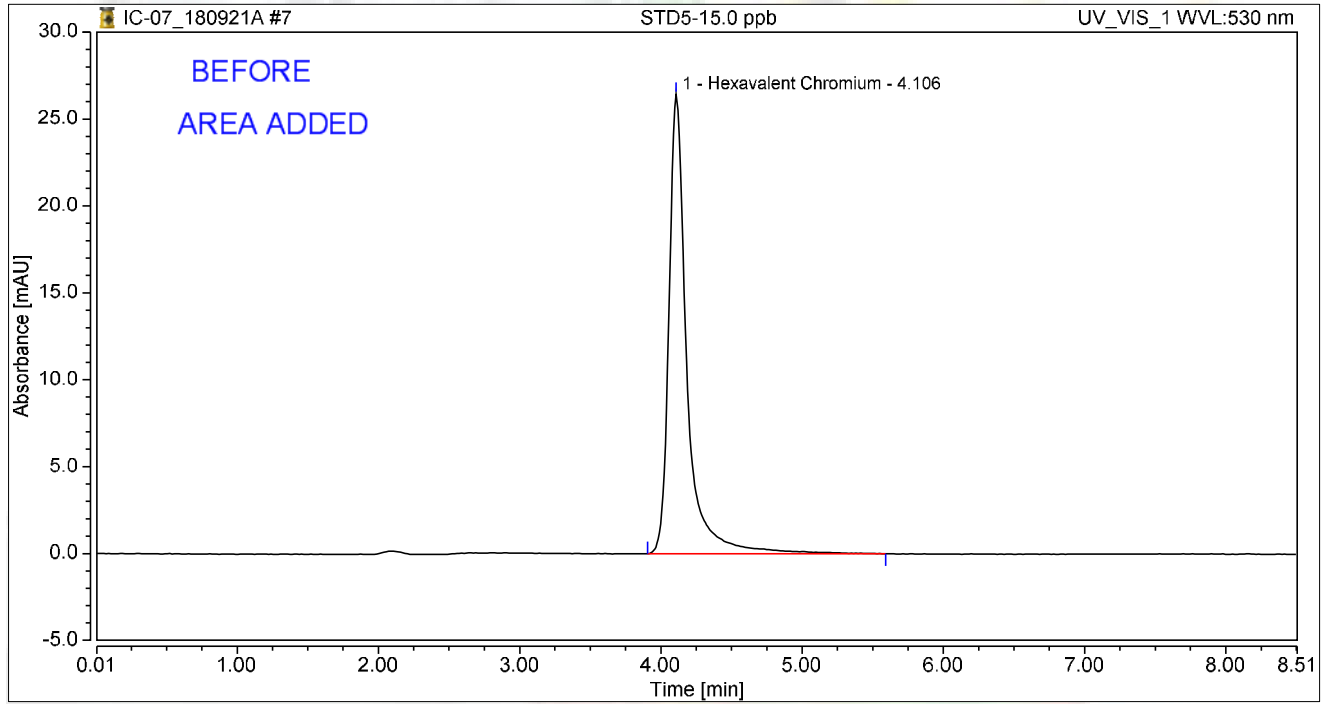
Reviewed by:  
*Money* 10/8/2018  
 My first report/integration

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	3.918	26.433	100.00	100.00	15.0352
<b>Total:</b>			<b>3.918</b>	<b>26.433</b>	<b>100.00</b>	<b>100.00</b>	

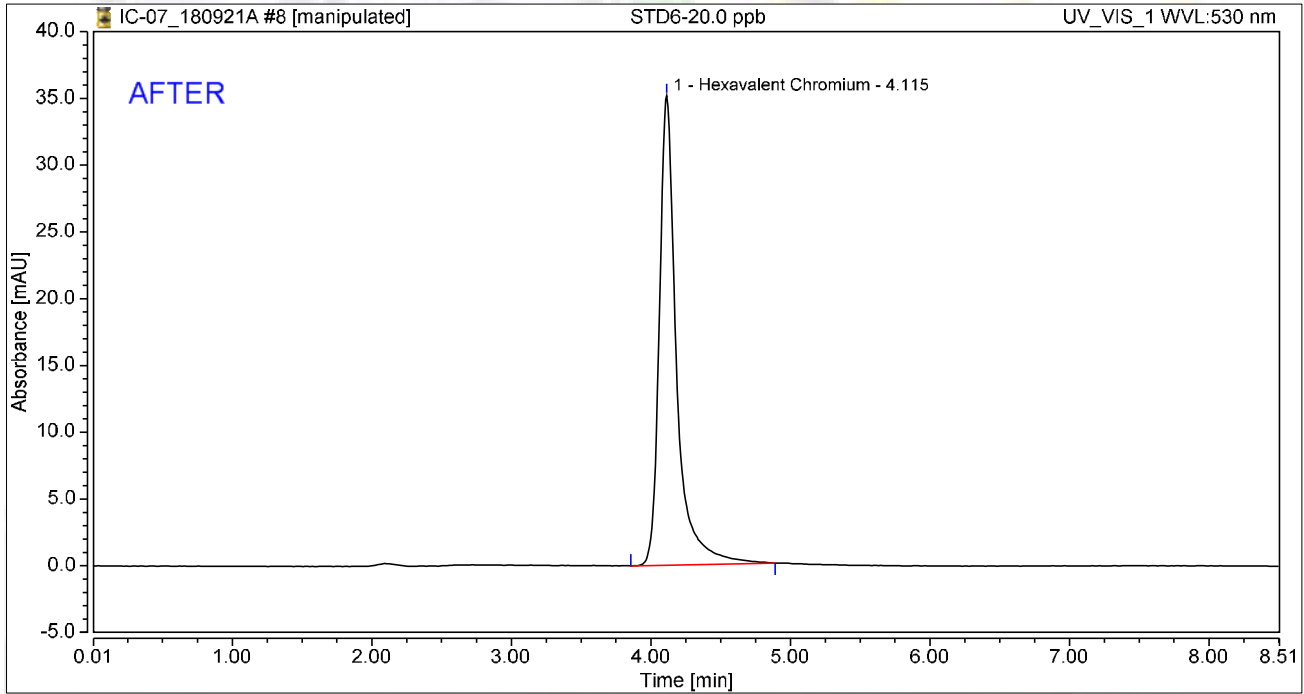
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:25	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	5.046	35.157	100.00	100.00	19.9635
<b>Total:</b>			<b>5.046</b>	<b>35.157</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/30/2018

Reviewed by:  
*Arney* 10/8/2018

My first report/Integration

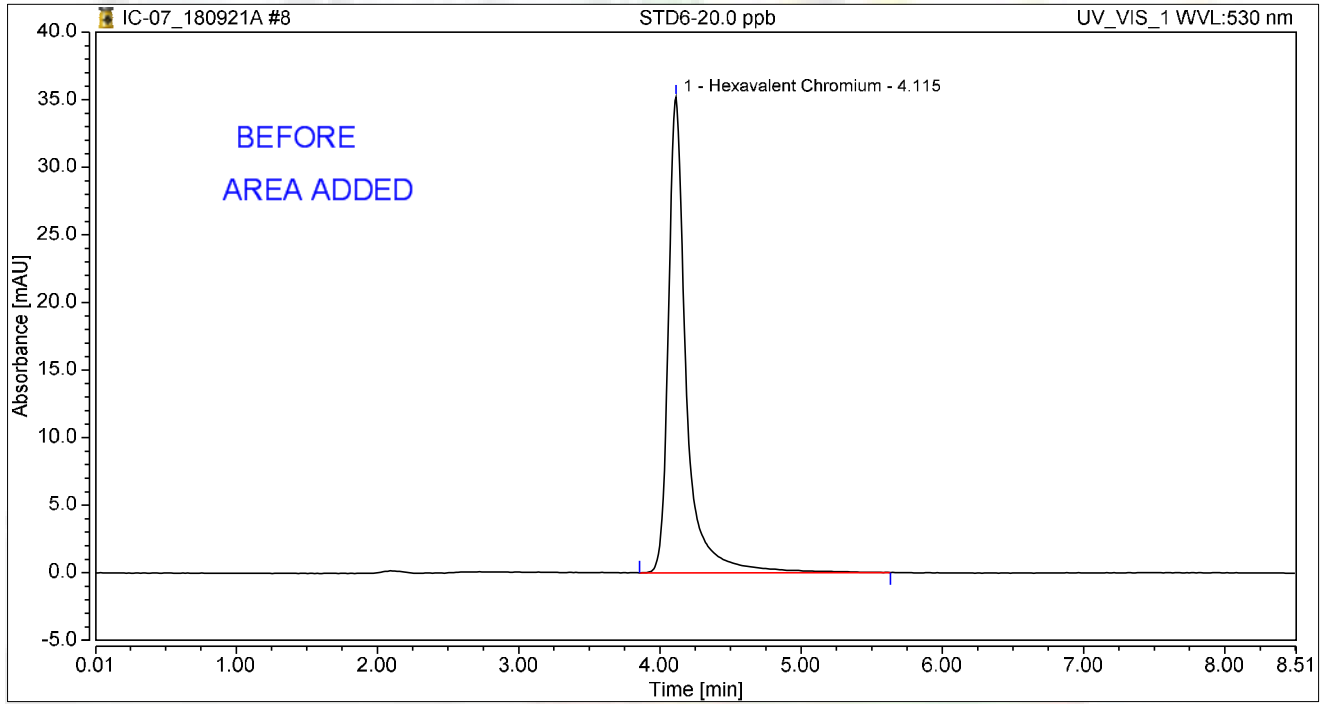
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:25	Sample Weight:	1.0000

**Chromatogram**

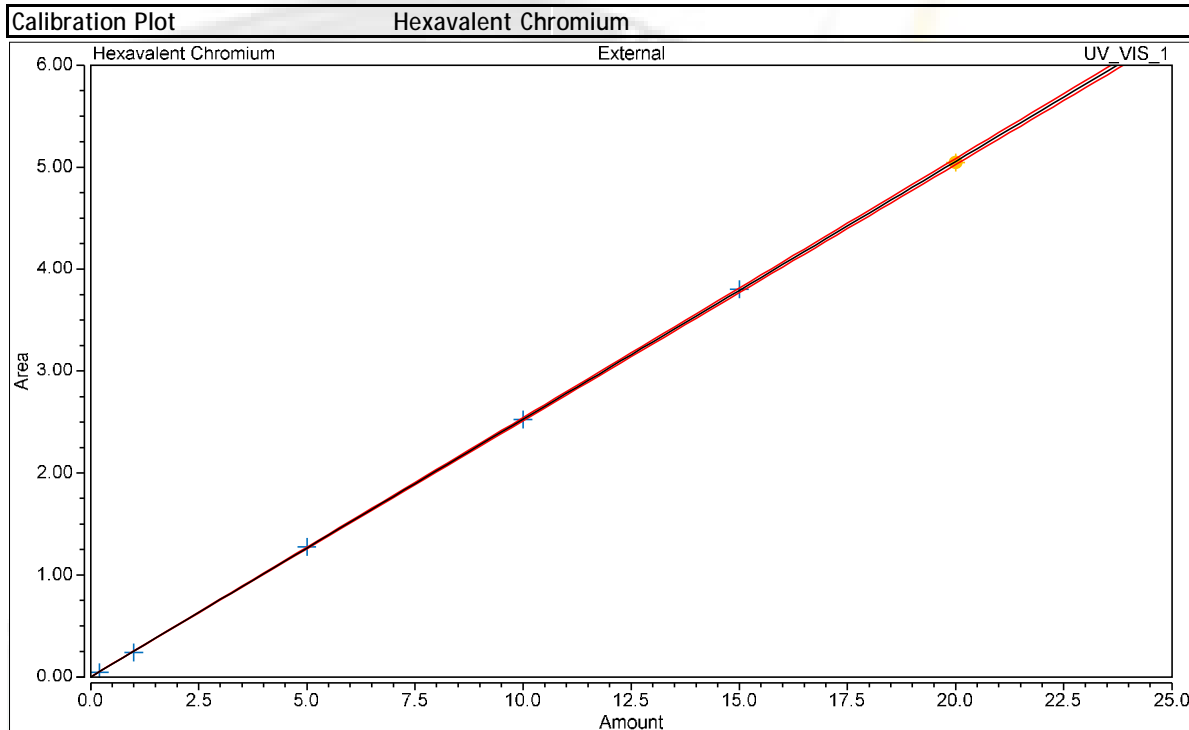


**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	5.210	35.207	100.00	100.00	19.9945
<b>Total:</b>			<b>5.210</b>	<b>35.207</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Initial Calibration Summary			
Calibration Details		Hexavalent Chromium	
Calibration Type	Lin	Offset (C0)	0.0000
Evaluation Type	Area	Slope (C1)	0.2528
Number of Calibration Points	6	Curve (C2)	0.0000
Number of disabled Calibration Points	0	R-Square	0.99997



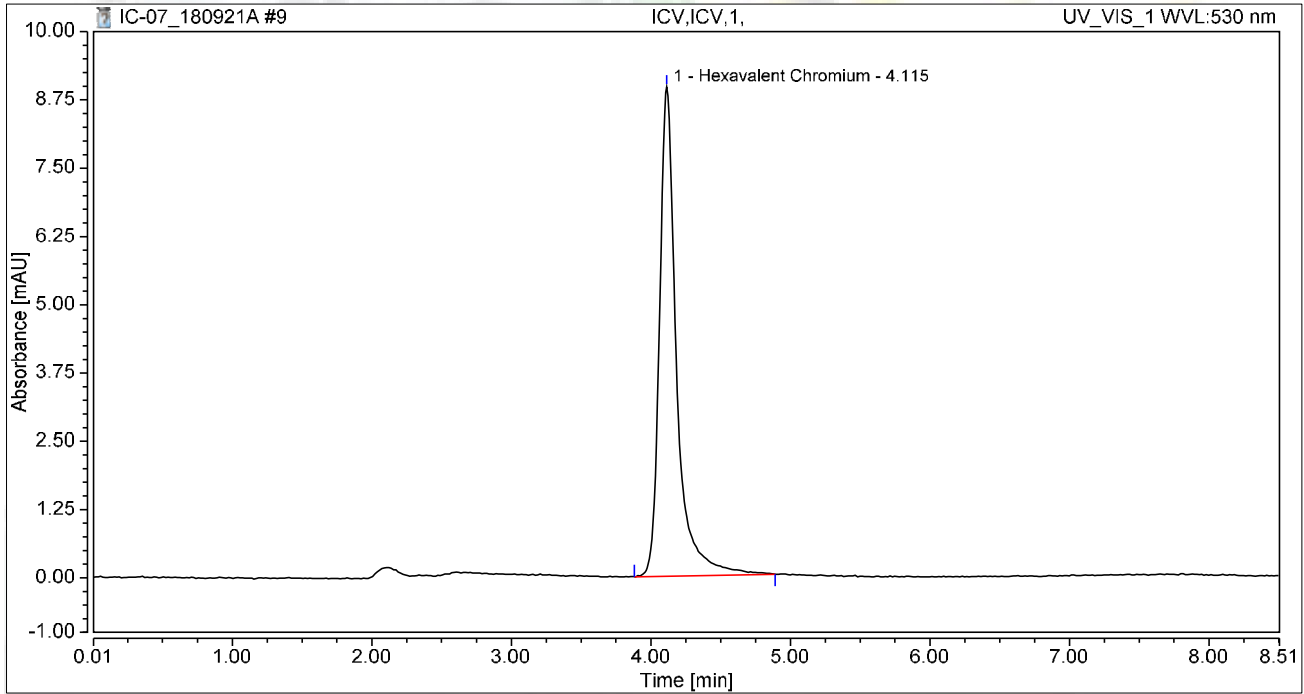
Calibration Results		Hexavalent Chromium				
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
3	STD1-0.2 ppb	01	0.2000	0.0462	0.046	0.379
4	STD2-1.0 ppb	02	1.0000	0.2400	0.240	1.724
5	STD3-5.0 ppb	03	5.0000	1.2761	1.276	8.809
6	STD4-10.0 ppb	04	10.0000	2.5253	2.525	17.564
7	STD5-15.0 ppb	05	15.0000	3.8020	3.802	26.404
8	STD6-20.0 ppb	06	20.0000	5.0460	5.046	35.157

### Chromatogram and Results

**Injection Details**

Injection Name:	ICV,ICV,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.276	8.956	100.00	100.00	5.0467
<b>Total:</b>			<b>1.276</b>	<b>8.956</b>	<b>100.00</b>	<b>100.00</b>	

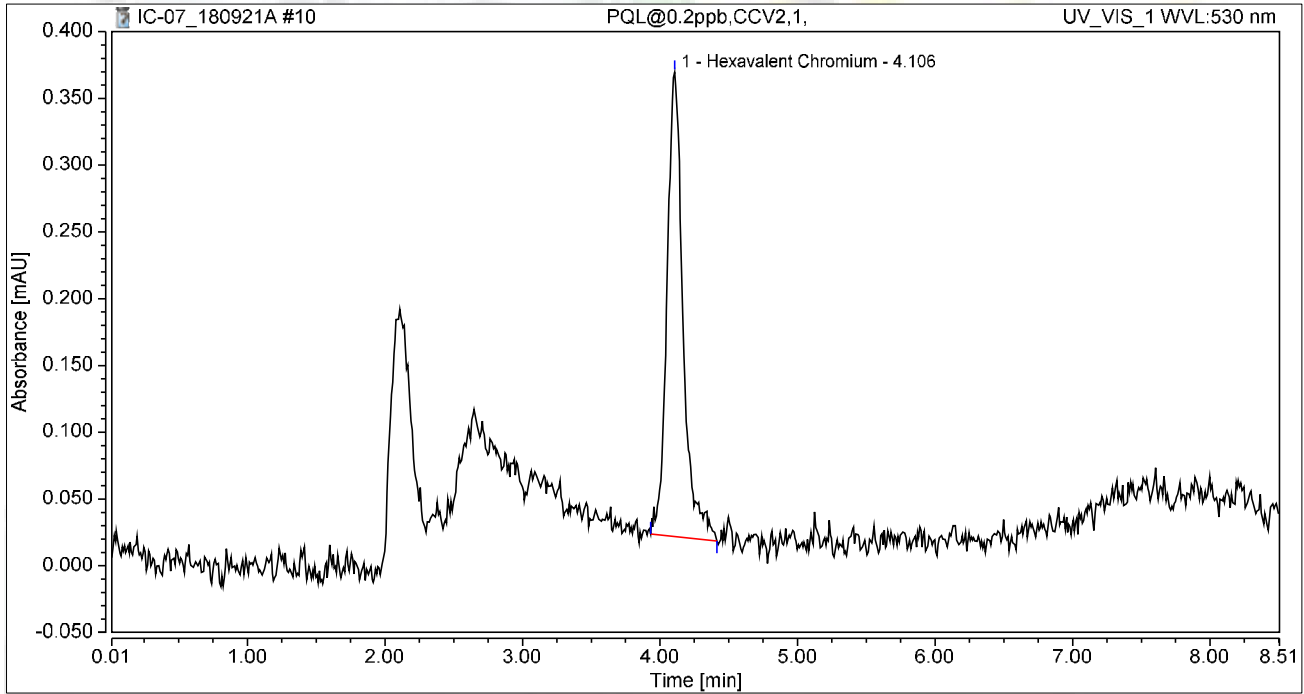


### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

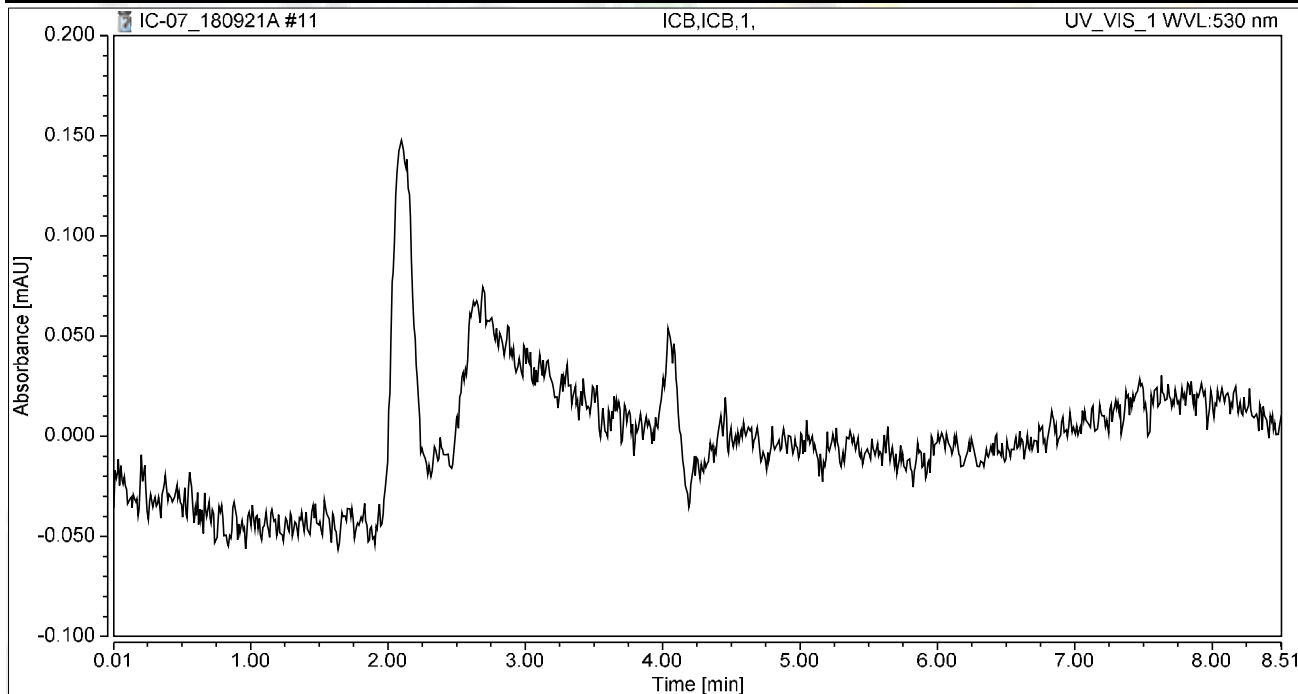
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.047	0.348	100.00	100.00	0.1865
<b>Total:</b>			<b>0.047</b>	<b>0.348</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	ICB,ICB,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2691 F: 702.307.2691



*"Serving Clients with Passion and Professionalism"*

**INJECTION LOG: 180925A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	09/25/18 9:30 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	09/25/18 9:41 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	09/25/18 9:50 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/25/18 10:00 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	09/25/18 10:09 AM	Reported
14	MB-R128817	MBLK	1	Hexavalent Chromium	09/25/18 10:18 AM	Reported
15	LCS-R128817	LCS	1	Hexavalent Chromium	09/25/18 10:28 AM	Reported
16	N032205-001A	SAMP	1	Hexavalent Chromium	09/25/18 10:39 AM	Reported
17	N032205-001AMS	MS	1	Hexavalent Chromium	09/25/18 10:51 AM	Reported
18	N032205-002A	SAMP	1	Hexavalent Chromium	09/25/18 11:00 AM	Reported
19	N032205-002AMS	MS	1	Hexavalent Chromium	09/25/18 11:10 AM	Reported
20	N032205-003A	SAMP	1	Hexavalent Chromium	09/25/18 11:19 AM	Not Reported
21	N032205-003AMS	MS	1	Hexavalent Chromium	09/25/18 11:29 AM	Not Reported
22	N032205-004A	SAMP	10	Hexavalent Chromium	09/25/18 11:38 AM	Reported
23	N032205-004AMS	MS	10	Hexavalent Chromium	09/25/18 11:47 AM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	09/25/18 11:57 AM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	09/25/18 12:06 PM	Reported
26	N032205-005A	SAMP	1	Hexavalent Chromium	09/25/18 12:16 PM	Reported
27	N032205-005AMS	MS	1	Hexavalent Chromium	09/25/18 12:25 PM	Reported
28	N032205-003A	SAMP	5	Hexavalent Chromium	09/25/18 12:35 PM	Reported
29	N032205-003AMS	MS	5	Hexavalent Chromium	09/25/18 12:44 PM	Reported
30	N032205-004ADUP	DUP	10	Hexavalent Chromium	09/25/18 1:14 PM	Reported
31	N032205-004AMSD	MSD	10	Hexavalent Chromium	09/25/18 1:26 PM	Reported
32	N032115-003A	SAMP	1	Hexavalent Chromium	09/25/18 1:50 PM	Reported
33	N032115-004A	SAMP	1	Hexavalent Chromium	09/25/18 2:01 PM	Reported
34	CCV-3	CCV	1	Hexavalent Chromium	09/25/18 2:11 PM	Reported
35	CCB-3	CCB	1	Hexavalent Chromium	09/25/18 2:20 PM	Reported

*rba* 9/30/2018

*Nancy* 10/8/2018

### Injection Log Summary

**Sequence Details**

Name:	IC-07_180925A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	25/Sep/18 15:39:31
No. of Injections:	38	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume $\mu$ L	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	BLANK	1	1000	Unknown		09/25/2018 09:30	Finished	BLANK
10	BLANK	2	1000	Unknown		09/25/2018 09:41	Finished	BLANK
11	CCV-1,CCV,1,	3	1000	Unknown		09/25/2018 09:50	Finished	CCV @5ppb, IWST-180622A
12	PQL@0.2ppb,CCV2,	4	1000	Unknown		09/25/2018 10:00	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		09/25/2018 10:09	Finished	CCB R180919A
14	MB-H2O,MBLK,1,	6	1000	Unknown		09/25/2018 10:18	Finished	MB R180919A
15	LCS-H2O,LCS,1,	7	1000	Unknown		09/25/2018 10:28	Finished	LCS @5ppb, IWST-180622B
16	N032205-001A,SAMP	9	1000	Unknown		09/25/2018 10:39	Finished	SAMP,10mL
17	N032205-001AMS,M\$	10	1000	Unknown		09/25/2018 10:51	Finished	MS (1ppb), IWST-180622B,10
18	N032205-002A,SAMP	11	1000	Unknown		09/25/2018 11:00	Finished	SAMP,10mL
19	N032205-002AMS,M\$	12	1000	Unknown		09/25/2018 11:10	Finished	MS (1ppb), IWST-180622B,10
20	N032205-003A,SAMP	13	1000	Unknown		09/25/2018 11:19	Finished	SAMP,10mL
21	N032205-003AMS,M\$	14	1000	Unknown		09/25/2018 11:29	Finished	MS (1ppb), IWST-180622B,10
22	N032205-004A,SAMP	15	1000	Unknown		09/25/2018 11:38	Finished	SAMP,1>10mL
23	N032205-004AMS,M\$	16	1000	Unknown		09/25/2018 11:47	Finished	MS (5ppb), IWST-180622B,1>1
24	CCV-2,CCV1,1,	17	1000	Unknown		09/25/2018 11:57	Finished	CCV @10ppb, IWST-180622A
25	CCB-2,CCB,1,	18	1000	Unknown		09/25/2018 12:06	Finished	CCB R180919A
26	N032205-005A,SAMP	19	1000	Unknown		09/25/2018 12:16	Finished	SAMP,10mL
27	N032205-005AMS,M\$	20	1000	Unknown		09/25/2018 12:25	Finished	MS (1ppb), IWST-180622B,10
28	N032205-003A,SAMP	21	1000	Unknown		09/25/2018 12:35	Finished	SAMP,2>10mL
29	N032205-003AMS,M\$	22	1000	Unknown		09/25/2018 12:44	Finished	MS (1ppb), IWST-180622B,2>1
30	N032205-004ADUP,D	24	1000	Unknown		09/25/2018 13:14	Finished	DUP,1>10mL
31	N032205-004AMSD,N	25	1000	Unknown		09/25/2018 13:26	Finished	MSD (5ppb), IWST-180622B,1>
32	N032115-003A,SAMP	27	1000	Unknown		09/25/2018 13:50	Finished	SAMP,10mL
33	N032115-004A,SAMP	28	1000	Unknown		09/25/2018 14:01	Finished	SAMP,10mL
34	CCV-3,CCV,1,	29	1000	Unknown		09/25/2018 14:11	Finished	CCV @5ppb, IWST-180622A
35	CCB-3,CCB,1,	30	1000	Unknown		09/25/2018 14:20	Finished	CCB R180919A
36	SHUTDOWN	31	1000	Unknown		09/25/2018 14:29	Finished	
37	Eluent: R180924B	32	1000	Unknown		n.a.	Finished	Eluent
38	PCR: R180921A	33	1000	Unknown		n.a.	Finished	Post-Column Reagent

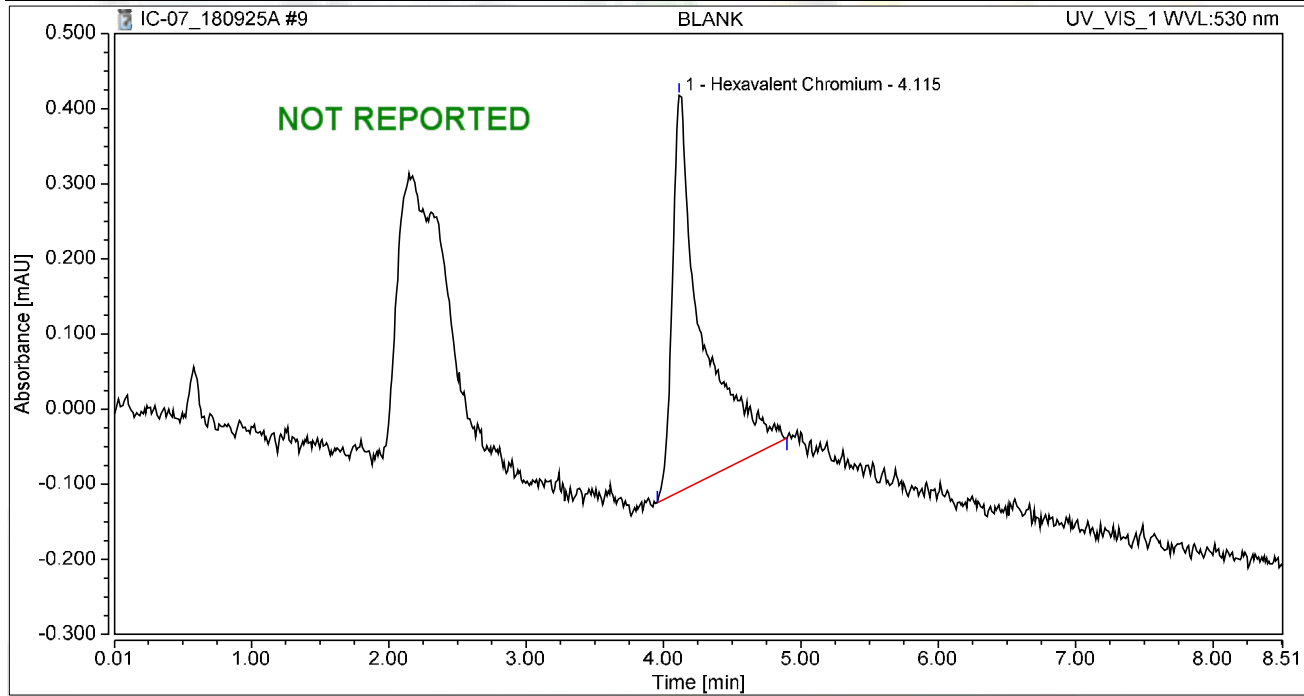
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	<b>BLANK</b>	Run Time (min):	<b>8.50</b>
Vial Number:	<b>1</b>	Injection Volume:	<b>1000.00</b>
Injection Type:	<b>Unknown</b>	Channel:	<b>UV_VIS_1</b>
Calibration Level:		Wavelength:	<b>530.0</b>
Instrument Method:	<b>Hex Chrom 4 mm</b>	Bandwidth:	<b>n.a.</b>
Processing Method:	<b>180921_IC-07_Cr6_218_6_HIGH</b>	Dilution Factor:	<b>1.0000</b>
Injection Date/Time:	<b>25/Sep/18 09:30</b>	Sample Weight:	<b>1.0000</b>

**Chromatogram**



**Integration Results**

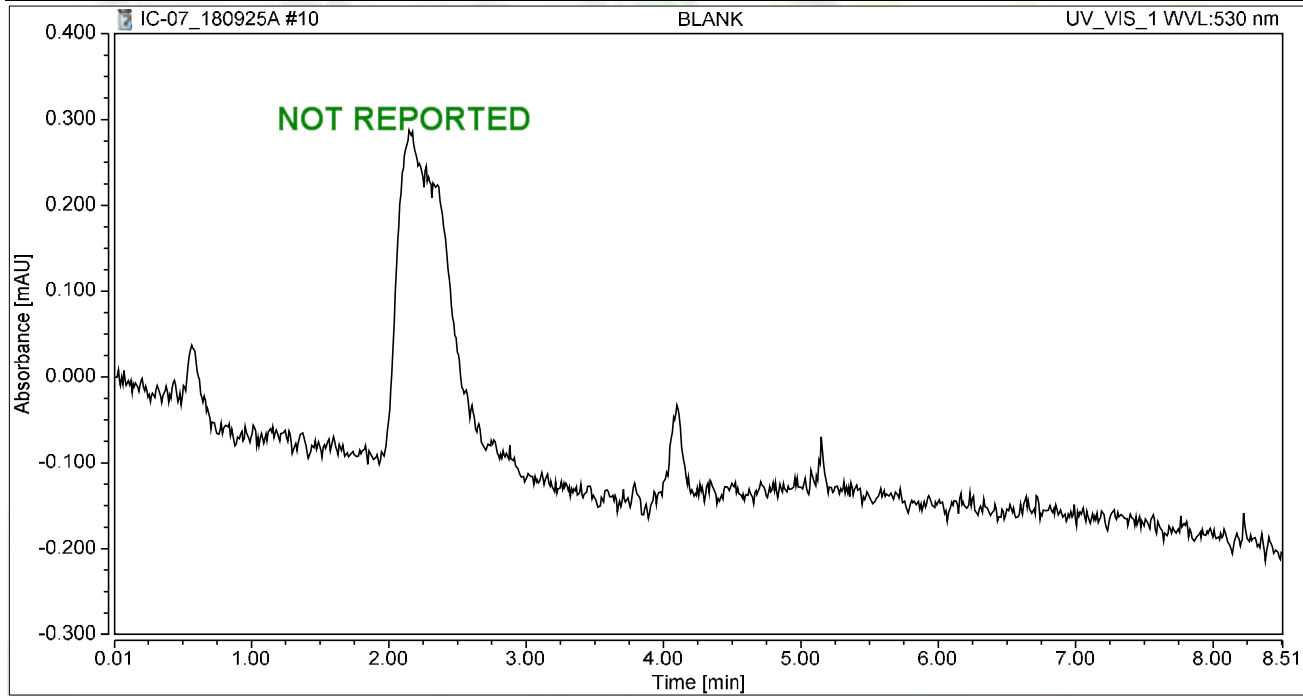
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.133	0.528	100.00	100.00	0.5244
<b>Total:</b>			<b>0.133</b>	<b>0.528</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 09:41	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

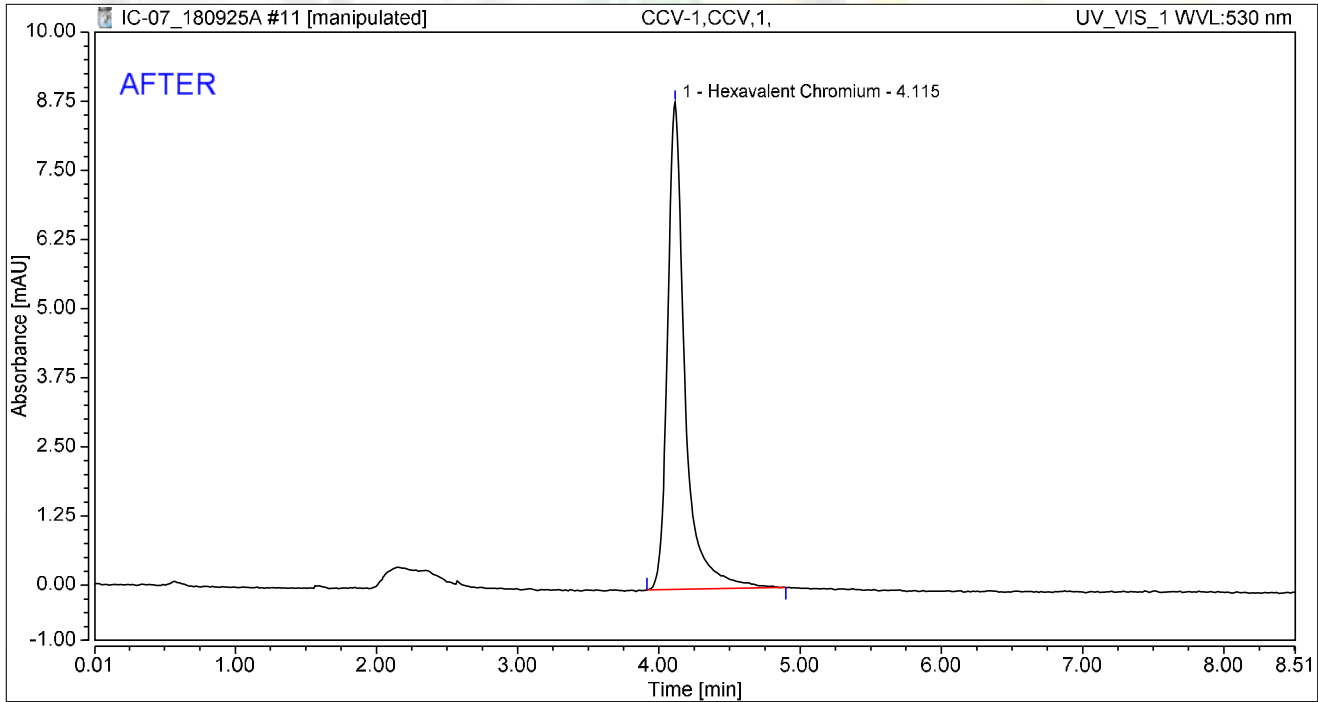
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-1,CCV,1,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 09:50	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.258	8.810	100.00	100.00	4.9780
<b>Total:</b>			<b>1.258</b>	<b>8.810</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Reviewed by:  
*Manning* 10/8/2018

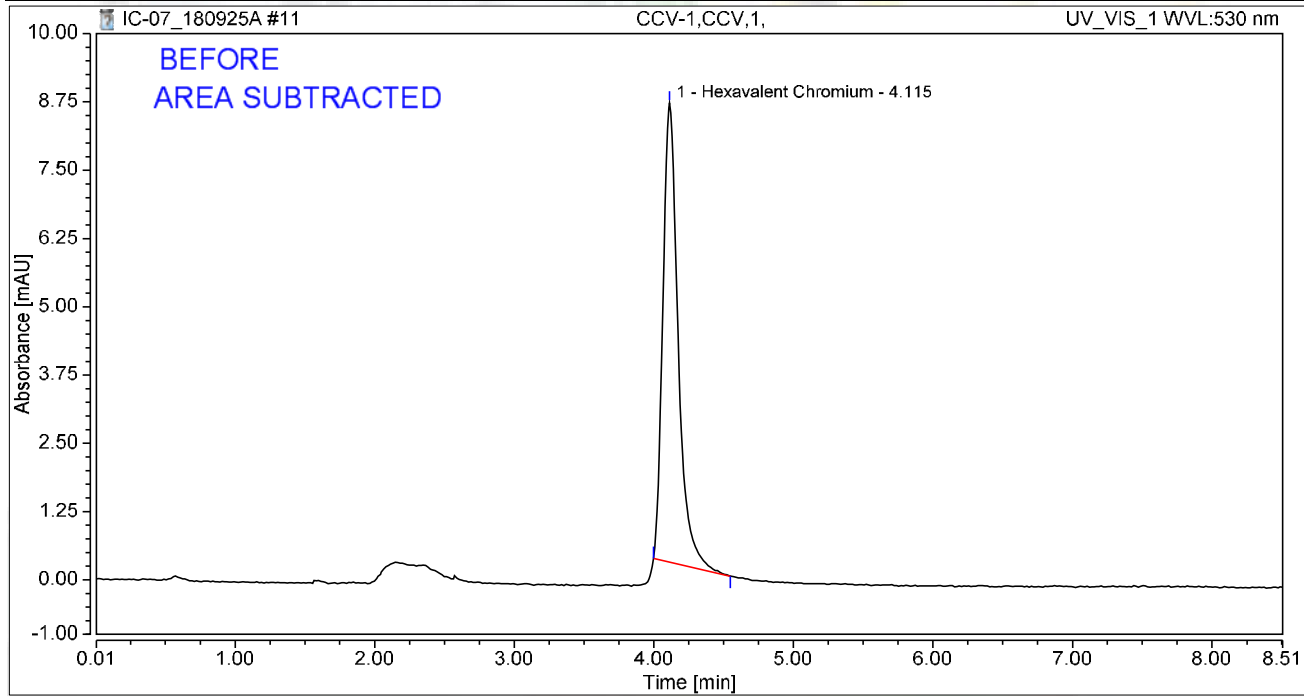


### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-1,CCV,1,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 09:50	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.066	8.406	100.00	100.00	4.2166
<b>Total:</b>			<b>1.066</b>	<b>8.406</b>	<b>100.00</b>	<b>100.00</b>	

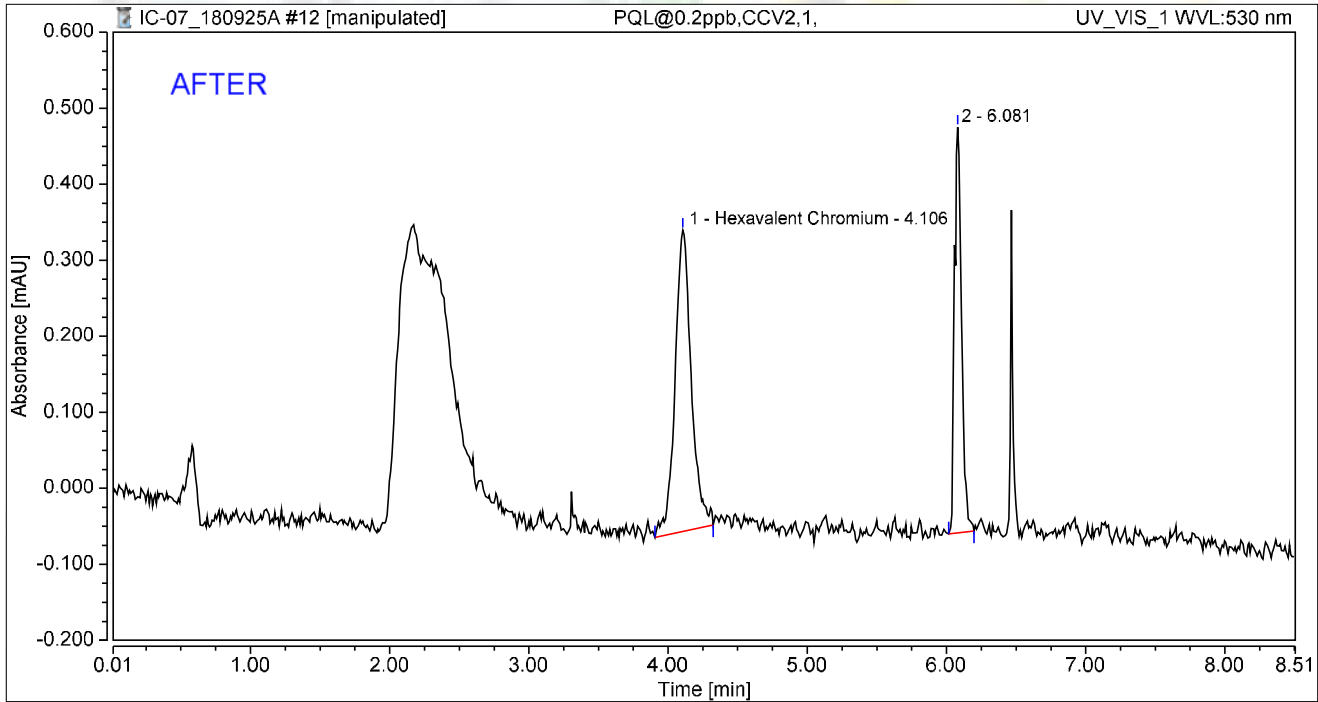
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.49
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 10:00	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.054	0.396	64.07	42.63	0.2118
2		6.081	0.030	0.533	35.93	57.37	n.a.
<b>Total:</b>			<b>0.084</b>	<b>0.930</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/30/2018

Reviewed by:

*Nancy* 10/8/2018

My first report/Integration

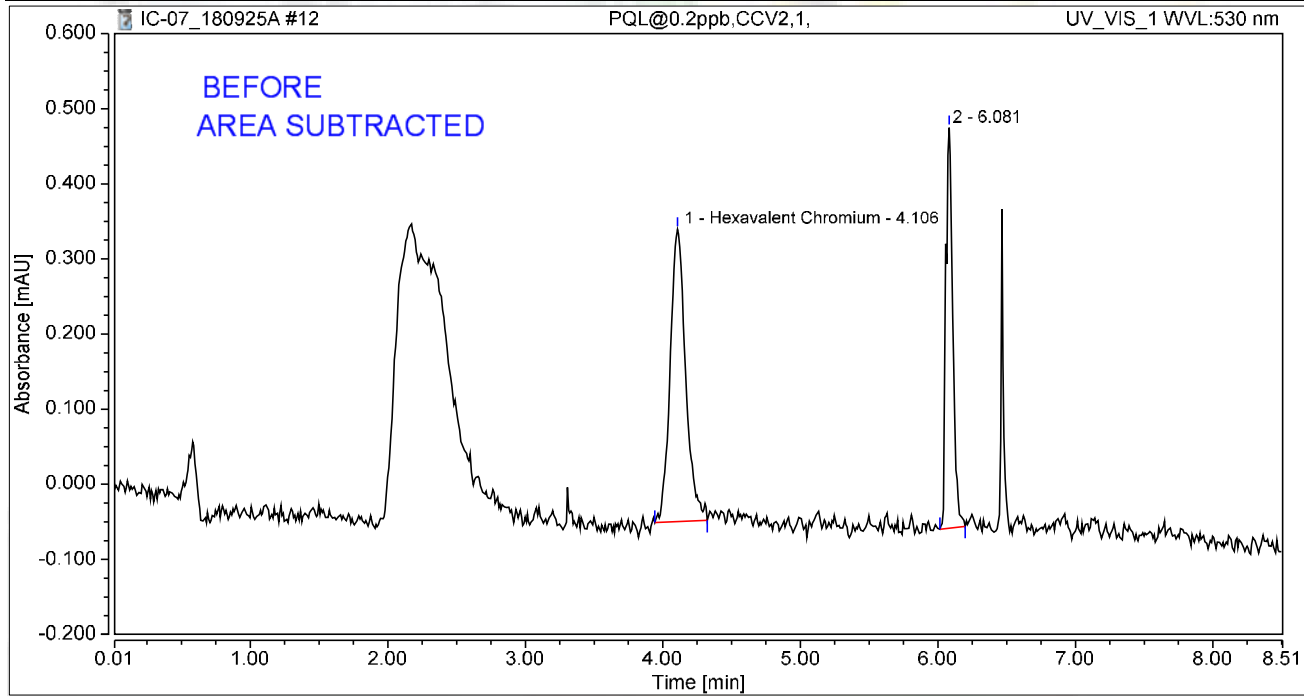
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.49
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 10:00	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.051	0.389	62.85	42.19	0.2010
2		6.081	0.030	0.533	37.15	57.81	n.a.
<b>Total:</b>			<b>0.081</b>	<b>0.923</b>	<b>100.00</b>	<b>100.00</b>	

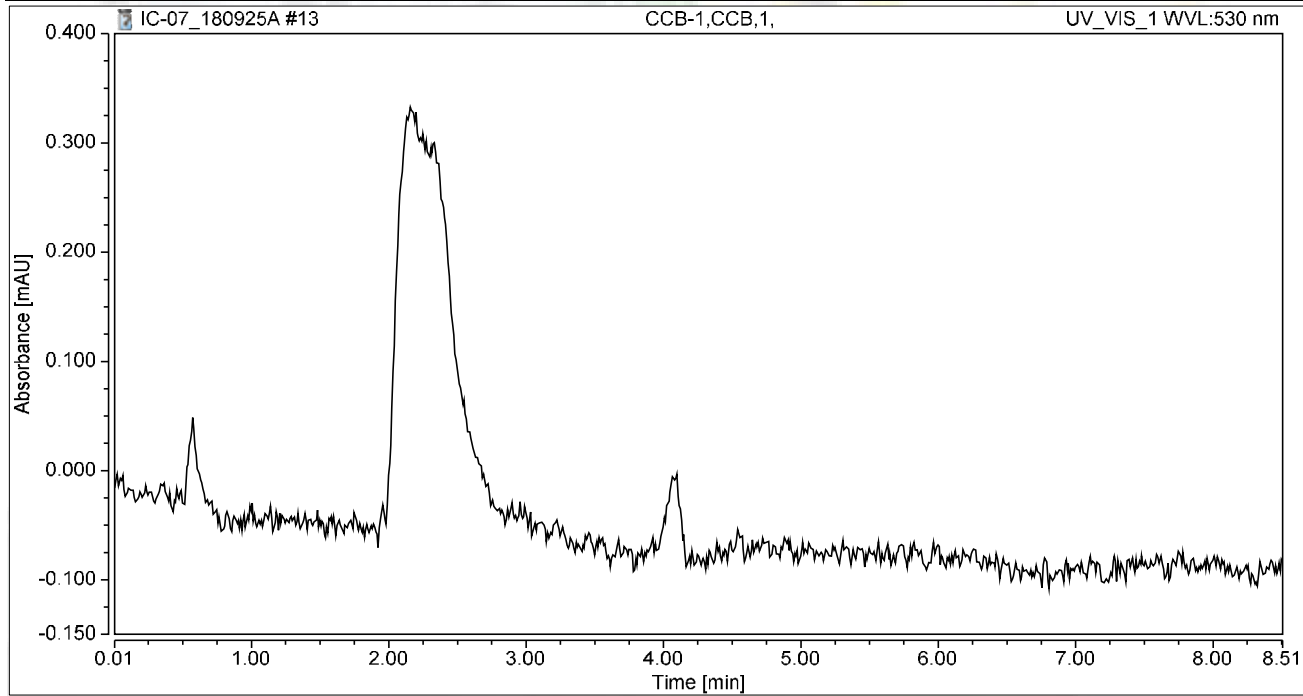
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-1,CCB,1,	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 10:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

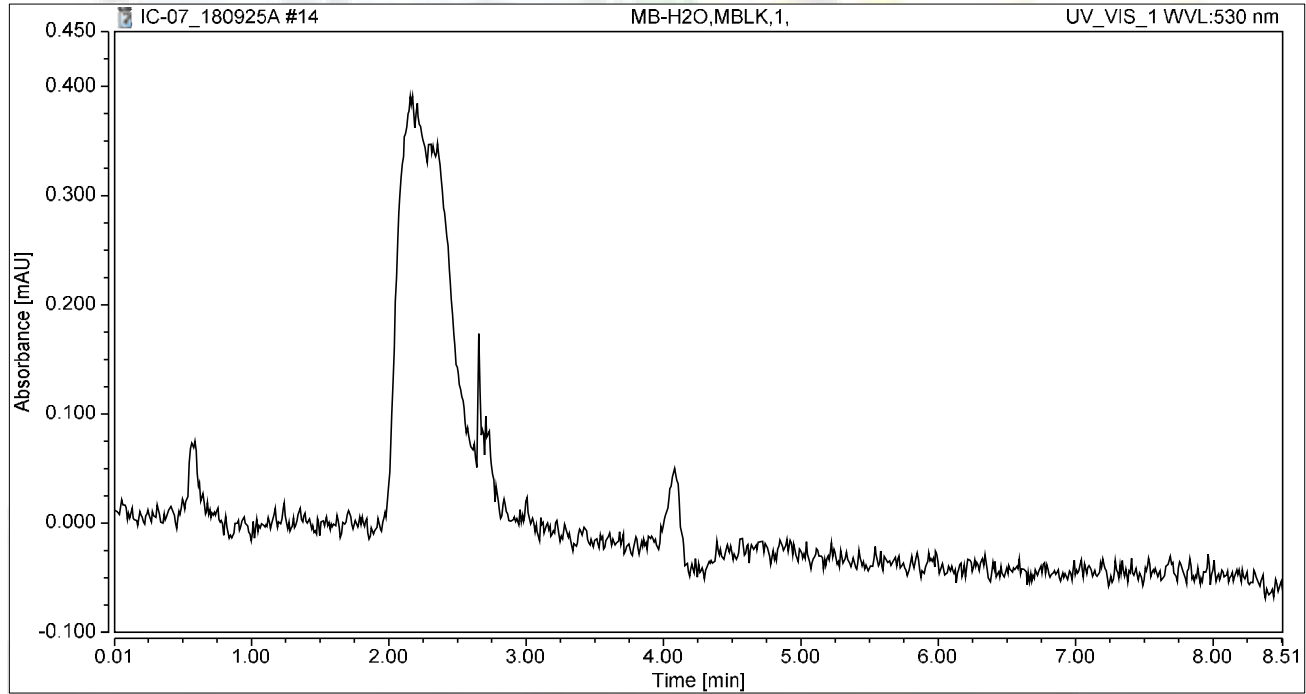
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	MB-H2O,MBLK,1,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 10:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

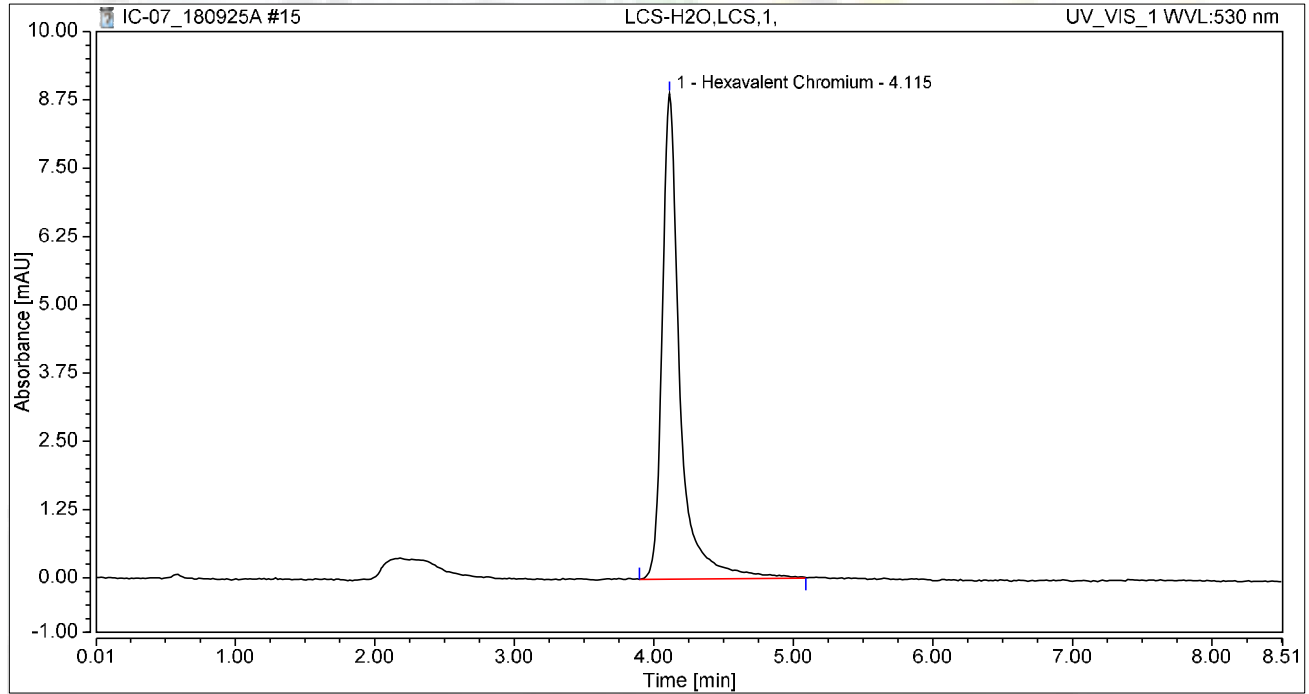
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	LCS-H2O,LCS,1,	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 10:28	Sample Weight:	1.0000

**Chromatogram**



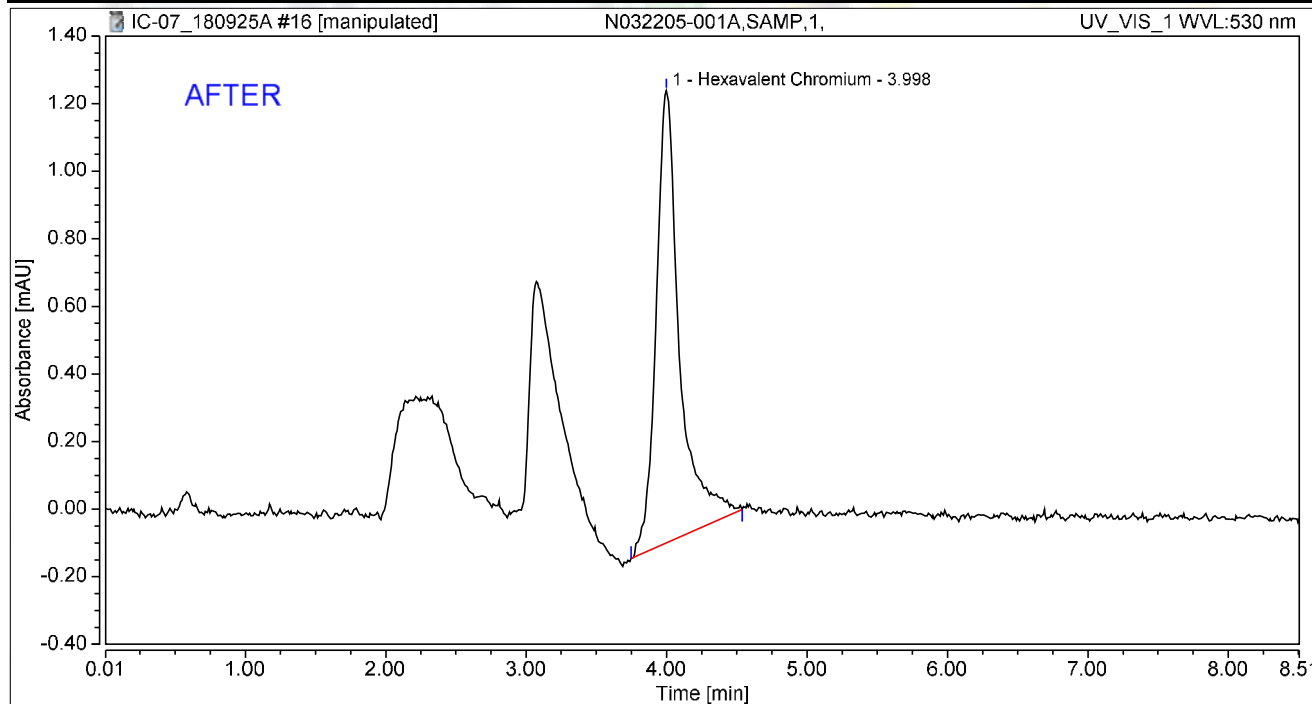
**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.309	8.889	100.00	100.00	5.1802
<b>Total:</b>			<b>1.309</b>	<b>8.889</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

Injection Details		
Injection Name:	N032205-001A,SAMP,1,	Run Time (min): 8.50
Vial Number:	9	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	25/Sep/18 10:39	Sample Weight: 1.0000

#### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.998	0.260	1.338	100.00	100.00	1.0283
<b>Total:</b>			<b>0.260</b>	<b>1.338</b>	<b>100.00</b>	<b>100.00</b>	

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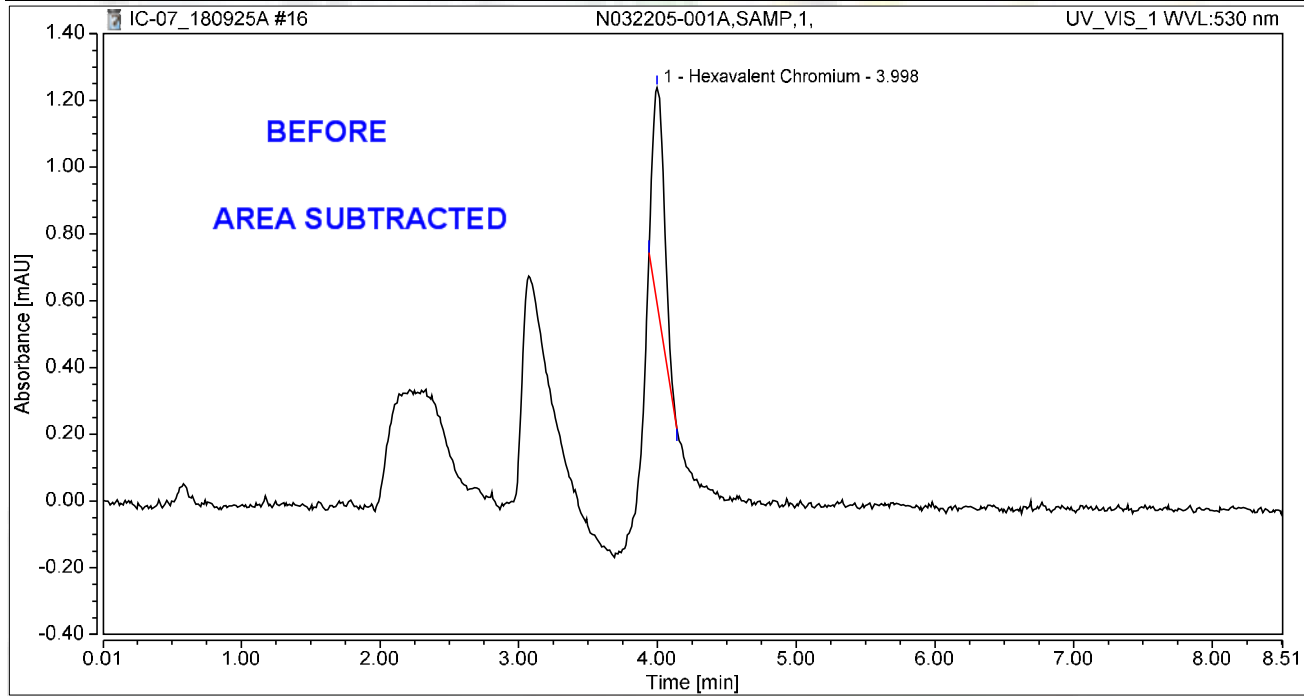
My first Review by: *Nancy* 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 10:39	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.998	0.065	0.648	100.00	100.00	0.2586
<b>Total:</b>			<b>0.065</b>	<b>0.648</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

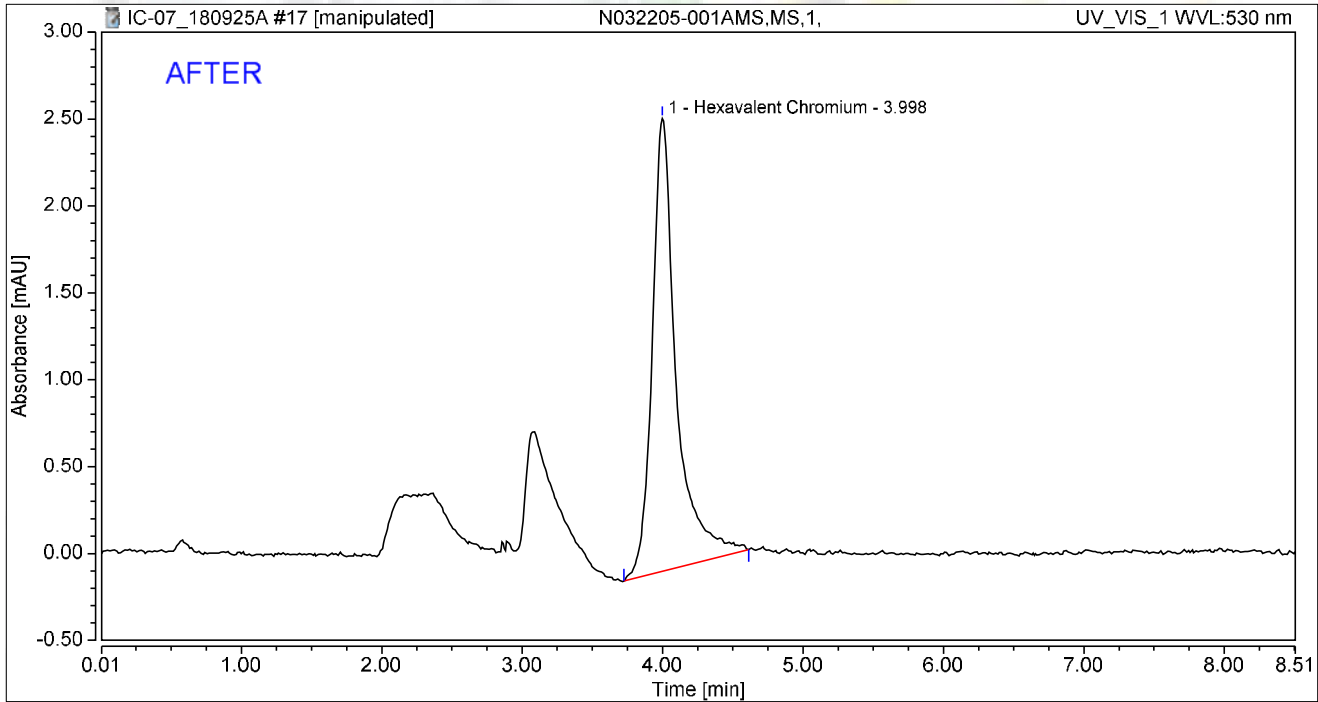


### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 10:51	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.998	0.518	2.605	100.00	100.00	2.0475
<b>Total:</b>			<b>0.518</b>	<b>2.605</b>	<b>100.00</b>	<b>100.00</b>	

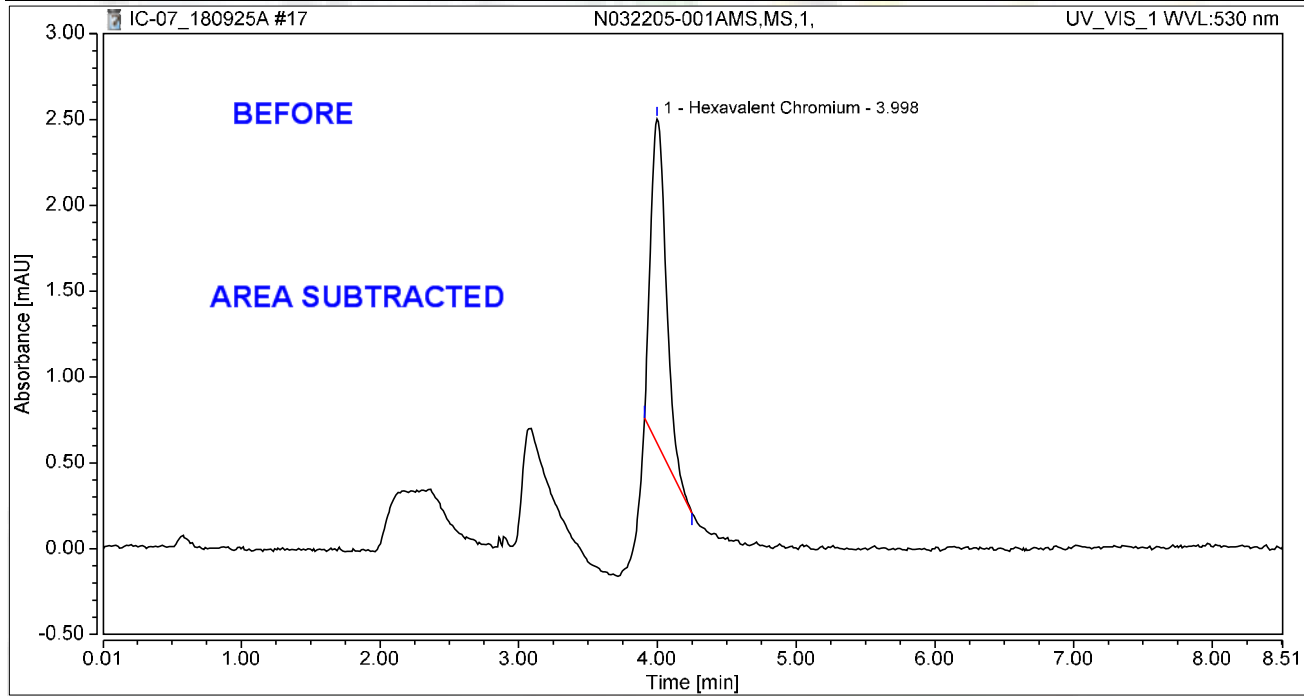
*rba* 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 10:51	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.998	0.247	1.889	100.00	100.00	0.9763
<b>Total:</b>			<b>0.247</b>	<b>1.889</b>	<b>100.00</b>	<b>100.00</b>	

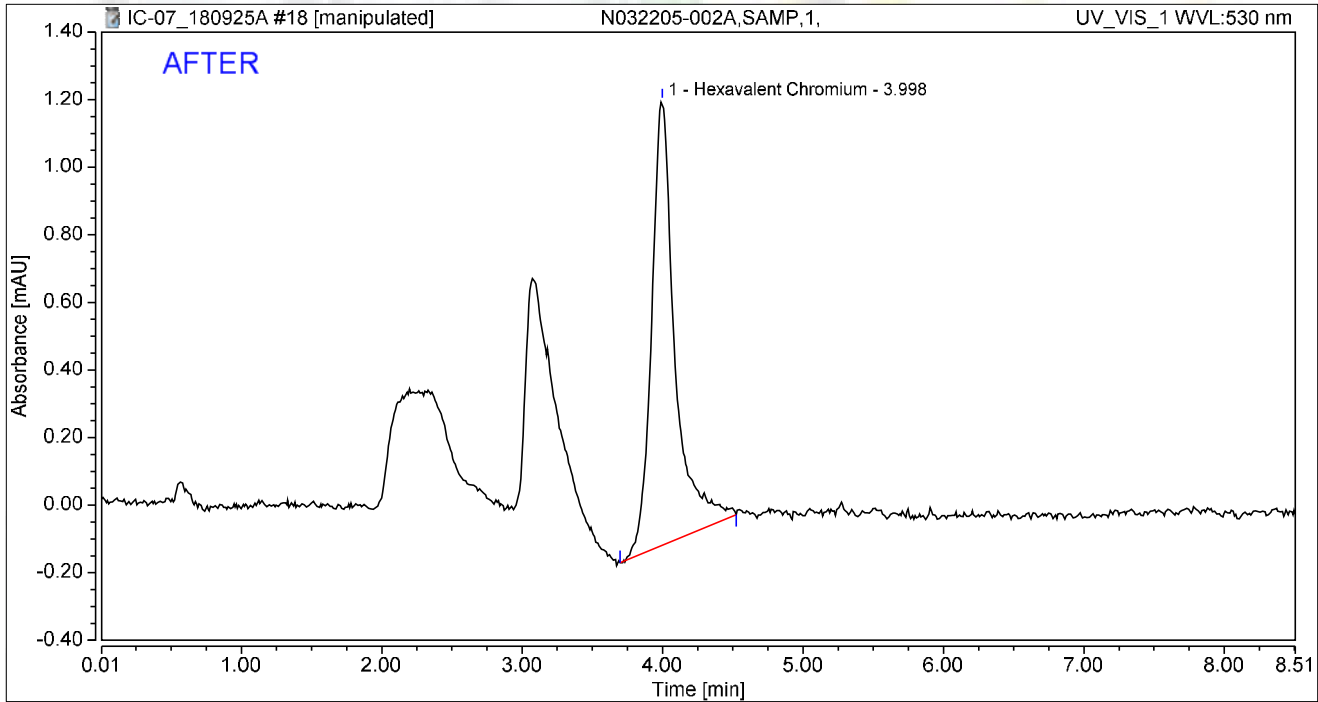
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-002A,SAMP,1,	Run Time (min):	8.50
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 11:00	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.998	0.254	1.315	100.00	100.00	1.0053
<b>Total:</b>			<b>0.254</b>	<b>1.315</b>	<b>100.00</b>	<b>100.00</b>	

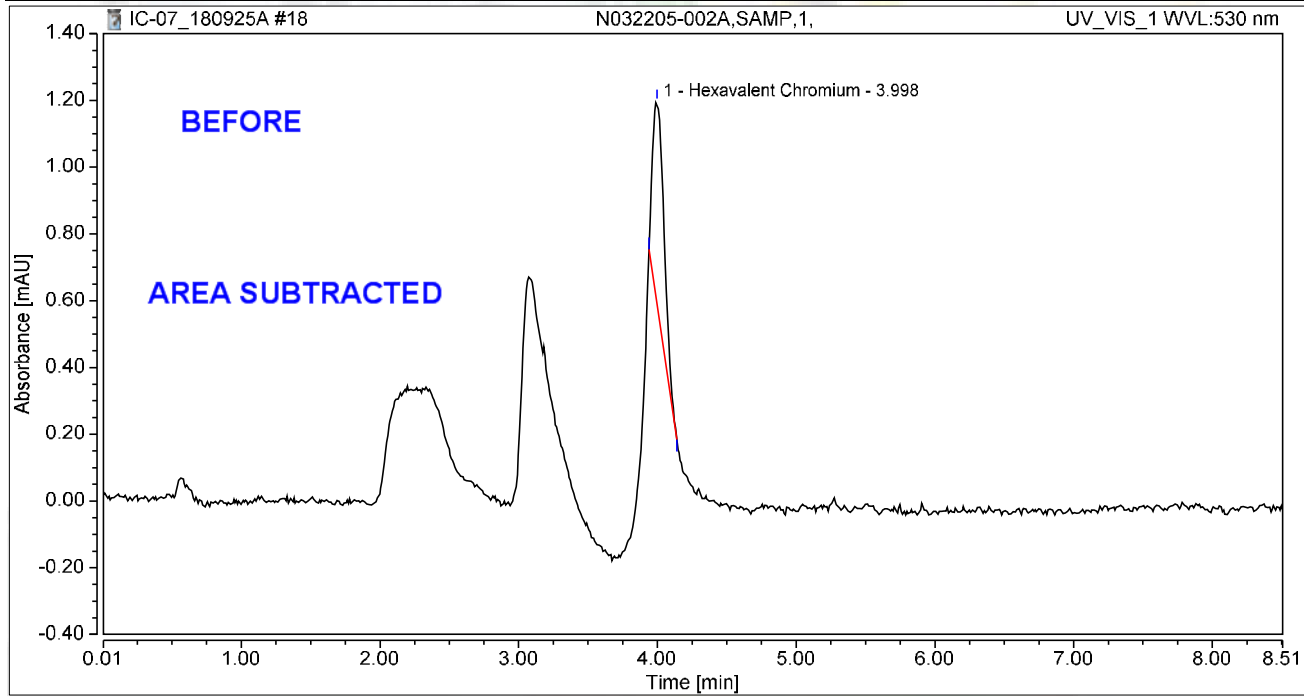
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-002A,SAMP,1,	Run Time (min):	8.50
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 11:00	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.998	0.059	0.609	100.00	100.00	0.2316
<b>Total:</b>			<b>0.059</b>	<b>0.609</b>	<b>100.00</b>	<b>100.00</b>	

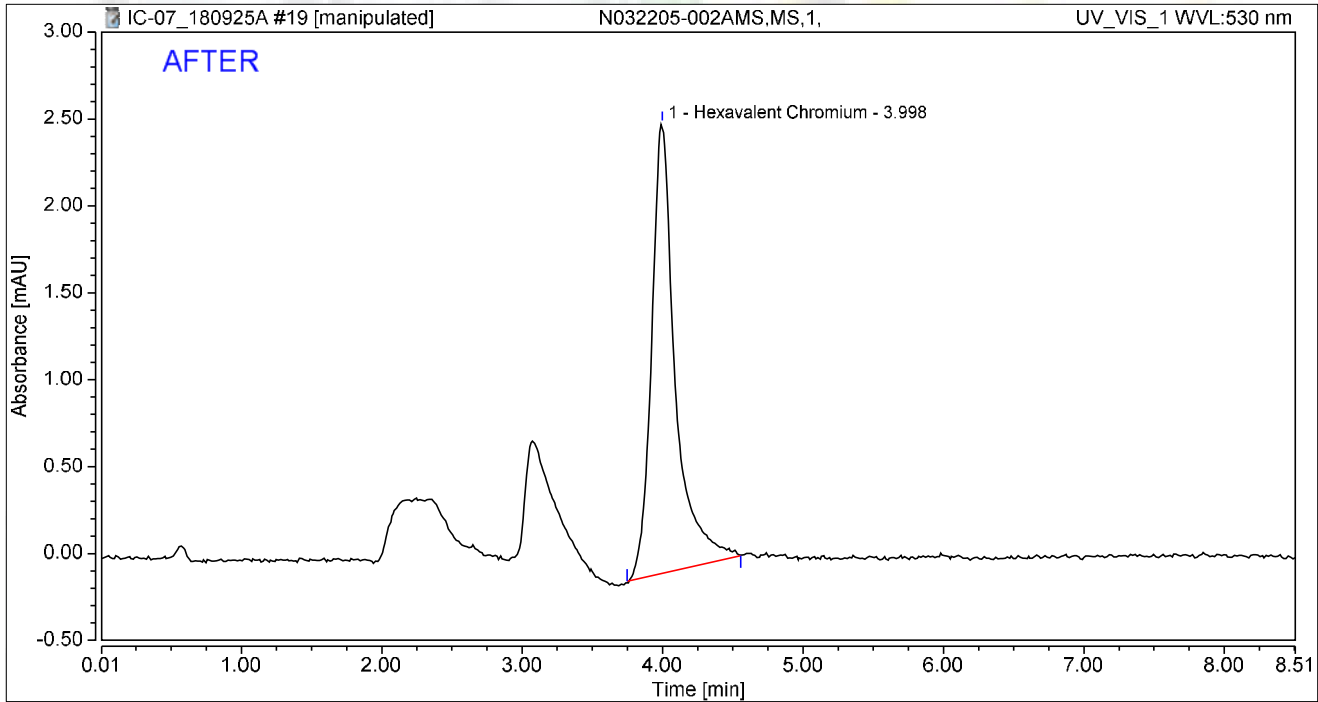
*rba* 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-002AMS,MS,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 11:10	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.998	0.507	2.588	100.00	100.00	2.0043
<b>Total:</b>			<b>0.507</b>	<b>2.588</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

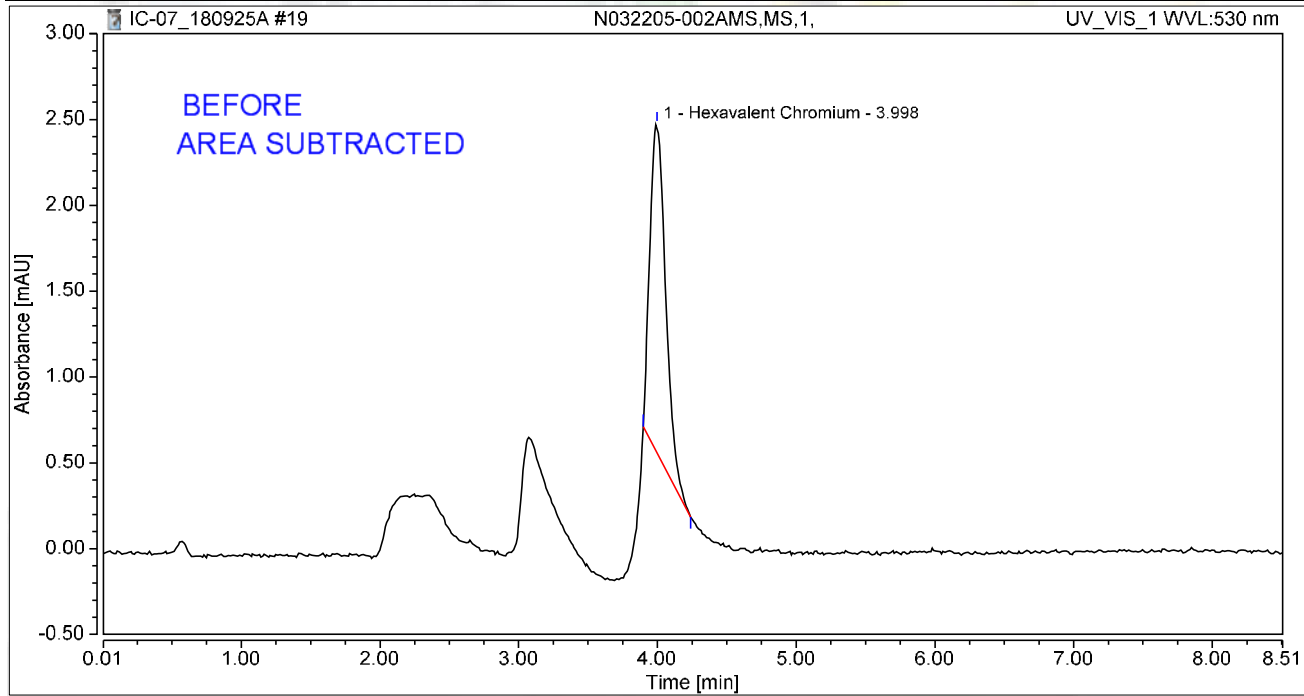
Reviewed by:  
*Nancy* 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-002AMS,MS,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 11:10	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.998	0.253	1.917	100.00	100.00	0.9996
<b>Total:</b>			<b>0.253</b>	<b>1.917</b>	<b>100.00</b>	<b>100.00</b>	

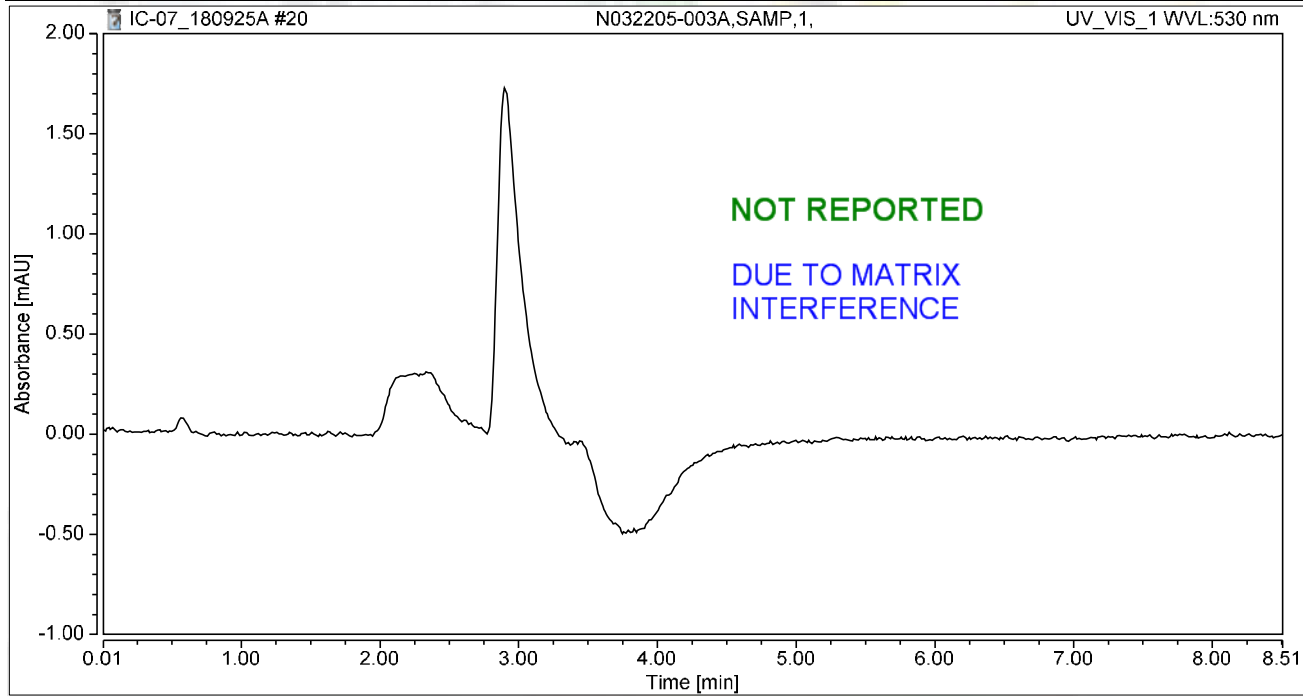
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-003A,SAMP,1,	Run Time (min):	8.50
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 11:19	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

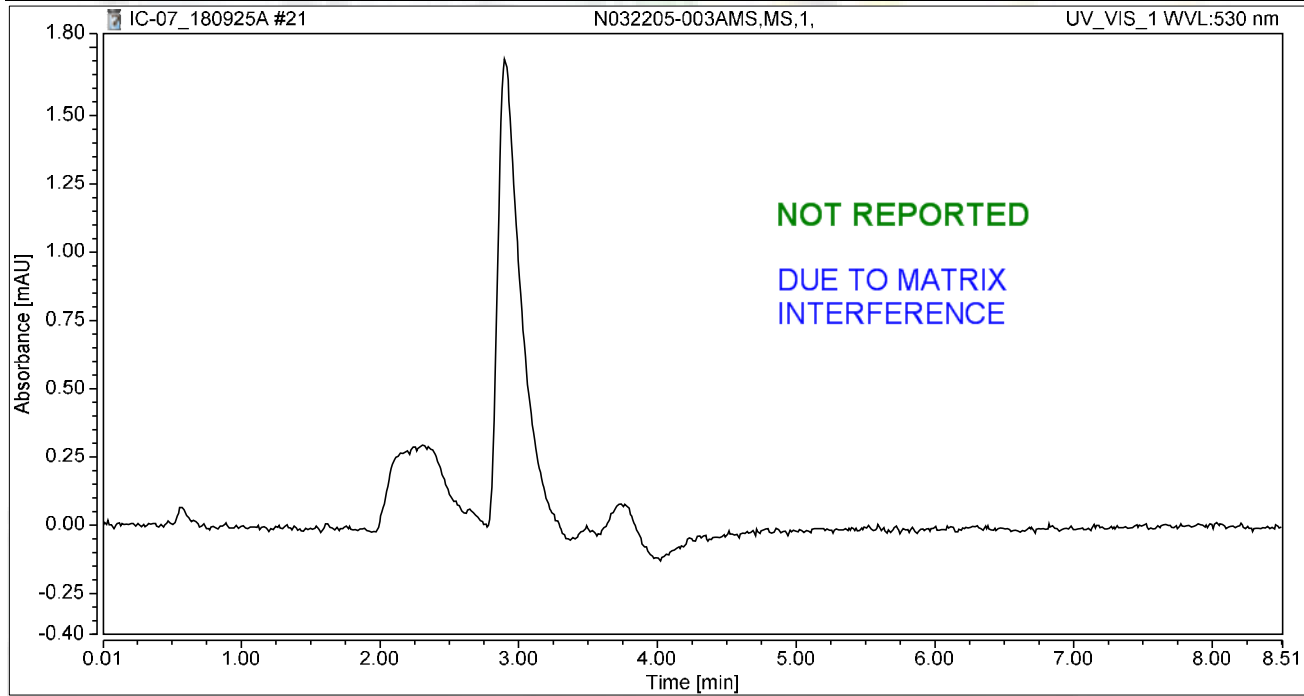
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-003AMS,MS,1,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 11:29	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

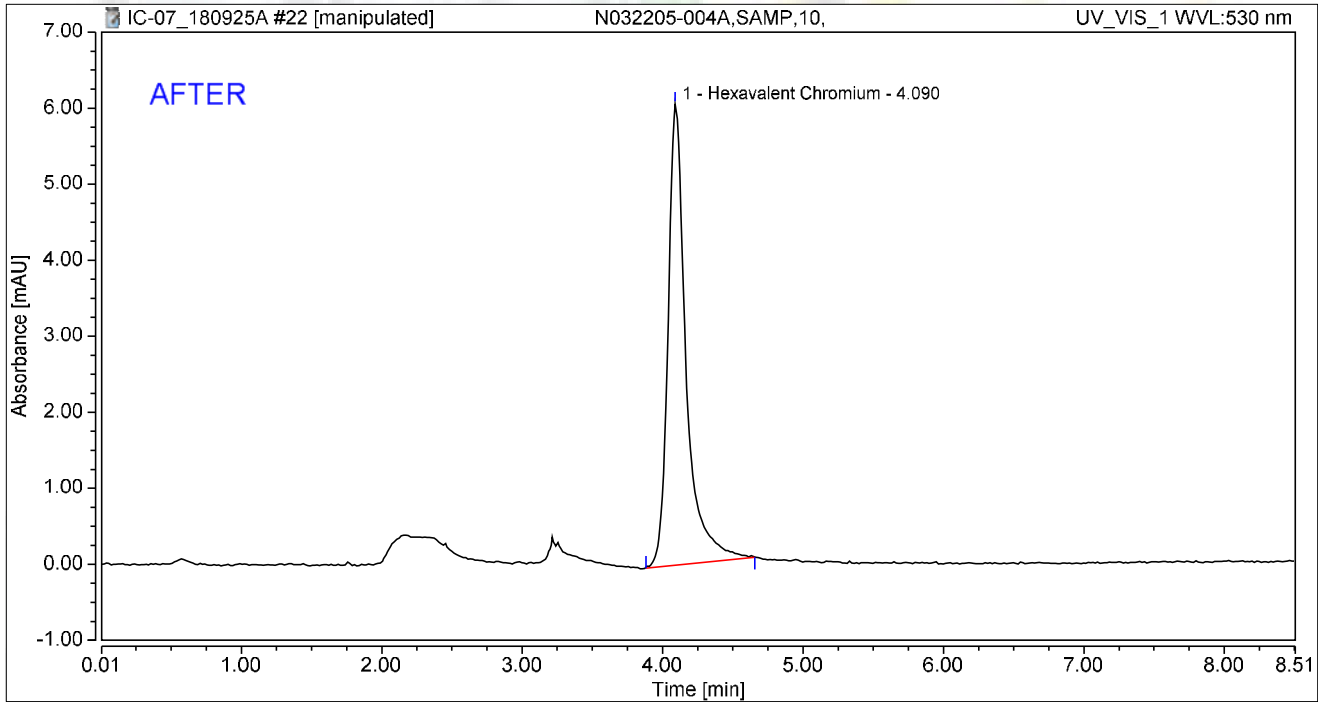


### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-004A,SAMP,10,	Run Time (min):	8.50
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 11:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	0.909	6.061	100.00	100.00	3.5958
<b>Total:</b>			<b>0.909</b>	<b>6.061</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/30/2018

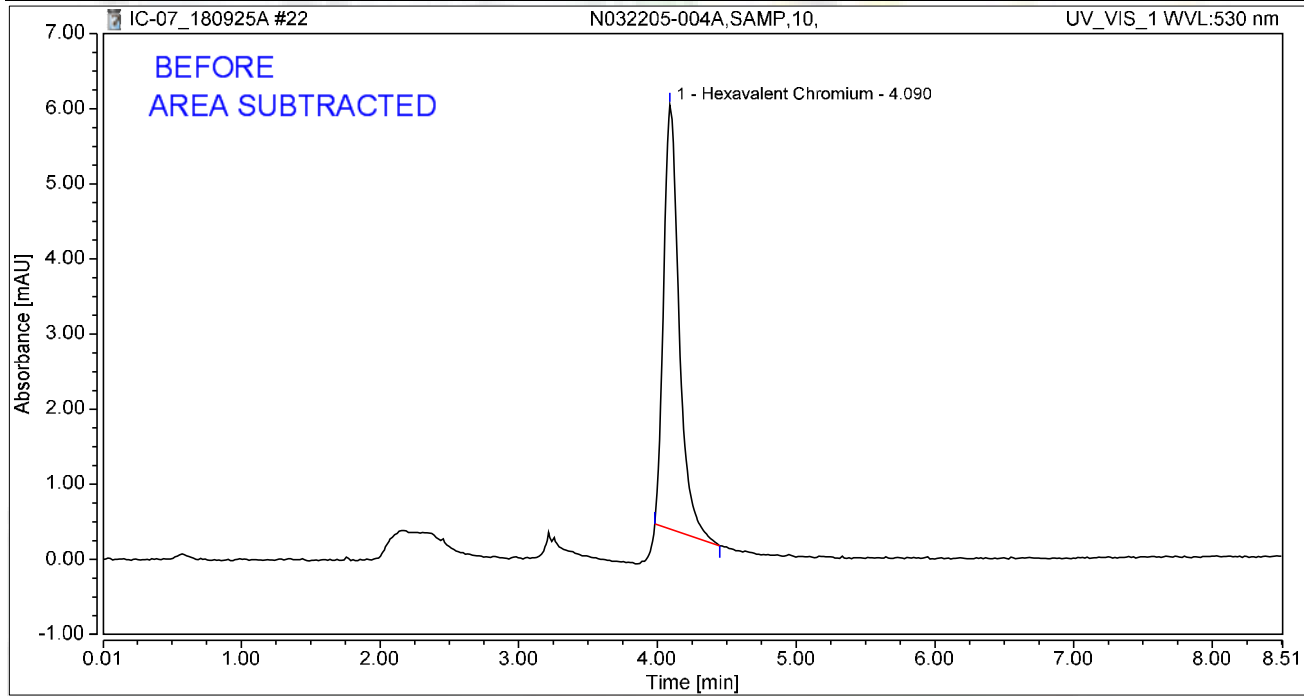
Reviewed by:  
*Nancy* 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-004A,SAMP,10,	Run Time (min):	8.50
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 11:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

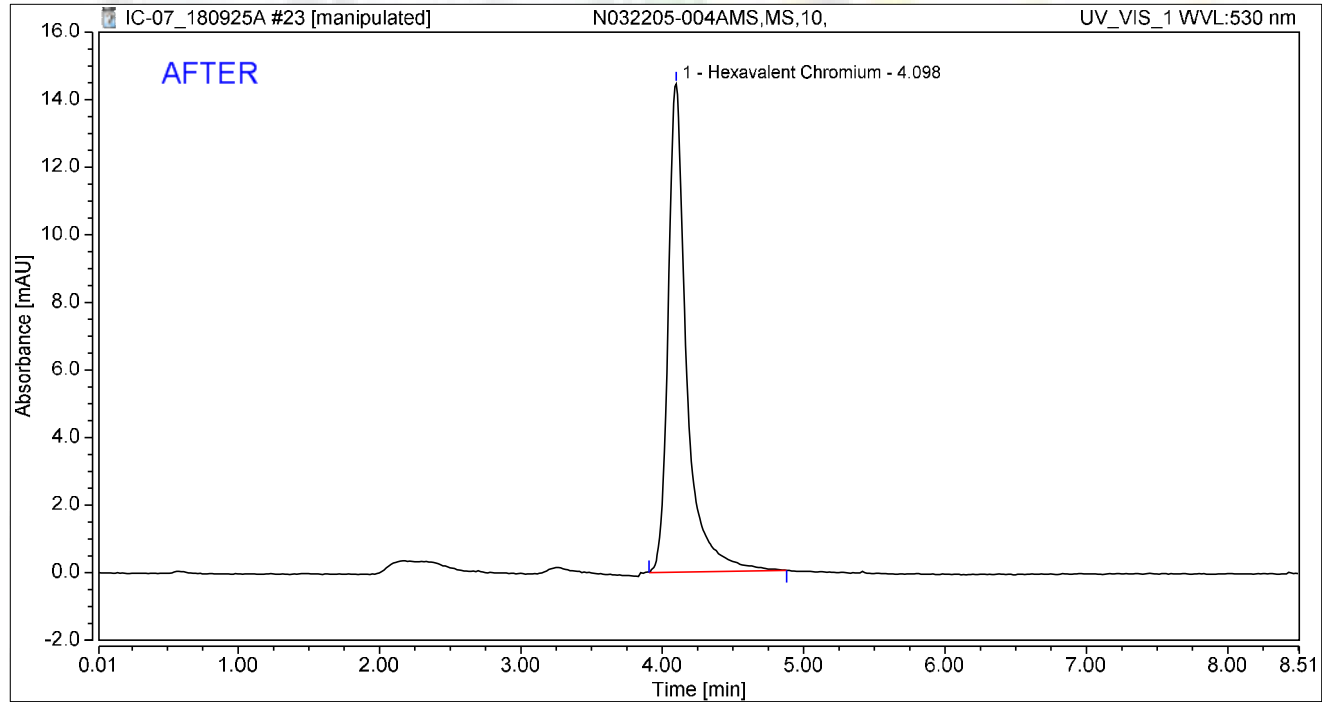
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	0.737	5.646	100.00	100.00	2.9139
<b>Total:</b>			<b>0.737</b>	<b>5.646</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

### Chromatogram and Results

Injection Details		
Injection Name:	N032205-004AMS,MS,10,	Run Time (min): 8.49
Vial Number:	16	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	25/Sep/18 11:47	Sample Weight: 1.0000

### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	2.197	14.455	100.00	100.00	8.6916
<b>Total:</b>			<b>2.197</b>	<b>14.455</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

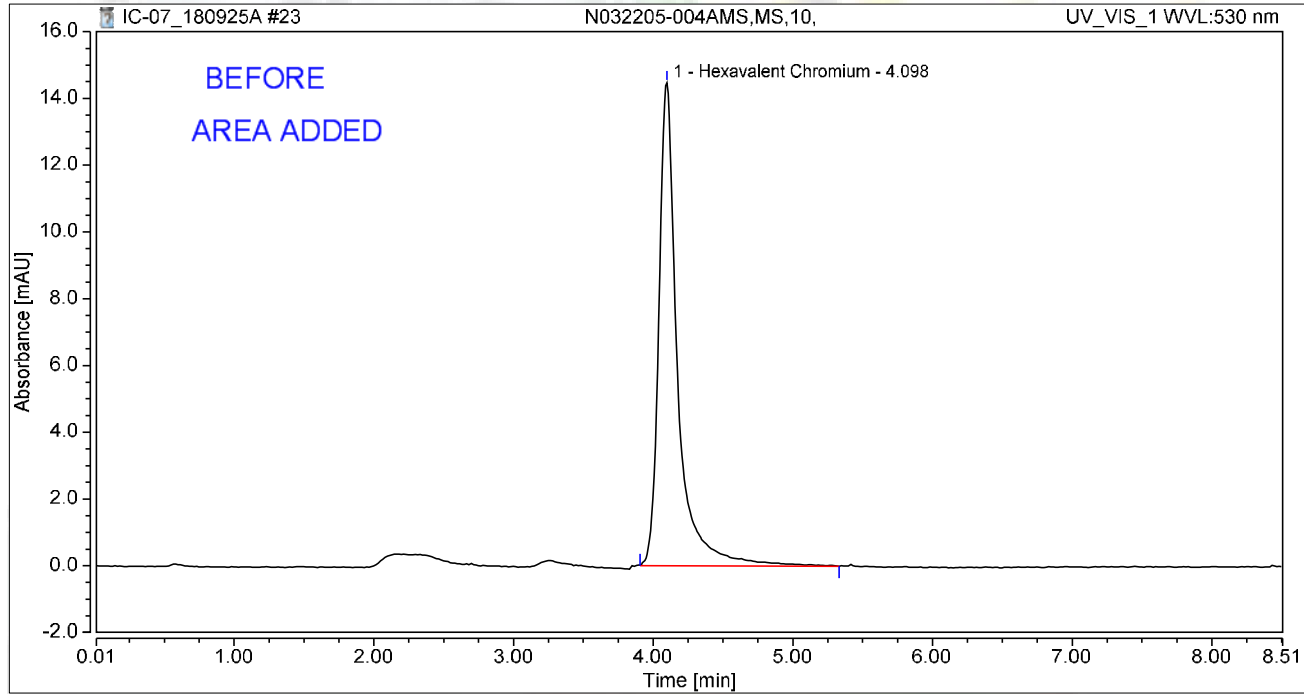
Reviewed by:  
*Nancy* 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-004AMS,MS,10,	Run Time (min):	8.49
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 11:47	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	2.254	14.471	100.00	100.00	8.9167
Total:			2.254	14.471	100.00	100.00	

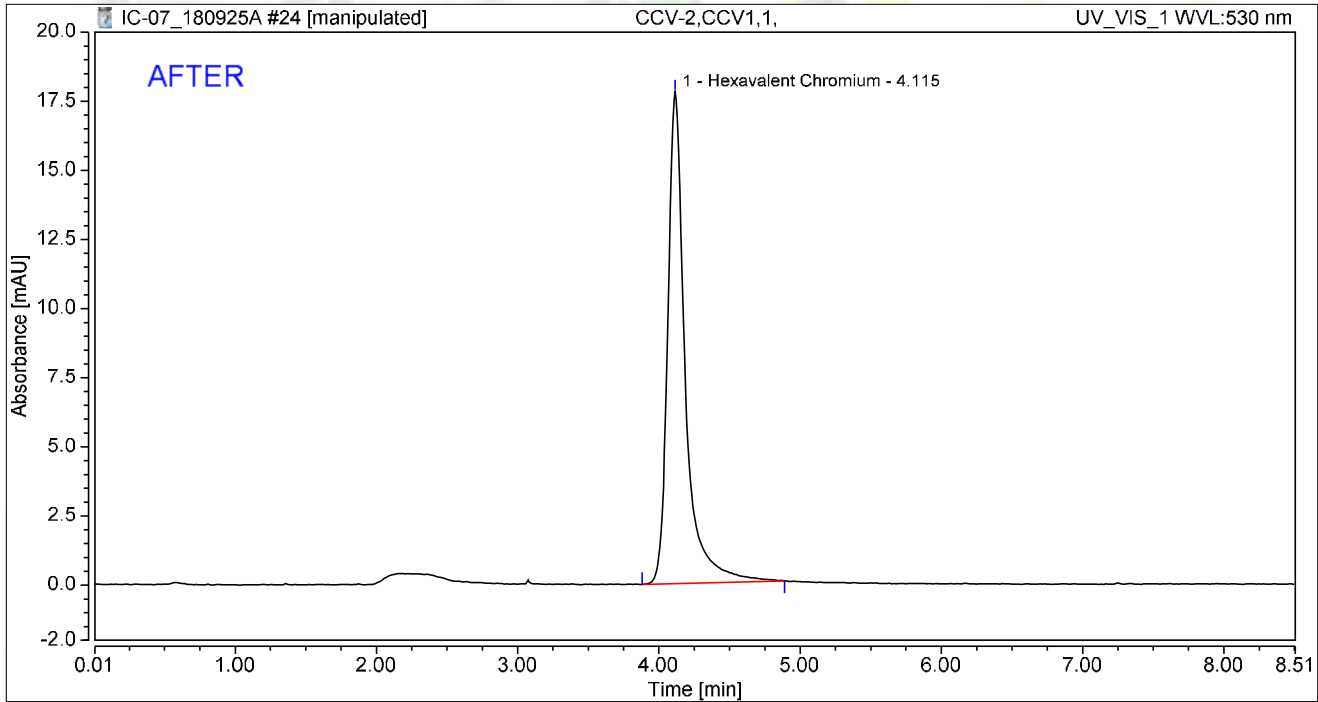
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-2,CCV1,1,	Run Time (min):	8.50
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 11:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.558	17.785	100.00	100.00	10.1213
<b>Total:</b>			<b>2.558</b>	<b>17.785</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Reviewed by:  
*Henry* 10/8/2018

My first report/Integration

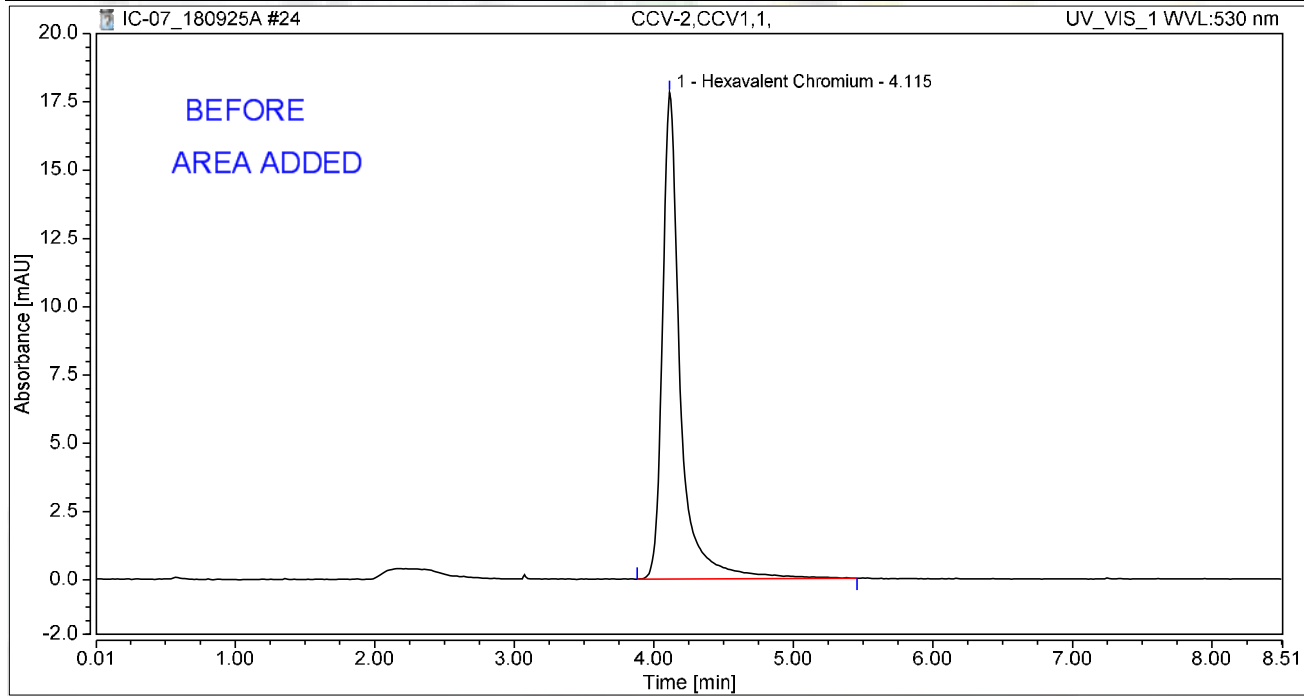
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-2,CCV1,1,	Run Time (min):	8.50
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 11:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.637	17.809	100.00	100.00	10.4335
<b>Total:</b>			<b>2.637</b>	<b>17.809</b>	<b>100.00</b>	<b>100.00</b>	

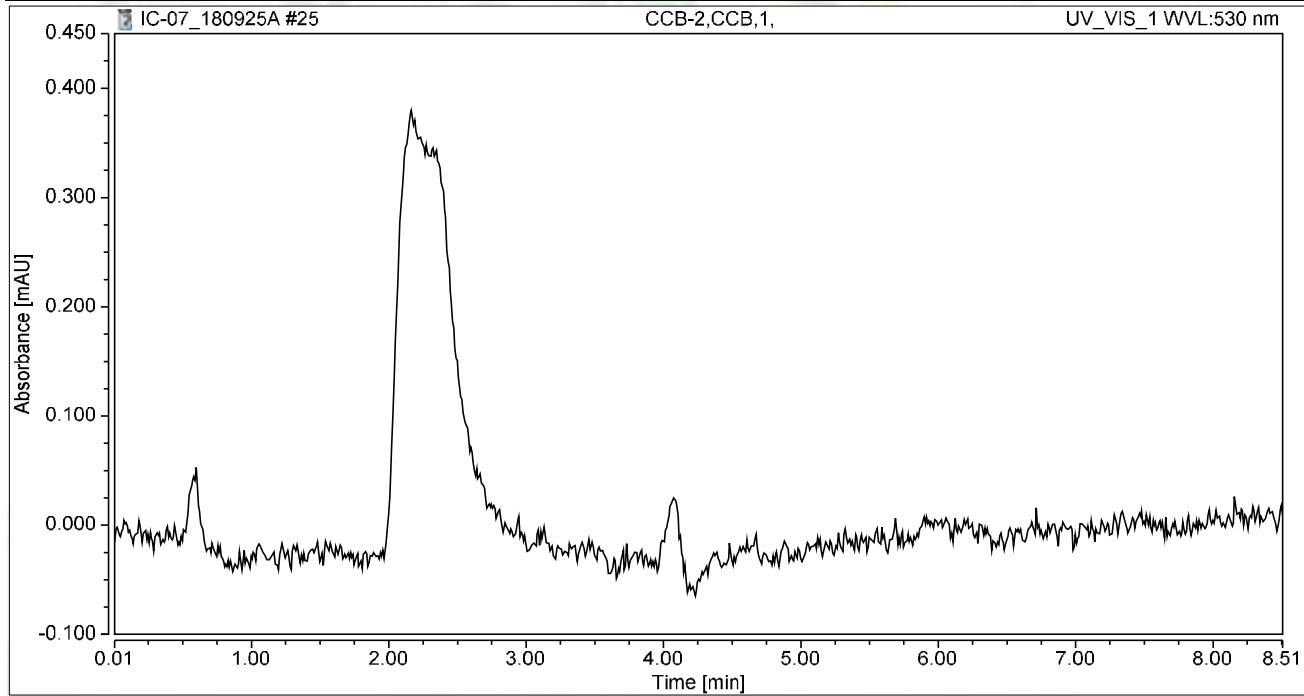
*rba* 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-2,CCB,1,	Run Time (min):	8.50
Vial Number:	18	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 12:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

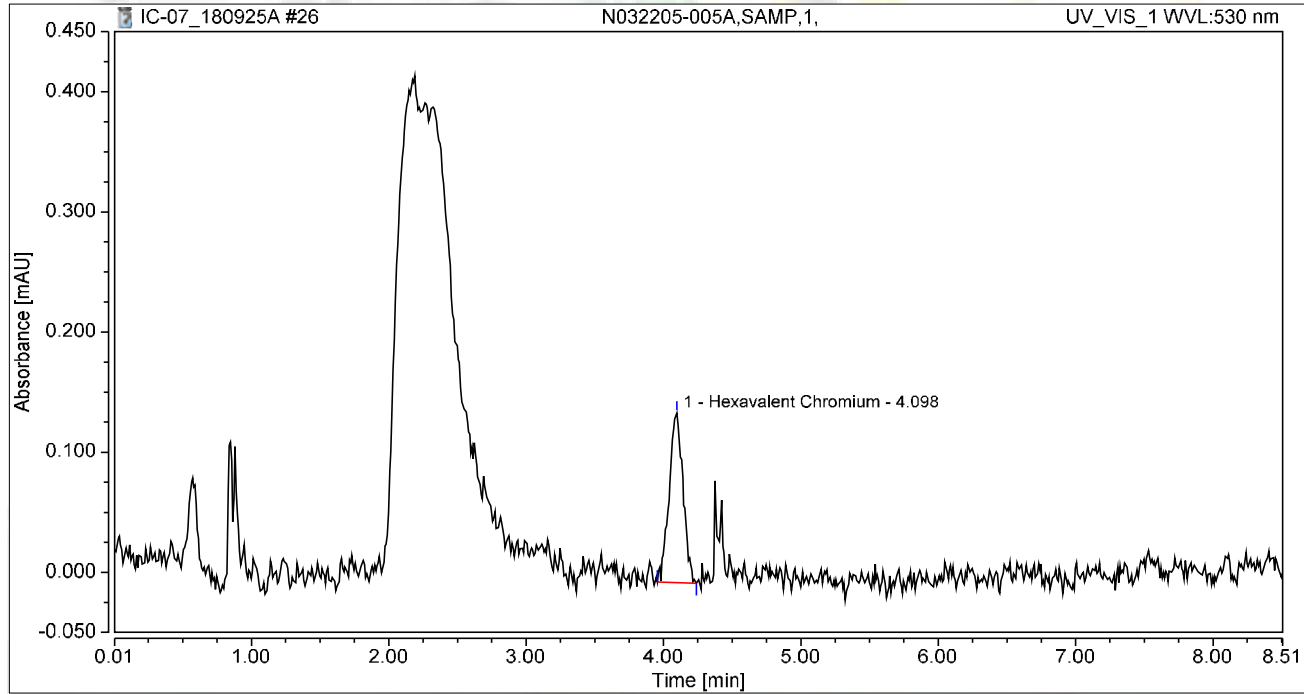
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-005A,SAMP,1,	Run Time (min):	8.50
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 12:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.017	0.141	100.00	100.00	0.0659
<b>Total:</b>			<b>0.017</b>	<b>0.141</b>	<b>100.00</b>	<b>100.00</b>	

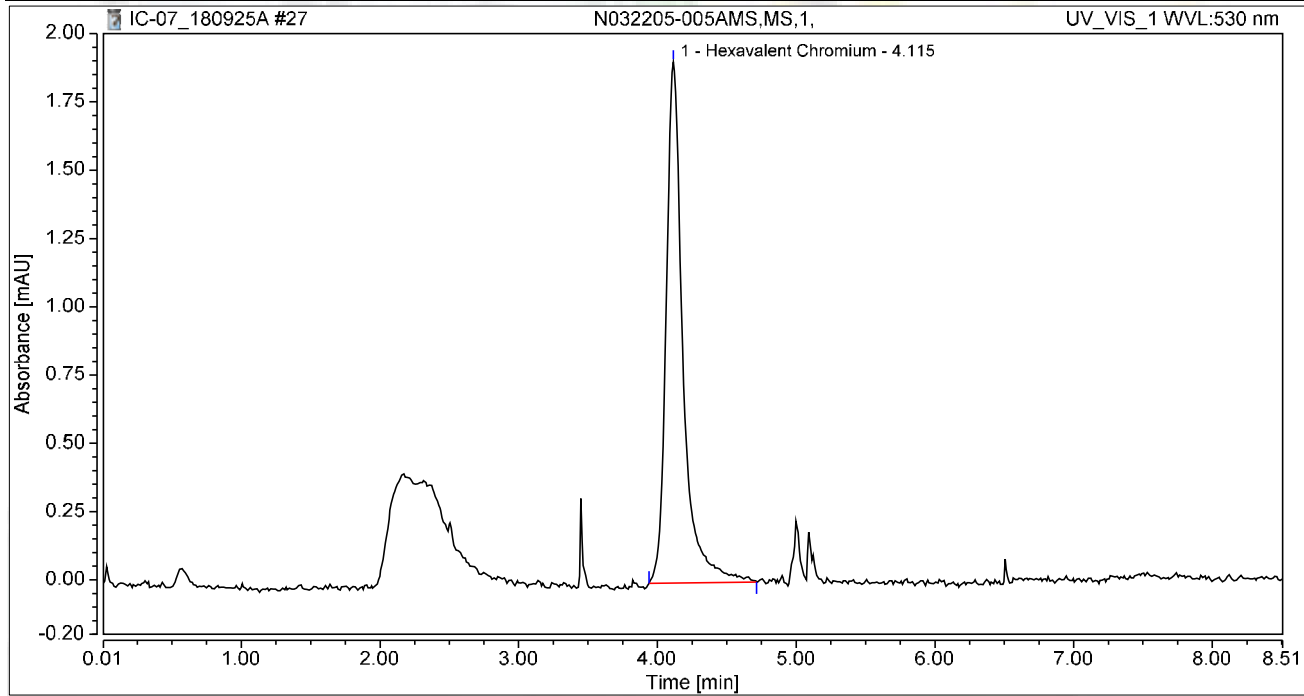


### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-005AMS,MS,1,	Run Time (min):	8.50
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 12:25	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

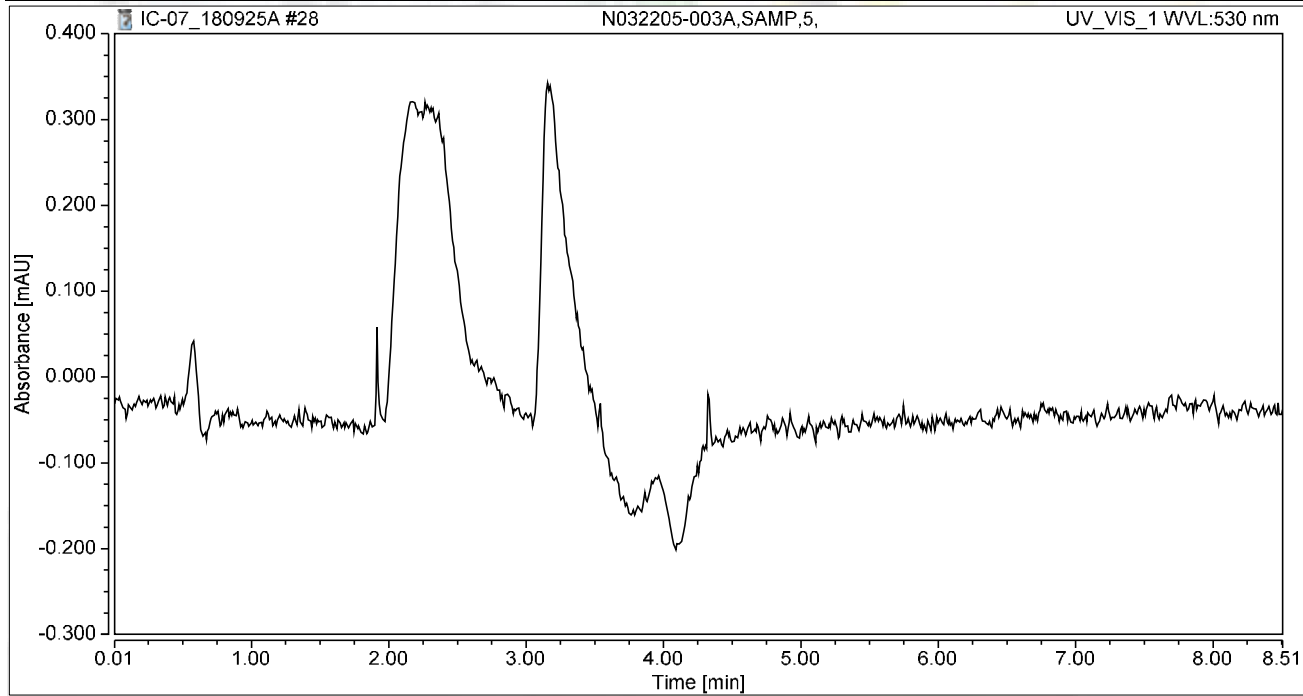
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.269	1.908	100.00	100.00	1.0629
<b>Total:</b>			<b>0.269</b>	<b>1.908</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-003A,SAMP,5,	Run Time (min):	8.50
Vial Number:	21	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 12:35	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

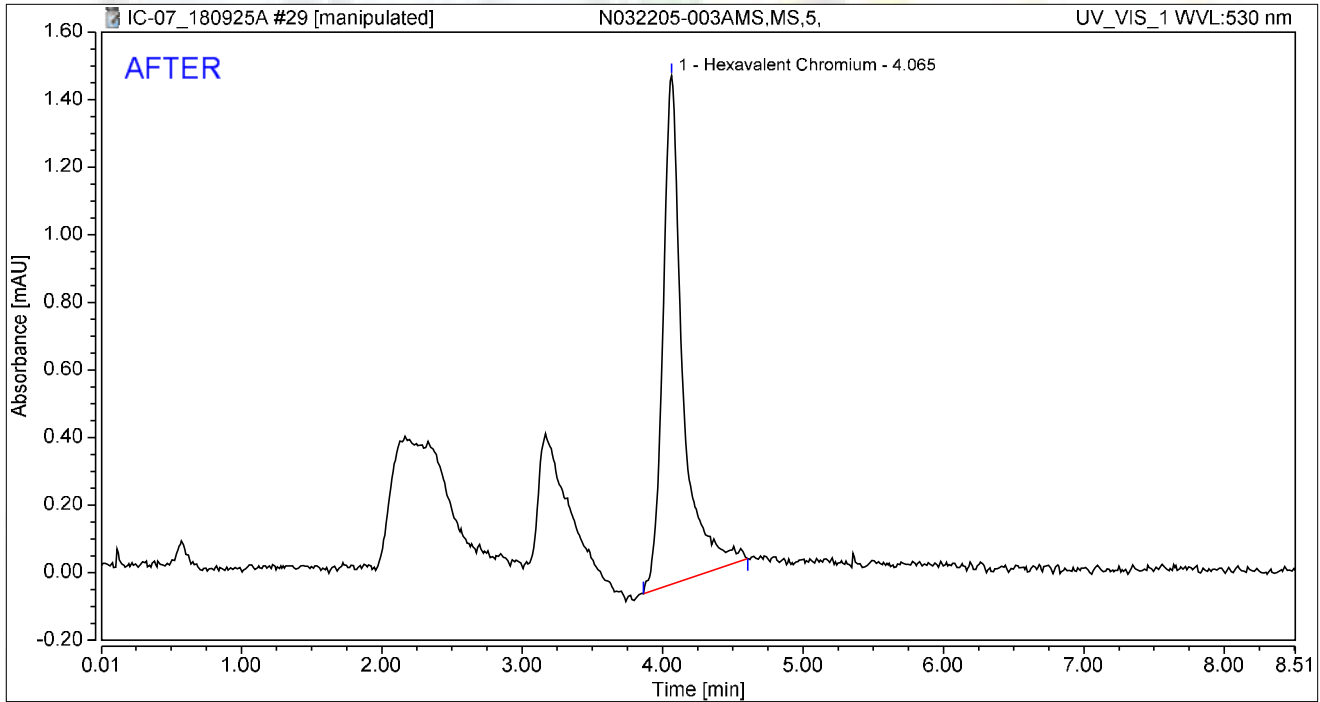
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-003AMS,MS,5,	Run Time (min):	8.50
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 12:44	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.065	0.247	1.504	100.00	100.00	0.9787
<b>Total:</b>			<b>0.247</b>	<b>1.504</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

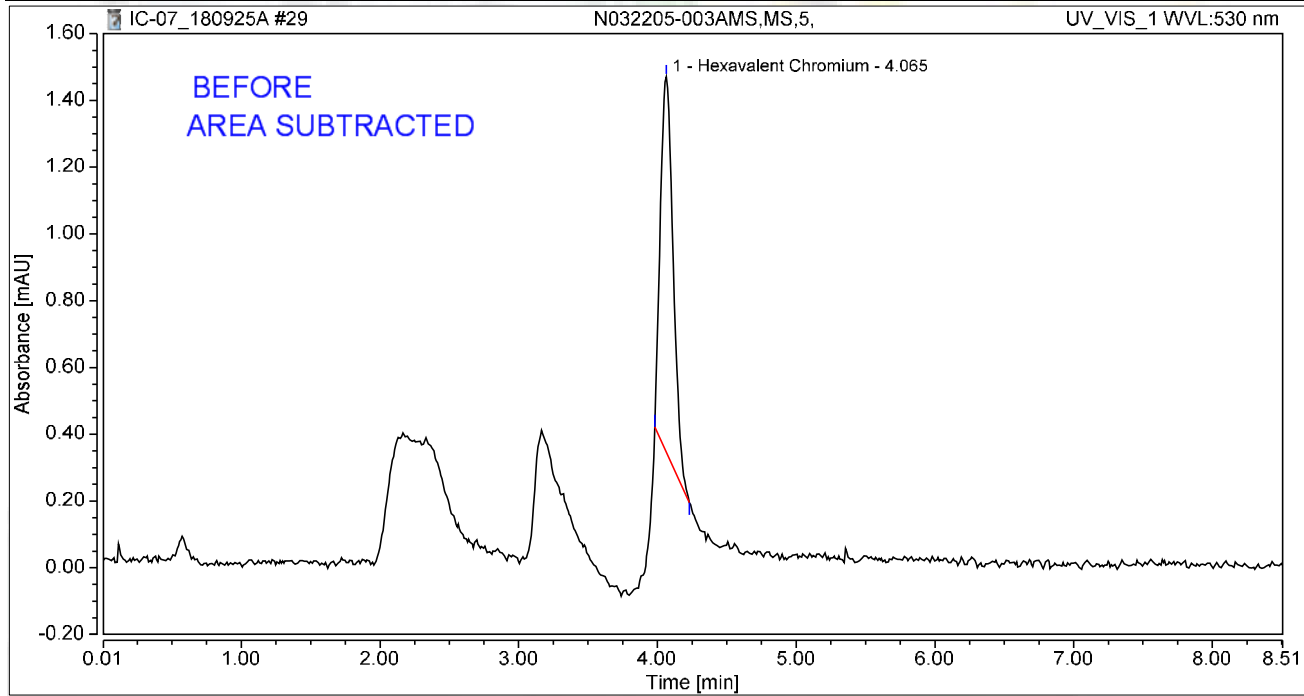
Reviewed by:  
*Nancy* 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-003AMS,MS,5,	Run Time (min):	8.50
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 12:44	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.065	0.120	1.124	100.00	100.00	0.4746
<b>Total:</b>			<b>0.120</b>	<b>1.124</b>	<b>100.00</b>	<b>100.00</b>	

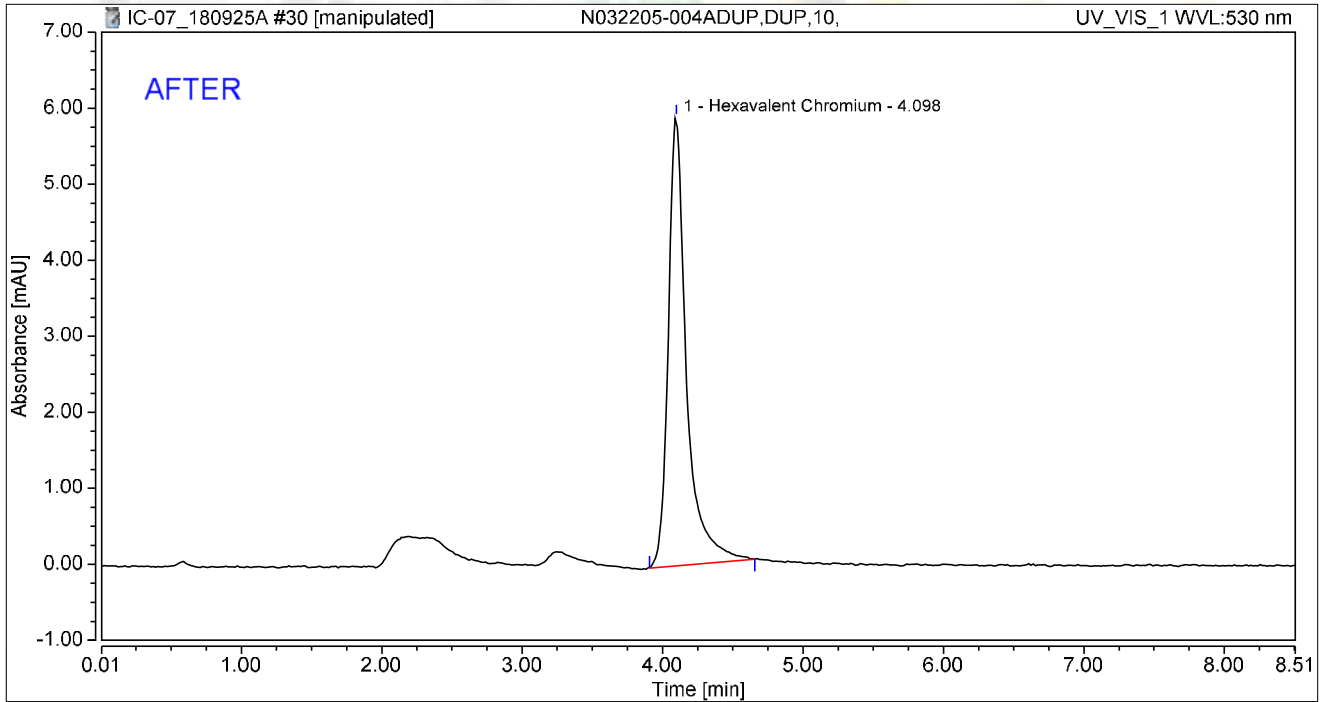
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-004ADUP,DUP,10,	Run Time (min):	8.50
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 13:14	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.888	5.902	100.00	100.00	3.5116
<b>Total:</b>			<b>0.888</b>	<b>5.902</b>	<b>100.00</b>	<b>100.00</b>	

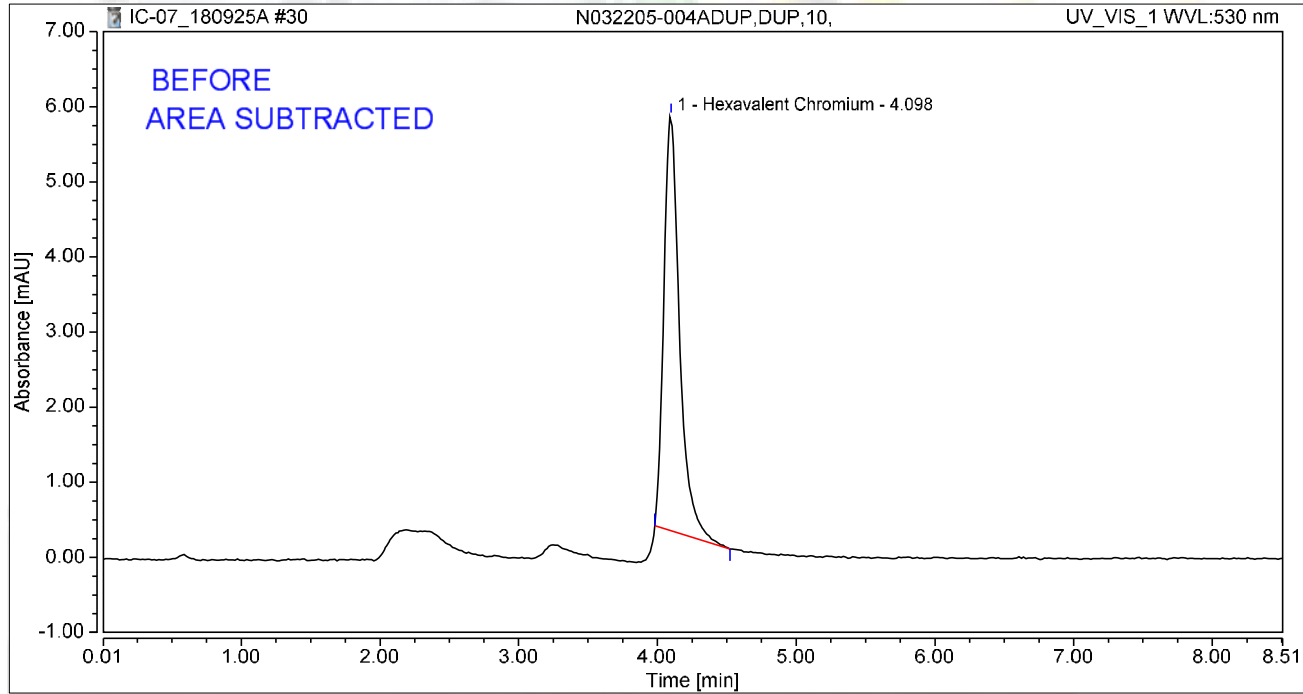
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-004ADUP,DUP,10,	Run Time (min):	8.50
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 13:14	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.729	5.526	100.00	100.00	2.8838
<b>Total:</b>			<b>0.729</b>	<b>5.526</b>	<b>100.00</b>	<b>100.00</b>	

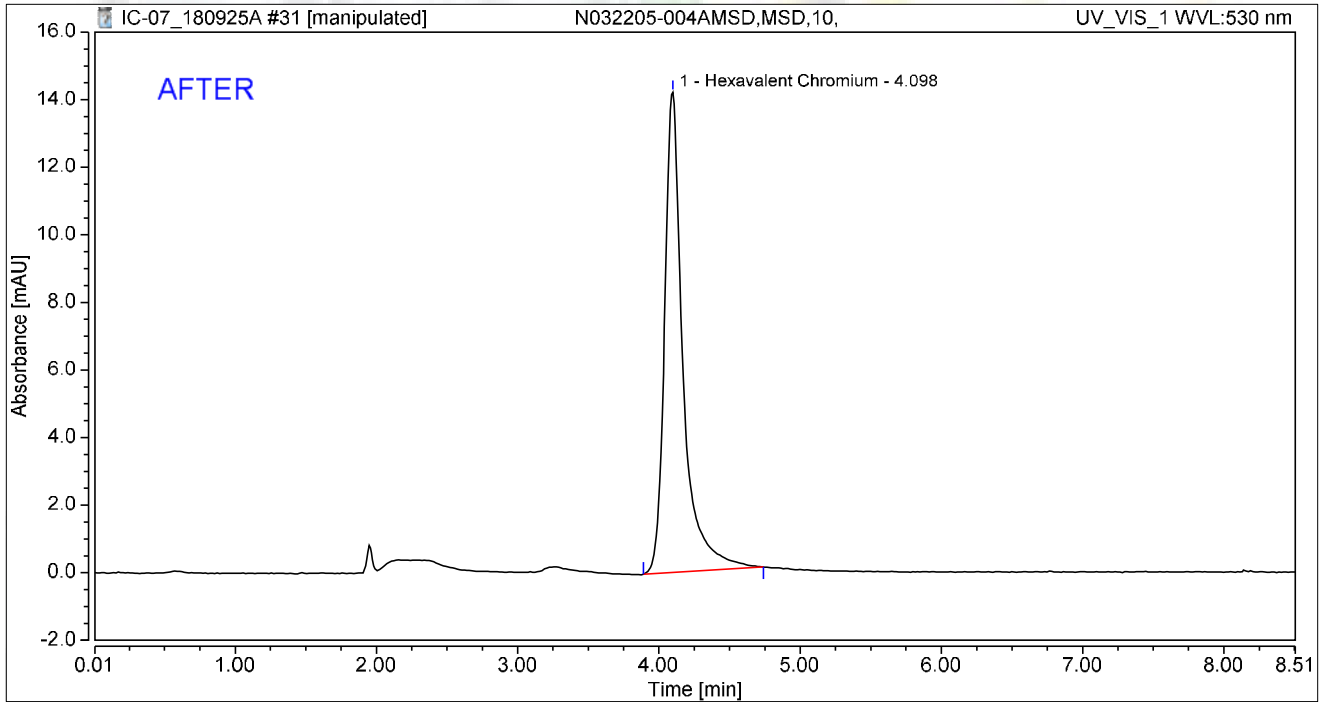
jba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-004AMSD,MSD,10,	Run Time (min):	8.50
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 13:26	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	2.152	14.206	100.00	100.00	8.5158
<b>Total:</b>			<b>2.152</b>	<b>14.206</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

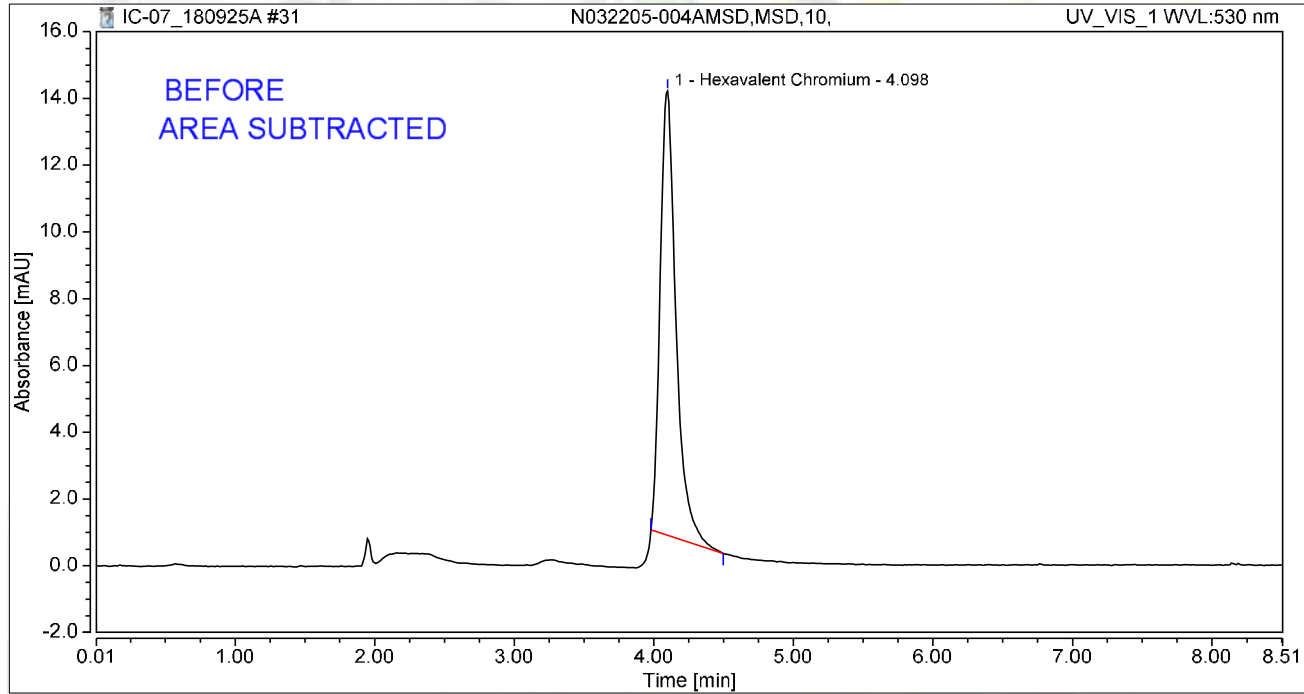
My first report integration  
 Reviewed by: *Nancy* 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032205-004AMSD,MSD,10,	Run Time (min):	8.50
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 13:26	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	1.751	13.302	100.00	100.00	6.9288
<b>Total:</b>			<b>1.751</b>	<b>13.302</b>	<b>100.00</b>	<b>100.00</b>	

nba 9/30/2018

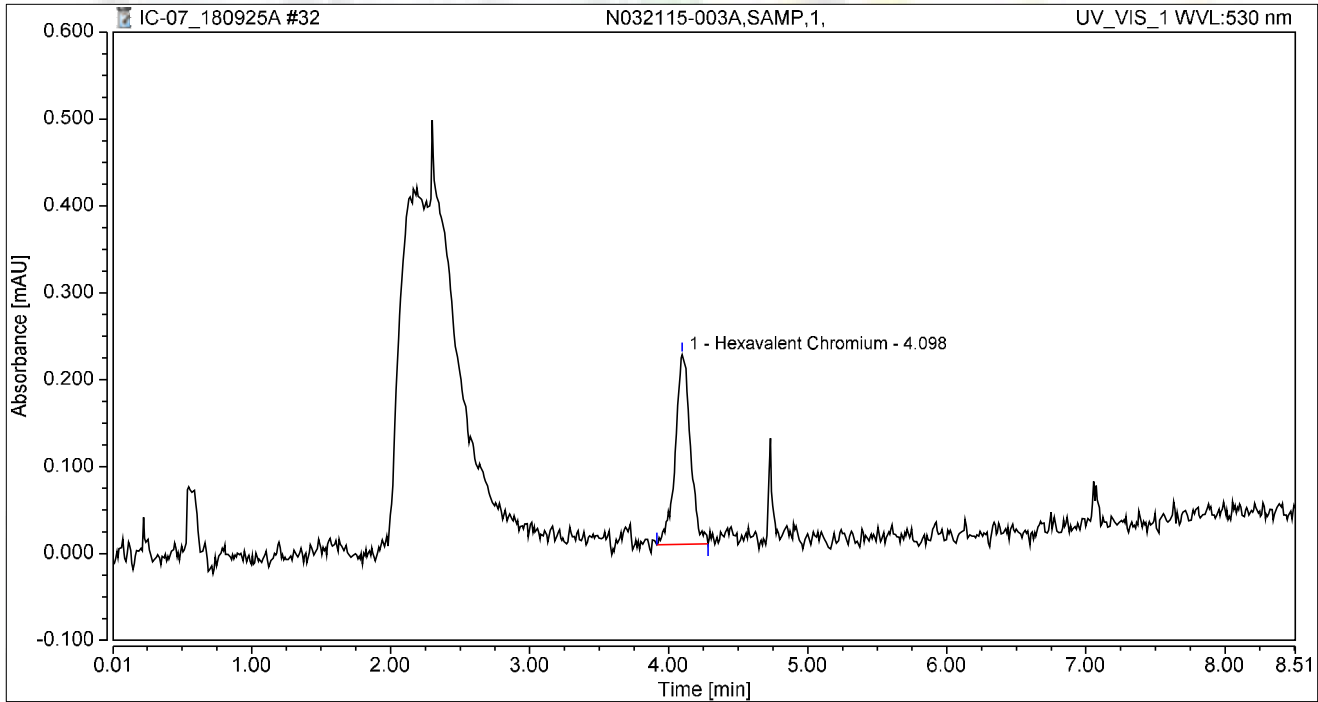


### Chromatogram and Results

**Injection Details**

Injection Name:	N032115-003A,SAMP,1,	Run Time (min):	8.50
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 13:50	Sample Weight:	1.0000

**Chromatogram**



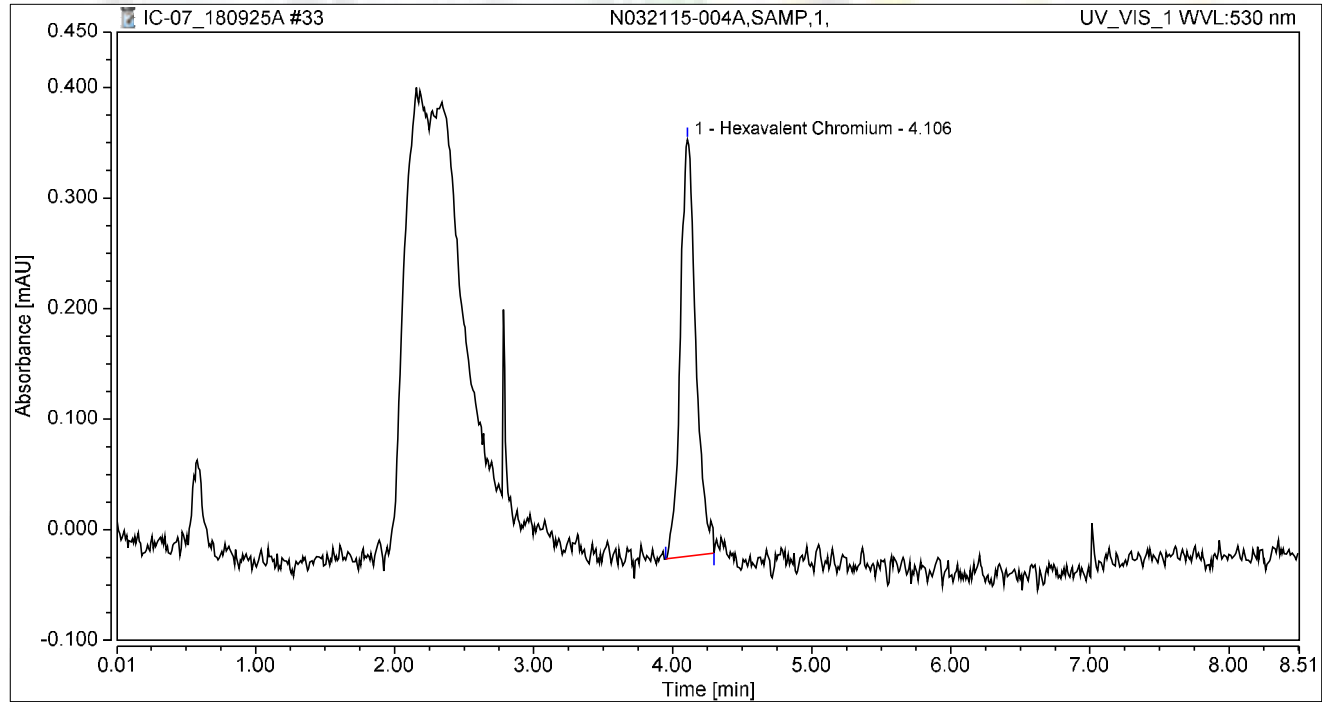
**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.028	0.218	100.00	100.00	0.1088
<b>Total:</b>			<b>0.028</b>	<b>0.218</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

Injection Details		
Injection Name:	N032115-004A,SAMP,1,	Run Time (min): 8.50
Vial Number:	28	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	25/Sep/18 14:01	Sample Weight: 1.0000

#### Chromatogram



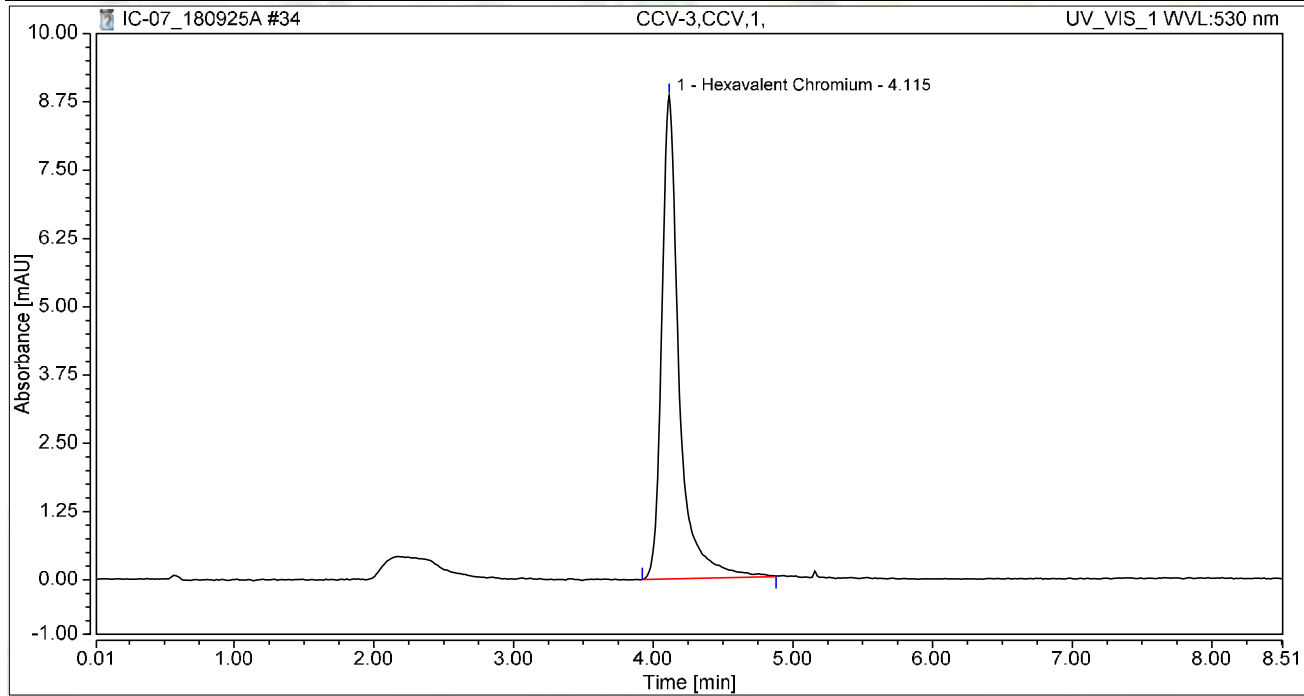
Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.049	0.377	100.00	100.00	0.1923
<b>Total:</b>			<b>0.049</b>	<b>0.377</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-3,CCV,1,	Run Time (min):	8.49
Vial Number:	29	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 14:11	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

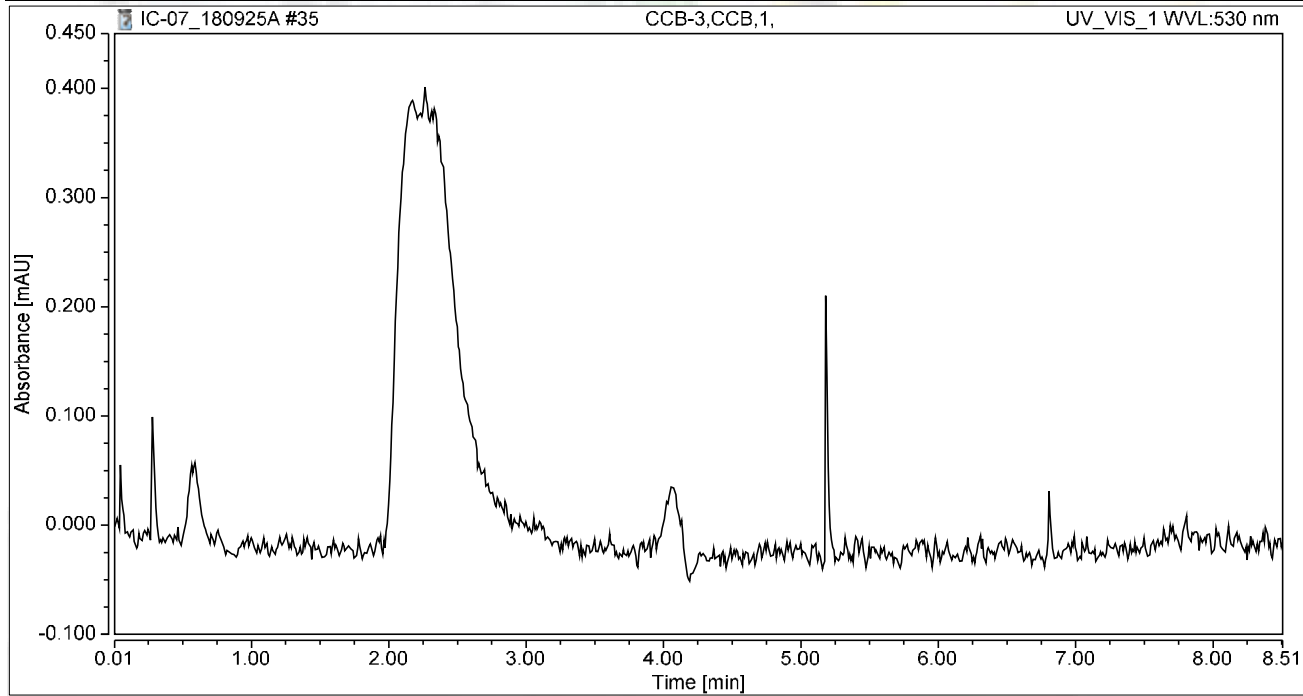
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.278	8.847	100.00	100.00	5.0558
<b>Total:</b>			<b>1.278</b>	<b>8.847</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-3,CCB,1,	Run Time (min):	8.50
Vial Number:	30	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	25/Sep/18 14:20	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# SM 4500-NO3F



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"



## Wet Chemistry Technical Batch Review Checklist (ARCUS02) ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number:                     R129025                     Analyst:                     QBM                      
 ASSET #:           N032205, N032216, N032246                     Date Analyzed:                     10/4/2018                      
 Method:           4500\_N03                    

Initial Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis or every 24 hrs.	X					
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)	X					
3. ICV within ± 15% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.	X					
5. CCV within ± 15% of expected value.	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)	X					
<b>Sample Information</b>						
8. All samples are within linear range.	X					
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits		X				
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented		X				
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

%Rec of Nitrate/Nitrite as N in MSD @5x failed, high bias. Possibly due to matrix interference.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer                     QBM                     Date:                     10/8/18                      
 2nd Level Reviewer                     *Nancy* 10/8/2018                     Date:                     \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

## Sample Calculation

**METHOD:** EPA 4500N03F  
**TEST NAME:** Nitrate/Nitrite-N by Automated Cadmium Reduction  
**MATRIX:** Groundwater

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

$$\text{Nitrate/Nitrite-N, mg/L} = A * DF$$

where:

A = mg/L, instrument calculated concentration  
DF = dilution factor

For: **N032205-004C**

The concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{Nitrate/Nitrite-N} &= 0.5942 * 5 \\ &= 2.971 \text{ mg/L} \end{aligned}$$

Reporting result in two significant figures,

$$\text{Nitrate/Nitrite-N} = 3.0 \text{ mg/L}$$



# INITIAL CALIBRATION DATA SUMMARY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
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**EPA 353.2 NO3 as N (NO3CD) - Endpoint**

**General setup**

Measuring unit	ppm
Number of decimals	4
Stabilization time (sec)	26
Measurement time (sec)	3
Sample volume (µl)	450
Filter	546
Reagent prime	No
CD Reduction	Yes

**Limits and dilution**

Low level	-0.2
High level	4
Max linearity	4
Blank min	0
Blank max	0.049
Postdilution factor %	10
Factor Calculations	No

**Washes**

Number of final washes	6
Wash every	R1, R2

**O.D. Corrections**

Carry Over	No
Carry Over value	0.0000
Blank	No
Gain	No

**Reagents**

N.	Volume (µl)	Incubation time (sec)
1	200	102
2	300	663
3	0	0

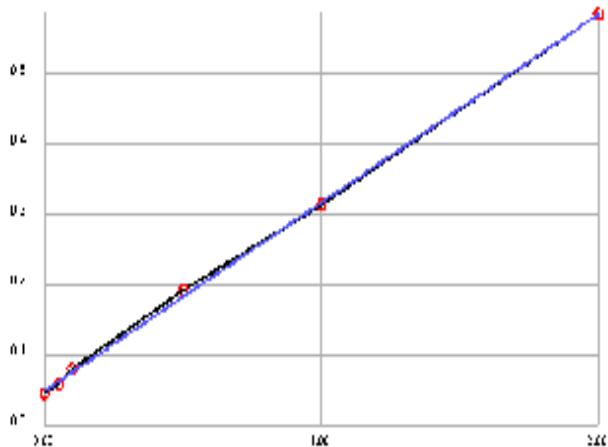
**QC**

N.	Value	Tolerance
1	1	0.1

**Calibration**

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	$y = 0.2678x + 0.0504$
Correlation	.999678



Calibrant	Energy	Set	Conc
1	0.0455	0.0000	-0.0182
2	0.0607	0.0500	0.0385
3	0.0801	0.1000	0.1110
4	0.1935	0.5000	0.5345
5	0.3145	1.0000	0.9863
6	0.5854	2.0000	1.9980

**Notes:**

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161929</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.495	0.050	0.5000	0	99.0	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161947</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.495	0.050	0.5000	0	99.0	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161958</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.473	0.050	0.5000	0	94.6	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# INITIAL CALIBRATION AND CONTINUING CALIBRATION BLANK SUMMARY



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161930</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161948</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161959</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Advanced Technology Laboratories, Inc.**

3151 W. Post Rd.  
Las Vegas, NV. 89118  
702-307-2659  
702-307-2691  
[www.atl-labs.com](http://www.atl-labs.com)

Time start: 10-04-2018 17:48

Time end: 10-04-2018 20:05

		EPA 353.2 NO3 as N		
		ppm	Flags	OD
1	<BLANK>	19:34:30	-0.0309	0.0421
2	<BLANK>	19:35:25	-0.0209	0.0448
3	<CAL1>	19:36:24	-0.0182 [0]	0.0455
4	<CAL2>	19:37:20	0.0385 [0.05]	0.0607
5	<CAL3>	19:38:21	0.1110 [0.1]	0.0801
6	<CAL4>	19:39:15	0.5345 [0.5]	0.1935
7	<CAL5>	19:40:11	0.9863 [1]	0.3145
8	<CAL6>	19:41:12	1.9980 [2]	0.5854
9	,BLANK,BLANK,1, <b>NOT REPORTED</b>	19:42:08	0.0804	0.0719
10	,ICV,ICV,1,	19:43:02	0.4949	0.1829
11	,ICB,ICB,1,	19:44:03	0.0094	0.0529
12	,MB-H2O,MBLK,1,	19:44:59	-0.0141	0.0466
13	,LCS-H2O,LCS,1,	19:46:00	0.4811	0.1792
14	,N032205-003C,SAMP,1,	19:46:54	0.0169	0.0549
15	,N032205-004C,SAMP,5,	19:47:49	0.5942	0.2095
16	,N032205-004CMS,MS,5,	19:48:45	1.2074	0.3737
17	,N032205-004CMSD,MSD,5,	19:49:33	1.2324	0.3804
18	,N032205-001C,SAMP,1,	19:50:23	1.0281	0.3257
19	,N032205-002C,SAMP,1,	19:51:05	1.1357	0.3545
20	,N032205-002CDUP,DUP,1,	19:51:48	1.1110	0.3479
21	,BLANK, <b>NOT REPORTED</b>	19:52:38	0.0430	0.0619
22	,CCV-1,CCV,1,	19:53:20	0.4952	0.1830
23	,CCB-1,CCB,1,	19:54:03	-0.0029	0.0496
24	,N032246-007C,SAMP,1,	19:54:51	0.0146	0.0543
25	,N032216-001C,SAMP,1,	19:55:34	0.0240	0.0568
26	,N032216-002C,SAMP,1,	19:56:22	0.0169	0.0549



		<b>EPA 353.2 NO3 as N</b>			
			<b>ppm</b>	<b>Flags</b>	<b>OD</b>
27	,N032216-003C,SAMP,1,	19:57:06	0.2140		0.1077
28	,N032246-002C,SAMP,1,	19:57:55	0.1352		0.0866
29	,N032246-003C,SAMP,1,	19:58:37	0.0811		0.0721
30	,N032246-004C,SAMP,1,	19:59:20	0.4445		0.1694
31	,N032246-001C,SAMP,1,	20:00:02	0.6827		0.2332
32	,N032246-008C,SAMP,5,	20:00:52	1.0061		0.3198
33	,BLANK,	<b>NOT REPORTED</b>	0.0202		0.0558
34	,CCV-2,CCV,1,	20:02:17	0.4728		0.1770
35	,CCB-2,CCB,1,	20:03:05	-0.0026		0.0497

**Nitrate/Nitrite as N by Cadmium Reduction Preparation and Runlog**

**Matrix:**

Method: SM 4500-NO3-F/ EPA 353.2

Insturment: Easy Chem Analyzer

Date Analyzed: 10/4/2018

Time Analyzed: 5:48 PM

Analyzed By: QBM

Reagent ID #

Ammonium Chloride reagent/Buffer: R180904B

Color reagent: R180904C

2% Copper Sulfate: R180904A

Ammonium Hydroxide: CINV-180703A

Sample ID.	Sample Wt./Vol.	Sample pH	Std Code	Spike Amt Added (mL)	Spike Conc.(PPM)	Final Volume (mL)	Dilution (F/I)	Reading & Calculations (mg/L)	Comments
N032205-001C		8.51							
N032205-002C		7.88							
N032205-003C		8.55							
N032205-004C		7.56							
N032216-001C		8.18							
N032216-002C		8.42							
N032216-003C		8.21							
N032246-001C		8.13							
N032246-002C		7.58							
N032246-003C		7.24							
N032246-004C		8.18							
N032246-007C		8.08							
N032246-008C		7.72							

# MDL STUDY



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Nitrate/Nitrite by Cadmium Reduction**  
 Method Number: SM4500NO3F  
 Analysis Date(s): 10/25,2017, 10/26/2017, 10/27/2017  
 Analyst/Technician: Quennie B. Manimtim

Matrix: **Water**  
 Unit: mg/L  
 Spike Conc: 0.05 mg/L

Analyte	#1	#2	#3	#4	#5	#6	#7	Ave	SD	t <sub>(n-1)</sub> value	MDL	PQL
Nitrate/Nitrite as N	0.0573	0.0562	0.0500	0.0730	0.0698	0.0637	0.0564	0.0609	0.0082	3.143	0.0259	0.05

**Method Blank**

Nitrate/Nitrite as N	0.0160	0.0067	0.0064	0.0204	0.0173	0.0036	0.0083	0.0112	0.0065	3.143	0.0317	0.05
----------------------	--------	--------	--------	--------	--------	--------	--------	--------	--------	-------	--------	------

**MDL:**                    **0.0317**                    **mg/L**



# EPA 6020 Dissolved



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P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70807  
 ASSET #: N032205

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 10/2/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.		X			X	
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X			X		
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?	X			X		
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits		X			X	
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented	X			<del>X</del>		)
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

% Rec of Mo in N032205-001D PS, MS/MSD failed, high bias. However, LCS passed criteria.

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	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer Henry 10/9/2018

Date: 10/9/18  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## SAMPLE CALCULATION

**METHOD:** EPA 6020  
**TEST NAME:** Heavy Metals by ICP-MS  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Arsenic concentration, in ug/L in the original sample as follows:

$$\text{Arsenic, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration  
DF = Dilution Factor  
PF = Final Volume of Digestate, mL / Amount of Sample, mL

For Sample **N032205-001D**, the concentration in ug/L is calculated as follows:

$$\text{Arsenic, ug/L} = 1.55795 * 1 * (25/25)$$

$$\text{Arsenic, ug/L} = 1.55795$$

Reporting results in two significant figures,

$$\text{Arsenic, ug/L} = 1.6$$



# % RSD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENT

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.082	7.86	15	PASS	0.093	16.22	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.5	3.24	15	PASS	0.51	4.65	15	PASS
Std3-5/50 ppb	ICAL	1	5.12	2.0019	15	PASS	5.18	1.11	15	PASS
Std4-10/100 ppb	ICAL	1	10.26	1.58	15	PASS	10.24	1.12	15	PASS
Std5-20/200 ppb	ICAL	1	20.57	1.073	15	PASS	20.32	0.21	15	PASS
Std6-40/400 ppb	ICAL	1	40.83	1.18	15	PASS	40.77	1.23	15	PASS
Std7-100/1000 ppb	ICAL	1	101.24	0.25	15	PASS	101.94	0.39	15	PASS
Std8-200/2000 ppb	ICAL	1	199.14	1.25	15	PASS	198.83	1.11	15	PASS
ICV	ICV	1	10.36	1.019	15	PASS	106.15	1.085	15	PASS
ICB	ICB	1	0.0099	52.98	15	<PQL	<0.000	N/A	15	<PQL
LLICV	CCV1	1	1.014	1.2	20	PASS	0.55	1.65	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	21.23	0.89	15	PASS	16.4	0.69	15	PASS
LLICV	CCV1	1	1.049	3.55	20	PASS	0.53	8.74	20	PASS
MB-70807	MBLK	1	<0.000	N/A	15	<PQL	0.043	7.17	15	PASS
LCS-70807	LCS	1	10.55	0.45	15	PASS	106.68	1.23	15	PASS
N032205-001D	SAMP	1	1.42	1.081	15	PASS	0.21	35.79	15	<PQL
N032205-001D	SAMP	5	0.29	7.23	15	PASS	0.11	24.92	15	<PQL
N032205-001D-PS	PS	1	12.087	0.48	15	PASS	113.2	0.43	15	PASS
N032205-001D-MS	MS	1	12.13	0.78	15	PASS	114.51	0.64	15	PASS
N032205-001D-MSD	MSD	1	12.0053	0.85	15	PASS	113.67	0.72	15	PASS
N032205-002D	SAMP	1	1.55	0.79	15	PASS	0.23	15.21	15	<PQL
CCV1	CCV	1	21.25	1.31	15	PASS	20.81	1.17	15	PASS
CCB1	CCB	1	<0.000	N/A	15	<PQL	0.0064	102.18	15	<PQL
N032205-003D	SAMP	1	<0.000	N/A	15	<PQL	920.3	0.72	15	PASS
N032205-004D	SAMP	1	38.75	1.38	15	PASS	23.53	2.66	15	PASS
N032216-001D	SAMP	1	0.4	5.25	15	PASS	26.061	1.038	15	PASS
N032216-002D	SAMP	1	6.22	1.64	15	PASS	25.97	0.66	15	PASS
N032216-003D	SAMP	1	80.7	1.013	15	PASS	10.57	1.64	15	PASS
N032246-001D	SAMP	1	99.86	1.17	15	PASS	44.81	0.51	15	PASS
N032246-002D	SAMP	1	2.91	1.47	15	PASS	15.038	1.72	15	PASS
N032246-003D	SAMP	1	<0.000	N/A	15	<PQL	244.76	0.25	15	PASS
N032246-004D	SAMP	1	0.24	17.24	15	<PQL	56.18	1.16	15	PASS
N032246-005C	SAMP	1	0.28	10.032	15	PASS	86.082	0.95	15	PASS
CCV2	CCV	1	21.26	0.27	15	PASS	20.73	1.72	15	PASS
CCB2	CCB	1	0.0053	204.59	15	<PQL	<0.000	N/A	15	<PQL
N032246-006C	SAMP	1	0.33	2.91	15	PASS	84.15	0.7	15	PASS
N032246-007D	SAMP	1	<0.000	N/A	15	<PQL	166.4	0.96	15	PASS
N032246-008D	SAMP	1	578.87	1.27	15	PASS	0.3	12.65	15	PASS
N032205-003D	SAMP	10	0.072	19.98	15	<PQL	92.46	0.31	15	PASS

PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N032246-003D	SAMP	5	<0.000	N/A	15	<PQL	51.27	1.17	15	PASS
N032246-008D	SAMP	5	114.6	0.96	15	PASS	0.076	89.024	15	<PQL
N032205-002D	SAMP	1	1.63	4.093	15	PASS	0.32	9.66	15	PASS
N032216-001D	SAMP	1	0.4	4.93	15	PASS	25.95	0.32	15	PASS
N032216-002D	SAMP	5	1.34	1.88	15	PASS	5.47	0.061	15	PASS
N032216-003D	SAMP	5	16.84	0.83	15	PASS	2.16	1.77	15	PASS
CCV3	CCV	1	20.63	0.87	15	PASS	20.31	1.015	15	PASS
CCB3	CCB	1	0.0011	451.87	15	<PQL	<0.000	N/A	15	<PQL
N032205-002D	SAMP	1	1.57	5.75	15	PASS	0.33	9.37	15	PASS
N032205-002D	SAMP	1	1.59	2.38	15	PASS	0.31	7.64	15	PASS
N032216-001D	SAMP	5	0.09	11.52	15	PASS	5.46	2.57	15	PASS
N032246-001D	SAMP	5	20.78	1.31	15	PASS	9.27	1.37	15	PASS
N032246-002D	SAMP	5	0.67	2.83	15	PASS	3.16	1.93	15	PASS
N032246-004D	SAMP	5	0.047	43.14	15	<PQL	11.91	0.44	15	PASS
N032246-005C	SAMP	5	0.05	45.38	15	<PQL	17.84	1.5	15	PASS
N032246-007D	SAMP	5	<0.000	N/A	15	<PQL	35.4	0.66	15	PASS
CCV4	CCV	1	20.66	0.8	15	PASS	20.16	1.23	15	PASS
CCB4	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
ICSA2	ICSA	1	0.018	32.82	15	<PQL	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	21.67	1.5	15	PASS	16.059	2.028	15	PASS

PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	75 As [2]				78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.097	20.78	15	<PQL	0.071	18.82	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.5	7.34	15	PASS	0.67	16.36	15	NR!
Std3-5/50 ppb	ICAL	1	5.16	1.39	15	PASS	5.16	10.12	15	PASS
Std4-10/100 ppb	ICAL	1	10.06	1.34	15	PASS	10.65	1.73	15	PASS
Std5-20/200 ppb	ICAL	1	20.28	1.36	15	PASS	19.46	3.44	15	PASS
Std6-40/400 ppb	ICAL	1	40.38	1.14	15	PASS	40.38	5.55	15	PASS
Std7-100/1000 ppb	ICAL	1	100.58	0.45	15	PASS	98.83	1.024	15	PASS
Std8-200/2000 ppb	ICAL	1	199.6	0.96	15	PASS	200.52	0.83	15	PASS
ICV	ICV	1	10.4	1.14	15	PASS	10.38	11.88	15	PASS
ICB	ICB	1	0.026	76.91	15	<PQL	0.1	43.53	15	<PQL
LLICV	CCV1	1	0.15	16.65	20	PASS	0.67	16.25	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	0.035	35.67	15	<PQL
ICSAB1	ICSAB	1	21.29	1.82	15	PASS	19.033	5.44	15	PASS
LLICV	CCV1	1	0.1	18.34	20	PASS	0.53	16.4	20	PASS
MB-70807	MBLK	1	<0.000	N/A	15	<PQL	0.0071	173.21	15	<PQL
LCS-70807	LCS	1	9.99	0.9	15	PASS	10.086	11.95	15	PASS
N032205-001D	SAMP	1	1.56	3.47	15	PASS	1.017	2.25	15	PASS
N032205-001D	SAMP	5	0.29	7.94	15	PASS	0.25	39.26	15	<PQL
N032205-001D-PS	PS	1	12.97	0.53	15	PASS	11.68	2.17	15	PASS
N032205-001D-MS	MS	1	13.11	2.51	15	PASS	11.11	1.2	15	PASS
N032205-001D-MSD	MSD	1	13.25	0.69	15	PASS	10.66	8.85	15	PASS
N032205-002D	SAMP	1	1.48	2.86	15	PASS	0.93	16.31	15	NR!
CCV1	CCV	1	19.87	0.83	15	PASS	20.9	6.71	15	PASS
CCB1	CCB	1	0.006	240.52	15	<PQL	0.037	91.97	15	<PQL
N032205-003D	SAMP	1	3.99	1.039	15	PASS	0.11	55.19	15	<PQL
N032205-004D	SAMP	1	1.44	4.44	15	PASS	3.86	13.76	15	PASS
N032216-001D	SAMP	1	4.65	2.26	15	PASS	2.17	15.16	15	NR!
N032216-002D	SAMP	1	5.3	2.84	15	PASS	2.075	8.63	15	PASS
N032216-003D	SAMP	1	9.1	1.64	15	PASS	2.79	12.86	15	PASS
N032246-001D	SAMP	1	12.35	0.78	15	PASS	1.44	17.53	15	NR!
N032246-002D	SAMP	1	15.77	2.44	15	PASS	0.51	30.79	15	NR!
N032246-003D	SAMP	1	9.97	0.4	15	PASS	0.063	91.48	15	<PQL
N032246-004D	SAMP	1	15.38	2.53	15	PASS	0.16	13.26	15	PASS
N032246-005C	SAMP	1	1.16	4.56	15	PASS	1.22	18.078	15	NR!
CCV2	CCV	1	19.26	1.86	15	PASS	20.1	1.38	15	PASS
CCB2	CCB	1	0.0082	195.85	15	<PQL	0.051	49.75	15	<PQL
N032246-006C	SAMP	1	1.15	11.47	15	PASS	1.32	7.57	15	PASS
N032246-007D	SAMP	1	3.25	5.26	15	PASS	0.075	99.41	15	<PQL
N032246-008D	SAMP	1	1.69	1.31	15	PASS	4.69	9.34	15	PASS
N032205-003D	SAMP	10	0.33	9.88	15	PASS	0.055	50.63	15	<PQL

PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	75 As [2]				78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N032246-003D	SAMP	5	1.94	2.71	15	PASS	0.03	173.21	15	<PQL
N032246-008D	SAMP	5	0.31	12.88	15	PASS	0.86	12.52	15	PASS
N032205-002D	SAMP	1	1.48	2.6	15	PASS	1.17	43.75	15	NR!
N032216-001D	SAMP	1	4.71	1.23	15	PASS	2.0041	16.25	15	NR!
N032216-002D	SAMP	5	1.056	4.64	15	PASS	0.42	25.49	15	<PQL
N032216-003D	SAMP	5	1.77	4.14	15	PASS	0.72	10.6	15	PASS
CCV3	CCV	1	19.83	1.74	15	PASS	20.3	4.55	15	PASS
CCB3	CCB	1	<0.000	N/A	15	<PQL	0.052	49.89	15	<PQL
N032205-002D	SAMP	1	1.44	5.73	15	PASS	1.11	15.23	15	NR!
N032205-002D	SAMP	1	1.6	2.65	15	PASS	1.18	14.96	15	PASS
N032216-001D	SAMP	5	0.93	4.91	15	PASS	0.45	11.97	15	PASS
N032246-001D	SAMP	5	2.52	2.83	15	PASS	0.14	64.065	15	<PQL
N032246-002D	SAMP	5	3.2	4.76	15	PASS	0.062	50.3	15	<PQL
N032246-004D	SAMP	5	3.15	6.12	15	PASS	0.021	86.6	15	<PQL
N032246-005C	SAMP	5	0.2	16.052	15	NR!	0.24	96.14	15	<PQL
N032246-007D	SAMP	5	0.63	3.96	15	PASS	0	N/A	15	<PQL
CCV4	CCV	1	19.61	0.55	15	PASS	21.31	5.69	15	PASS
CCB4	CCB	1	0.0021	1167.37	15	<PQL	0.055	133.12	15	<PQL
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	0.017	86.61	15	<PQL
ICSAB2	ICSAB	1	20.9	0.42	15	PASS	21.0027	4.75	15	PASS

PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.083	18.13	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.46	10.34	15	PASS
Std3-5/50 ppb	ICAL	1	4.78	1.084	15	PASS
Std4-10/100 ppb	ICAL	1	9.77	1.54	15	PASS
Std5-20/200 ppb	ICAL	1	19.72	0.88	15	PASS
Std6-40/400 ppb	ICAL	1	39.87	0.49	15	PASS
Std7-100/1000 ppb	ICAL	1	99.59	0.49	15	PASS
Std8-200/2000 ppb	ICAL	1	200.27	0.52	15	PASS
ICV	ICV	1	10.34	0.91	15	PASS
ICB	ICB	1	0.17	9.66	15	PASS
LLICV	CCV1	1	0.56	7.59	20	PASS
ICSA1	ICSA	1	0.11	5.92	15	PASS
ICSAB1	ICSAB	1	22.29	0.43	15	PASS
LLICV	CCV1	1	0.59	7.73	20	PASS
MB-70807	MBLK	1	0.0085	85.85	15	<PQL
LCS-70807	LCS	1	9.8	1.67	15	PASS
N032205-001D	SAMP	1	16.37	1.69	15	PASS
N032205-001D	SAMP	5	3.19	0.93	15	PASS
N032205-001D-PS	PS	1	28.52	0.7	15	PASS
N032205-001D-MS	MS	1	28.78	0.87	15	PASS
N032205-001D-MSD	MSD	1	28.93	0.63	15	PASS
N032205-002D	SAMP	1	17.23	0.53	15	PASS
CCV1	CCV	1	19.39	0.24	15	PASS
CCB1	CCB	1	0.11	12.36	15	PASS
N032205-003D	SAMP	1	64.83	0.44	15	PASS
N032205-004D	SAMP	1	26.85	0.97	15	PASS
N032216-001D	SAMP	1	56.72	0.93	15	PASS
N032216-002D	SAMP	1	56.91	1.28	15	PASS
N032216-003D	SAMP	1	60.6	1.27	15	PASS
N032246-001D	SAMP	1	82.039	0.6	15	PASS
N032246-002D	SAMP	1	78.12	0.6	15	PASS
N032246-003D	SAMP	1	69.044	0.83	15	PASS
N032246-004D	SAMP	1	81.76	0.87	15	PASS
N032246-005C	SAMP	1	11.54	1.019	15	PASS
CCV2	CCV	1	19.3	0.8	15	PASS
CCB2	CCB	1	0.11	23.7	15	<PQL
N032246-006C	SAMP	1	11.56	0.074	15	PASS
N032246-007D	SAMP	1	58.58	0.81	15	PASS
N032246-008D	SAMP	1	13.14	1.68	15	PASS
N032205-003D	SAMP	10	6.16	0.82	15	PASS

PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment
N032246-003D	SAMP	5	13.34	1.049	15	PASS
N032246-008D	SAMP	5	2.59	4.12	15	PASS
N032205-002D	SAMP	1	17.025	2.18	15	PASS
N032216-001D	SAMP	1	56.91	0.32	15	PASS
N032216-002D	SAMP	5	11.12	0.78	15	PASS
N032216-003D	SAMP	5	11.66	0.64	15	PASS
CCV3	CCV	1	19.95	0.86	15	PASS
CCB3	CCB	1	0.087	12.61	15	PASS
N032205-002D	SAMP	1	16.93	1.56	15	PASS
N032205-002D	SAMP	1	17.087	1.53	15	PASS
N032216-001D	SAMP	5	11.14	2.68	15	PASS
N032246-001D	SAMP	5	15.74	0.86	15	PASS
N032246-002D	SAMP	5	15.16	2.045	15	PASS
N032246-004D	SAMP	5	16.3	0.99	15	PASS
N032246-005C	SAMP	5	2.25	3.073	15	PASS
N032246-007D	SAMP	5	11.44	1.21	15	PASS
CCV4	CCV	1	19.49	1.53	15	PASS
CCB4	CCB	1	0.11	16.032	15	<PQL
ICSA2	ICSA	1	0.08	23.8	15	<PQL
ICSAB2	ICSAB	1	22.36	0.2	15	PASS

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



**INJECTION LOG: 181002A**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A1002001.D	RINSE	RINSE	1	10/02/18 10:20 AM
A1002002.D	Cal Blank	IBLK	1	10/02/18 10:25 AM
A1002003.D	Std1-0.1/1 ppb	ICAL	1	10/02/18 10:31 AM
A1002004.D	Std2-0.5/5 ppb	ICAL	1	10/02/18 10:37 AM
A1002005.D	Std3-5/50 ppb	ICAL	1	10/02/18 10:42 AM
A1002006.D	Std4-10/100 ppb	ICAL	1	10/02/18 10:48 AM
A1002007.D	Std5-20/200 ppb	ICAL	1	10/02/18 10:53 AM
A1002008.D	Std6-40/400 ppb	ICAL	1	10/02/18 10:59 AM
A1002009.D	Std7-100/1000 ppb	ICAL	1	10/02/18 11:05 AM
A1002010.D	Std8-200/2000 ppb	ICAL	1	10/02/18 11:10 AM
A1002011.D	ICV	ICV	1	10/02/18 11:16 AM
A1002012.D	ICB	ICB	1	10/02/18 11:21 AM
A1002013.D	LLICV	CCV1	1	10/02/18 11:27 AM
A1002014.D	ICSA1	ICSA	1	10/02/18 11:32 AM
A1002015.D	ICSAB1	ICSAB	1	10/02/18 11:38 AM
A1002016.D	LLICV	CCV1	1	10/02/18 11:44 AM
A1002017.D	N032299-001A	SAMP	1	10/02/18 11:49 AM
A1002018.D	N032299-001A	SAMP	5	10/02/18 11:55 AM
A1002019.D	MB-70807	MBLK	1	10/02/18 12:00 PM
A1002020.D	LCS-70807	LCS	1	10/02/18 12:06 PM
A1002021.D	N032205-001D	SAMP	1	10/02/18 12:11 PM
A1002022.D	N032205-001D	SAMP	5	10/02/18 12:17 PM
A1002023.D	N032205-001D-PS	PS	1	10/02/18 12:23 PM
A1002024.D	N032205-001D-MS	MS	1	10/02/18 12:28 PM
A1002025.D	N032205-001D-MSD	MSD	1	10/02/18 12:34 PM
A1002026.D	N032205-002D	SAMP	1	10/02/18 12:39 PM
A1002027.D	CCV1	CCV	1	10/02/18 12:45 PM
A1002028.D	CCB1	CCB	1	10/02/18 12:50 PM
A1002029.D	N032205-003D	SAMP	1	10/02/18 12:56 PM
A1002030.D	N032205-004D	SAMP	1	10/02/18 1:02 PM
A1002031.D	N032216-001D	SAMP	1	10/02/18 1:07 PM
A1002032.D	N032216-002D	SAMP	1	10/02/18 1:13 PM
A1002033.D	N032216-003D	SAMP	1	10/02/18 1:18 PM
A1002034.D	N032246-001D	SAMP	1	10/02/18 1:24 PM
A1002035.D	N032246-002D	SAMP	1	10/02/18 1:30 PM
A1002036.D	N032246-003D	SAMP	1	10/02/18 1:35 PM
A1002037.D	N032246-004D	SAMP	1	10/02/18 1:41 PM
A1002038.D	N032246-005C	SAMP	1	10/02/18 1:46 PM
A1002039.D	CCV2	CCV	1	10/02/18 1:52 PM
A1002040.D	CCB2	CCB	1	10/02/18 1:58 PM
A1002041.D	N032246-006C	SAMP	1	10/02/18 2:03 PM
A1002042.D	N032246-007D	SAMP	1	10/02/18 2:09 PM

**INJECTION LOG: 181002A**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A1002043.D	N032246-008D	SAMP	1	10/02/18 2:14 PM
A1002044.D	N032205-003D	SAMP	10	10/02/18 2:20 PM
A1002045.D	N032246-003D	SAMP	5	10/02/18 2:25 PM
A1002046.D	N032246-008D	SAMP	5	10/02/18 2:31 PM
A1002047.D	N032205-002D	SAMP	1	10/02/18 2:37 PM
A1002048.D	N032216-001D	SAMP	1	10/02/18 2:42 PM
A1002049.D	N032216-002D	SAMP	5	10/02/18 2:48 PM
A1002050.D	N032216-003D	SAMP	5	10/02/18 2:53 PM
A1002051.D	CCV3	CCV	1	10/02/18 3:06 PM
A1002052.D	CCB3	CCB	1	10/02/18 3:11 PM
A1002053.D	N032205-002D	SAMP	1	10/02/18 3:17 PM
A1002054.D	N032205-002D	SAMP	1	10/02/18 3:22 PM
A1002055.D	N032216-001D	SAMP	5	10/02/18 3:28 PM
A1002056.D	N032246-001D	SAMP	5	10/02/18 3:34 PM
A1002057.D	N032246-002D	SAMP	5	10/02/18 3:39 PM
A1002058.D	N032246-004D	SAMP	5	10/02/18 3:45 PM
A1002059.D	N032246-005C	SAMP	5	10/02/18 3:50 PM
A1002060.D	N032246-007D	SAMP	5	10/02/18 3:56 PM
A1002061.D	CCV4	CCV	1	10/02/18 4:02 PM
A1002062.D	CCB4	CCB	1	10/02/18 4:07 PM
A1002063.D	ICSA2	ICSA	1	10/02/18 4:13 PM
A1002064.D	ICSAB2	ICSAB	1	10/02/18 4:18 PM
A1002065.D	MB-70830	MBLK	1	10/02/18 5:21 PM
A1002066.D	LCS-70830	LCS	1	10/02/18 5:27 PM
A1002067.D	N032289-001A	SAMP	1	10/02/18 5:32 PM
A1002068.D	N032289-001A	SAMP	5	10/02/18 5:38 PM
A1002069.D	N032289-001A-PS	PS	1	10/02/18 5:43 PM
A1002070.D	N032289-001A-MS	MS	1	10/02/18 5:49 PM
A1002071.D	N032289-001A-MSD	MSD	1	10/02/18 5:55 PM
A1002072.D	N032289-002A	SAMP	1	10/02/18 6:00 PM
A1002073.D	N032289-003A	SAMP	1	10/02/18 6:06 PM
A1002074.D	CCV5	CCV	1	10/02/18 6:11 PM
A1002075.D	CCB5	CCB	1	10/02/18 6:17 PM
A1002076.D	ICSA3	ICSA	1	10/02/18 6:22 PM
A1002077.D	ICSAB3	ICSAB	1	10/02/18 6:28 PM

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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ASSET Laboratories

*Murphy* 10/9/2018

PREP BATCH REPORT

Page: 1 of 2

Prep Start Date: **9/27/2018 8:43:28**

Reviewed/ Date: \_\_\_\_\_

Prep End Date: **9/27/2018 3:00:00**

Initials/ Date: for

Prep Factor Units  
mL / mL

Temp. (°C):  
**95**

Location:  
**DB-2-47**

Prep Batch **70807** Prep Code: **3010\_W\_MSDI**

Technician **Mark Gesmundo**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70807	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70807	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N032205-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032205-001D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032205-001D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032205-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032205-003D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032205-004D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032216-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032216-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032216-003D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-003D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **9/27/2018 8:43:28**

Reviewed/ Date: 10/9/2018

Page: 2 of 2

Prep End Date: **9/27/2018 3:00:00**

Initials/ Date: for

Prep Factor Units

Temp. (°C):

Location:

Prep Batch **70807** Prep Code: **3010\_W\_MSDI**

Technician **Mark Gesmundo**

mL / mL

**95**

**DB-2-47**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N032246-004D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-005C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-006C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-007D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-008D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

# INSTRUMENT TUNING CHECK



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 2 Oct 2018 09:48:11 am  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	200454.00	0.00	
24 Mg	538509.00	0.00	
25 Mg	69976.20	0.00	
26 Mg	78965.50	0.00	
59 Co	437148.00	0.00	
115 In	602602.00	0.00	
206 Pb	190085.00	0.00	
207 Pb	167626.00	0.00	
208 Pb	408337.00	0.00	

## RSD (%)

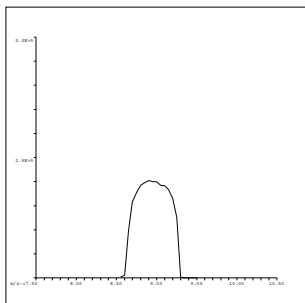
Element	Actual	Required	Flag
9 Be	0.90	5.00	
24 Mg	0.36	5.00	
25 Mg	2.29	5.00	
26 Mg	0.56	5.00	
59 Co	0.71	5.00	
115 In	1.21	5.00	
206 Pb	0.95	5.00	
207 Pb	0.86	5.00	
208 Pb	0.79	5.00	

## Ion Ratio

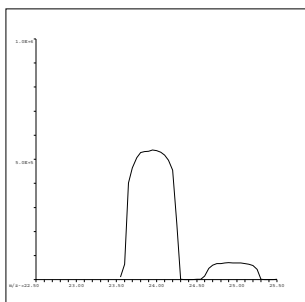
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

## Maximum Bkg. Count (CPS)

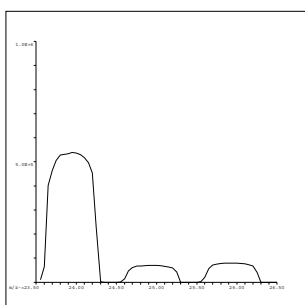
Element	Actual	Required	Flag
---------	--------	----------	------



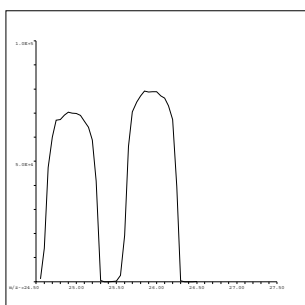
9 Be  
Mass Calib.  
Actual: 8.95  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



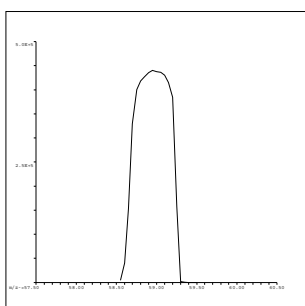
24 Mg  
Mass Calib.  
Actual: 23.95  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

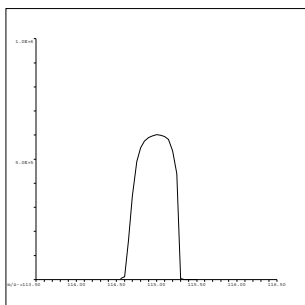


26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

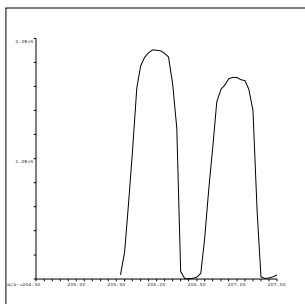


59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

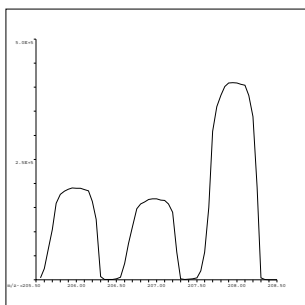




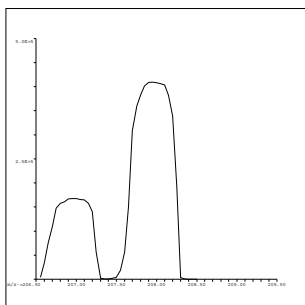
115 In  
Mass Calib.  
Actual: 115.00  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.00  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.00  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 208.00  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

QC Tune Result:Pass

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

INITIAL CALIBRATION SUMMARY: 181002A

Instrument ID: ICPMS-02

Analyte	Data File	A1002002.D	A1002003.D	A1002004.D	A1002005.D	A1002006.D	A1002007.D	A1002008.D	A1002009.D	A1002010.D	R
	Acq. Date-Time	10/02/2018 10:25 AM	10/02/2018 10:31 AM	10/02/2018 10:37 AM	10/02/2018 10:42 AM	10/02/2018 10:48 AM	10/02/2018 10:53 AM	10/02/2018 10:59 AM	10/02/2018 11:05 AM	10/02/2018 11:10 AM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	2	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std1-0.1/1 ppb	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.1/1 ug/L	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L		
45 Sc (ISTD) [ 2 ]	CPS	64982.8		76629.1	77148.2	77172.8	76407.4	76713.1	73269	73568.1	
55 Mn [ 2 ]	CPS	152.1		1493.1	13585.4	26687.5	52250.1	105082.2	250680.4	490730.1	0.9999
52 Cr [ 2 ]	CPS	301.6		3025.7	27867.8	55480.2	109795.8	218404.2	516748.5	1020118.9	1.0000
72 Ge (ISTD) [ 1 ]	CPS	38455.8		45037.1	44846.8	45715.8	44912.4	45150.9	43465.2	42898	
78 Se [ 1 ]	CPS	0		106.7	816.7	1719	3083.7	6433.7	15162	30360.2	1.0000
72 Ge (ISTD) [ 2 ]	CPS	36362.3	42330.2	41729.5	42890.4	42752.2	42129.5	42315.6	40825.1	40764.8	
75 As [ 2 ]	CPS	37.3	96	311.6	2869.2	5537	10953.9	21867.1	52489.8	103962.8	1.0000
103 Rh (ISTD) [ 2 ]	CPS	1014183.3		1188178.8	1196083.9	1195849.2	1177805.2	1191052.6	1130998.4	1121845.4	
95 Mo [ 2 ]	CPS	92.2		1402.3	13561.7	27585.5	54742.8	111810.9	265045.2	528584.6	1.0000

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MSST-180618C

Calibration Acceptance Criteria: > 0.995 Correlation

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159612</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.396	0.10	10.00	0	104	90	110				
Manganese	106.152	0.50	100.0	0	106	90	110				
Molybdenum	10.342	0.50	10.00	0	103	90	110				
Selenium	10.377	0.50	10.00	0	104	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159617</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.102	0.10	0.1000	0	102	80	120				
Manganese	0.535	0.50	0.5000	0	107	80	120				
Molybdenum	0.586	0.50	0.5000	0	117	80	120				
Selenium	0.530	0.50	0.5000	0	106	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159628</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.873	0.10	20.00	0	99.4	90	110				
Manganese	20.811	0.50	20.00	0	104	90	110				
Molybdenum	19.389	0.50	20.00	0	96.9	90	110				
Selenium	20.898	0.50	20.00	0	104	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159640</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.255	0.10	20.00	0	96.3	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159640</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.734	0.50	20.00	0	104	90	110				
Molybdenum	19.295	0.50	20.00	0	96.5	90	110				
Selenium	20.100	0.50	20.00	0	101	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159652</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.826	0.10	20.00	0	99.1	90	110				
Manganese	20.312	0.50	20.00	0	102	90	110				
Molybdenum	19.952	0.50	20.00	0	99.8	90	110				
Selenium	20.297	0.50	20.00	0	101	90	110				

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159662</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.610	0.10	20.00	0	98.0	90	110				
Manganese	20.159	0.50	20.00	0	101	90	110				
Molybdenum	19.485	0.50	20.00	0	97.4	90	110				
Selenium	21.312	0.50	20.00	0	107	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>ICV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159822</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	10.363	1.0	10.00	0	104 90 110

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159827</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	1.049	1.0	1.000	0	105 80 120

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159838</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	21.255	1.0	20.00	0	106 90 110

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159850</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	21.261	1.0	20.00	0	106 90 110

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159862</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	20.634	1.0	20.00	0	103 90 110

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 6020DIS\_CrPGE

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159872</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.661	1.0	20.00	0	103	90	110				

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference



# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159613</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159629</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159641</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159653</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159653</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159663</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159823</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159839</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159851</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159863</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159873</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159615</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159616</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	21.288	0.10	20.00	0	106	80	120				
Manganese	16.396	0.50	20.00	0	82.0	80	120				
Molybdenum	22.291	0.50	20.00	0	111	80	120				
Selenium	19.033	0.50	20.00	0	95.2	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159664</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159665</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	20.900	0.10	20.00	0	105	80	120				
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	ICSAB2	SampType:	ICSAB	TestCode:	6020_DIS	Units:	µg/L	Prep Date:		RunNo:	128979
Client ID:	ICSAB	Batch ID:	R128979	TestNo:	EPA 6020	Analysis Date:	10/2/2018	SeqNo:	3159665		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	16.059	0.50	20.00	0	80.3	80	120				
Molybdenum	22.363	0.50	20.00	0	112	80	120				
Selenium	21.003	0.50	20.00	0	105	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159825</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159825</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	21.225	1.0	20.00	0	106	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159874</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159875</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	21.675	1.0	20.00	0	108	80	120				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## INTERNAL STANDARD: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	64982.8	64982.8	100	PASS	70-125	36362.3	36362.3	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	76859.3	64982.8	118.28	PASS	70-125	42330.2	36362.3	116.41	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	76629.1	64982.8	117.92	PASS	70-125	41729.5	36362.3	114.76	PASS	70-125
Std3-5/50 ppb	ICAL	1	77148.2	64982.8	118.72	PASS	70-125	42890.4	36362.3	117.95	PASS	70-125
Std4-10/100 ppb	ICAL	1	77172.8	64982.8	118.76	PASS	70-125	42752.2	36362.3	117.57	PASS	70-125
Std5-20/200 ppb	ICAL	1	76407.4	64982.8	117.58	PASS	70-125	42129.5	36362.3	115.86	PASS	70-125
Std6-40/400 ppb	ICAL	1	76713.1	64982.8	118.05	PASS	70-125	42315.6	36362.3	116.37	PASS	70-125
Std7-100/1000 ppb	ICAL	1	73269	64982.8	112.75	PASS	70-125	40825.1	36362.3	112.27	PASS	70-125
Std8-200/2000 ppb	ICAL	1	73568.1	64982.8	113.21	PASS	70-125	40764.8	36362.3	112.11	PASS	70-125
ICV	ICV	1	74580	64982.8	114.77	PASS	70-125	41570.3	36362.3	114.32	PASS	70-125
ICB	ICB	1	64254.3	64982.8	98.88	PASS	70-125	35264.4	36362.3	96.98	PASS	70-125
LLICV	CCV1	1	76172.9	64982.8	117.22	PASS	70-125	41884.5	36362.3	115.19	PASS	70-125
ICSA1	ICSA	1	75938.4	64982.8	116.86	PASS	70-125	40656.8	36362.3	111.81	PASS	70-125
ICSAB1	ICSAB	1	74601.3	64982.8	114.8	PASS	70-125	41715.1	36362.3	114.72	PASS	70-125
LLICV	CCV1	1	65561.5	64982.8	100.89	PASS	70-125	36796.6	36362.3	101.19	PASS	70-125
MB-70807	MBLK	1	62217.6	64982.8	95.74	PASS	70-125	35644.1	36362.3	98.025	PASS	70-125
LCS-70807	LCS	1	62241	64982.8	95.78	PASS	70-125	37284.2	36362.3	102.54	PASS	70-125
N032205-001D	SAMP	1	53577.9	64982.8	82.45	PASS	70-125	29662.1	36362.3	81.57	PASS	70-125
N032205-001D	SAMP	5	60923.1	64982.8	93.75	PASS	70-125	34678.7	36362.3	95.37	PASS	70-125
N032205-001D-PS	PS	1	61369.1	64982.8	94.44	PASS	70-125	34175.3	36362.3	93.99	PASS	70-125
N032205-001D-MS	MS	1	64228.4	64982.8	98.84	PASS	70-125	36082.8	36362.3	99.23	PASS	70-125
N032205-001D-MSD	MSD	1	64738.2	64982.8	99.62	PASS	70-125	35791.2	36362.3	98.43	PASS	70-125
N032205-002D	SAMP	1	61469.4	64982.8	94.59	PASS	70-125	34009.5	36362.3	93.53	PASS	70-125
CCV1	CCV	1	59869.1	64982.8	92.13	PASS	70-125	35997.1	36362.3	99	PASS	70-125
CCB1	CCB	1	65108.5	64982.8	100.19	PASS	70-125	37365.6	36362.3	102.76	PASS	70-125
N032205-003D	SAMP	1	54561.1	64982.8	83.96	PASS	70-125	29140.1	36362.3	80.14	PASS	70-125
N032205-004D	SAMP	1	58685.8	64982.8	90.31	PASS	70-125	31553.3	36362.3	86.77	PASS	70-125
N032216-001D	SAMP	1	55227.7	64982.8	84.99	PASS	70-125	29721.1	36362.3	81.74	PASS	70-125
N032216-002D	SAMP	1	53787.5	64982.8	82.77	PASS	70-125	28966.3	36362.3	79.66	PASS	70-125
N032216-003D	SAMP	1	52384.1	64982.8	80.61	PASS	70-125	28611.2	36362.3	78.68	PASS	70-125
N032246-001D	SAMP	1	51442.3	64982.8	79.16	PASS	70-125	27941.2	36362.3	76.84	PASS	70-125
N032246-002D	SAMP	1	52333.9	64982.8	80.54	PASS	70-125	28310.7	36362.3	77.86	PASS	70-125
N032246-003D	SAMP	1	51863.5	64982.8	79.81	PASS	70-125	28232.9	36362.3	77.64	PASS	70-125
N032246-004D	SAMP	1	51826.9	64982.8	79.75	PASS	70-125	28350.8	36362.3	77.97	PASS	70-125
N032246-005C	SAMP	1	59482.2	64982.8	91.54	PASS	70-125	33330.3	36362.3	91.66	PASS	70-125
CCV2	CCV	1	58943.7	64982.8	90.71	PASS	70-125	35763.3	36362.3	98.35	PASS	70-125
CCB2	CCB	1	62673.8	64982.8	96.45	PASS	70-125	37675.4	36362.3	103.61	PASS	70-125
N032246-006C	SAMP	1	59091.1	64982.8	90.93	PASS	70-125	32949.4	36362.3	90.61	PASS	70-125
N032246-007D	SAMP	1	51628.4	64982.8	79.45	PASS	70-125	28673.6	36362.3	78.86	PASS	70-125
N032246-008D	SAMP	1	57665.9	64982.8	88.74	PASS	70-125	32699	36362.3	89.93	PASS	70-125
N032205-003D	SAMP	10	61512.9	64982.8	94.66	PASS	70-125	36062.7	36362.3	99.18	PASS	70-125

INTERNAL STANDARD: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
N032246-003D	SAMP	5	57243.3	64982.8	88.09	PASS	70-125	32896	36362.3	90.47	PASS	70-125
N032246-008D	SAMP	5	59840.3	64982.8	92.086	PASS	70-125	34923.6	36362.3	96.043	PASS	70-125
N032205-002D	SAMP	1	55074.8	64982.8	84.75	PASS	70-125	31291.8	36362.3	86.056	PASS	70-125
N032216-001D	SAMP	1	50684.1	64982.8	78	PASS	70-125	27797.6	36362.3	76.45	PASS	70-125
N032216-002D	SAMP	5	57903.5	64982.8	89.11	PASS	70-125	32972.9	36362.3	90.68	PASS	70-125
N032216-003D	SAMP	5	57292.4	64982.8	88.17	PASS	70-125	32781.3	36362.3	90.15	PASS	70-125
CCV3	CCV	1	74880.4	64982.8	115.23	PASS	70-125	44654	36362.3	122.8	PASS	70-125
CCB3	CCB	1	60589.5	64982.8	93.24	PASS	70-125	36238.6	36362.3	99.66	PASS	70-125
N032205-002D	SAMP	1	52382.8	64982.8	80.61	PASS	70-125	30690.6	36362.3	84.4	PASS	70-125
N032205-002D	SAMP	1	54863	64982.8	84.43	PASS	70-125	31462.2	36362.3	86.52	PASS	70-125
N032216-001D	SAMP	5	58036	64982.8	89.31	PASS	70-125	33088.7	36362.3	91	PASS	70-125
N032246-001D	SAMP	5	57041.5	64982.8	87.78	PASS	70-125	33152	36362.3	91.17	PASS	70-125
N032246-002D	SAMP	5	56949	64982.8	87.64	PASS	70-125	32353.8	36362.3	88.98	PASS	70-125
N032246-004D	SAMP	5	55981.2	64982.8	86.15	PASS	70-125	32237	36362.3	88.66	PASS	70-125
N032246-005C	SAMP	5	59244.8	64982.8	91.17	PASS	70-125	34968.2	36362.3	96.17	PASS	70-125
N032246-007D	SAMP	5	55709.2	64982.8	85.73	PASS	70-125	32887.1	36362.3	90.44	PASS	70-125
CCV4	CCV	1	70561.7	64982.8	108.59	PASS	70-125	41985.8	36362.3	115.47	PASS	70-125
CCB4	CCB	1	57764.1	64982.8	88.89	PASS	70-125	34942.6	36362.3	96.096	PASS	70-125
ICSA2	ICSA	1	67704.6	64982.8	104.19	PASS	70-125	39205.5	36362.3	107.82	PASS	70-125
ICSAB2	ICSAB	1	65574.8	64982.8	100.91	PASS	70-125	38303.4	36362.3	105.34	PASS	70-125
CCV5	CCV	1	54117.3	64982.8	83.28	PASS	70-125	33190	36362.3	91.28	PASS	70-125
CCB5	CCB	1	44777.5	64982.8	68.91	NR!	70-125	27592.8	36362.3	75.88	PASS	70-125
ICSA3	ICSA	1	54124.1	64982.8	83.29	PASS	70-125	31867.4	36362.3	87.64	PASS	70-125
ICSAB3	ICSAB	1	52860	64982.8	81.34	PASS	70-125	31179.4	36362.3	85.75	PASS	70-125

## INTERNAL STANDARD: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]					103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	38455.8	38455.8	100	PASS	70-125	1014183.3	1014183.3	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	44202.7	38455.8	114.94	PASS	70-125	1180325.2	1014183.3	116.38	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	45037.1	38455.8	117.11	PASS	70-125	1188178.8	1014183.3	117.16	PASS	70-125
Std3-5/50 ppb	ICAL	1	44846.8	38455.8	116.62	PASS	70-125	1196083.9	1014183.3	117.94	PASS	70-125
Std4-10/100 ppb	ICAL	1	45715.8	38455.8	118.88	PASS	70-125	1195849.2	1014183.3	117.91	PASS	70-125
Std5-20/200 ppb	ICAL	1	44912.4	38455.8	116.79	PASS	70-125	1177805.2	1014183.3	116.13	PASS	70-125
Std6-40/400 ppb	ICAL	1	45150.9	38455.8	117.41	PASS	70-125	1191052.6	1014183.3	117.44	PASS	70-125
Std7-100/1000 ppb	ICAL	1	43465.2	38455.8	113.03	PASS	70-125	1130998.4	1014183.3	111.52	PASS	70-125
Std8-200/2000 ppb	ICAL	1	42898	38455.8	111.55	PASS	70-125	1121845.4	1014183.3	110.62	PASS	70-125
ICV	ICV	1	43850.7	38455.8	114.03	PASS	70-125	1173966.2	1014183.3	115.75	PASS	70-125
ICB	ICB	1	37628.6	38455.8	97.85	PASS	70-125	1000566.2	1014183.3	98.66	PASS	70-125
LLICV	CCV1	1	45051.8	38455.8	117.15	PASS	70-125	1197941	1014183.3	118.12	PASS	70-125
ICSA1	ICSA	1	45585.4	38455.8	118.54	PASS	70-125	1079306.9	1014183.3	106.42	PASS	70-125
ICSAB1	ICSAB	1	45573.2	38455.8	118.51	PASS	70-125	1080534.3	1014183.3	106.54	PASS	70-125
LLICV	CCV1	1	42834.7	38455.8	111.39	PASS	70-125	1031625.5	1014183.3	101.72	PASS	70-125
MB-70807	MBLK	1	43765.9	38455.8	113.81	PASS	70-125	971871.2	1014183.3	95.83	PASS	70-125
LCS-70807	LCS	1	33600.9	38455.8	87.38	PASS	70-125	1054786.6	1014183.3	104	PASS	70-125
N032205-001D	SAMP	1	33428.2	38455.8	86.93	PASS	70-125	733626.8	1014183.3	72.34	PASS	70-125
N032205-001D	SAMP	5	40086.6	38455.8	104.24	PASS	70-125	886055.9	1014183.3	87.37	PASS	70-125
N032205-001D-PS	PS	1	39503.9	38455.8	102.73	PASS	70-125	840299.8	1014183.3	82.85	PASS	70-125
N032205-001D-MS	MS	1	41291.8	38455.8	107.37	PASS	70-125	881687.5	1014183.3	86.94	PASS	70-125
N032205-001D-MSD	MSD	1	41453.2	38455.8	107.79	PASS	70-125	893906.8	1014183.3	88.14	PASS	70-125
N032205-002D	SAMP	1	38434.8	38455.8	99.95	PASS	70-125	845396.9	1014183.3	83.36	PASS	70-125
CCV1	CCV	1	32283.7	38455.8	83.95	PASS	70-125	1032604.2	1014183.3	101.82	PASS	70-125
CCB1	CCB	1	42532.8	38455.8	110.6	PASS	70-125	1035781.7	1014183.3	102.13	PASS	70-125
N032205-003D	SAMP	1	30268.7	38455.8	78.71	PASS	70-125	732441.6	1014183.3	72.22	PASS	70-125
N032205-004D	SAMP	1	32073.4	38455.8	83.4	PASS	70-125	796732.3	1014183.3	78.56	PASS	70-125
N032216-001D	SAMP	1	27812.1	38455.8	72.32	PASS	70-125	733508.1	1014183.3	72.33	PASS	70-125
N032216-002D	SAMP	1	25786.6	38455.8	67.055	NR!	70-125	712745.8	1014183.3	70.28	PASS	70-125
N032216-003D	SAMP	1	25311.3	38455.8	65.82	NR!	70-125	697477.8	1014183.3	68.77	NR!	70-125
N032246-001D	SAMP	1	24450	38455.8	63.58	NR!	70-125	683489.5	1014183.3	67.39	NR!	70-125
N032246-002D	SAMP	1	25146.7	38455.8	65.39	NR!	70-125	703118.1	1014183.3	69.33	NR!	70-125
N032246-003D	SAMP	1	24912.9	38455.8	64.78	NR!	70-125	699781.4	1014183.3	69	NR!	70-125
N032246-004D	SAMP	1	24810.6	38455.8	64.52	NR!	70-125	703603	1014183.3	69.38	NR!	70-125
N032246-005C	SAMP	1	31147	38455.8	80.99	PASS	70-125	856296.9	1014183.3	84.43	PASS	70-125
CCV2	CCV	1	31861.7	38455.8	82.85	PASS	70-125	1014174	1014183.3	100	PASS	70-125
CCB2	CCB	1	36949.2	38455.8	96.082	PASS	70-125	1041222.3	1014183.3	102.67	PASS	70-125
N032246-006C	SAMP	1	30285.4	38455.8	78.75	PASS	70-125	848791.2	1014183.3	83.69	PASS	70-125
N032246-007D	SAMP	1	25038.6	38455.8	65.11	NR!	70-125	716881.8	1014183.3	70.69	PASS	70-125
N032246-008D	SAMP	1	29881.4	38455.8	77.7	PASS	70-125	830021.1	1014183.3	81.84	PASS	70-125
N032205-003D	SAMP	10	34396.9	38455.8	89.45	PASS	70-125	937131.8	1014183.3	92.4	PASS	70-125

INTERNAL STANDARD: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]					103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
N032246-003D	SAMP	5	31222.7	38455.8	81.19	PASS	70-125	855892.4	1014183.3	84.39	PASS	70-125
N032246-008D	SAMP	5	33340.2	38455.8	86.7	PASS	70-125	912912.7	1014183.3	90.015	PASS	70-125
N032205-002D	SAMP	1	27738.7	38455.8	72.13	PASS	70-125	786922.4	1014183.3	77.59	PASS	70-125
N032216-001D	SAMP	1	23752.3	38455.8	61.77	NR!	70-125	685175.8	1014183.3	67.56	NR!	70-125
N032216-002D	SAMP	5	30731.8	38455.8	79.91	PASS	70-125	849598.5	1014183.3	83.77	PASS	70-125
N032216-003D	SAMP	5	30400.1	38455.8	79.052	PASS	70-125	839462.1	1014183.3	82.77	PASS	70-125
CCV3	CCV	1	46230.7	38455.8	120.22	PASS	70-125	1216387.9	1014183.3	119.94	PASS	70-125
CCB3	CCB	1	36258.7	38455.8	94.29	PASS	70-125	1002866.5	1014183.3	98.88	PASS	70-125
N032205-002D	SAMP	1	27472.7	38455.8	71.44	PASS	70-125	765030	1014183.3	75.43	PASS	70-125
N032205-002D	SAMP	1	28418.7	38455.8	73.9	PASS	70-125	794842.7	1014183.3	78.37	PASS	70-125
N032216-001D	SAMP	5	31136.9	38455.8	80.97	PASS	70-125	855157.4	1014183.3	84.32	PASS	70-125
N032246-001D	SAMP	5	30848.7	38455.8	80.22	PASS	70-125	851183.1	1014183.3	83.93	PASS	70-125
N032246-002D	SAMP	5	30626.1	38455.8	79.64	PASS	70-125	841173.1	1014183.3	82.94	PASS	70-125
N032246-004D	SAMP	5	30043.8	38455.8	78.13	PASS	70-125	829293.1	1014183.3	81.77	PASS	70-125
N032246-005C	SAMP	5	33766.7	38455.8	87.81	PASS	70-125	911993.1	1014183.3	89.92	PASS	70-125
N032246-007D	SAMP	5	30957.8	38455.8	80.5	PASS	70-125	845716.3	1014183.3	83.39	PASS	70-125
CCV4	CCV	1	42265.3	38455.8	109.91	PASS	70-125	1161785.7	1014183.3	114.55	PASS	70-125
CCB4	CCB	1	34845.8	38455.8	90.61	PASS	70-125	978458.2	1014183.3	96.48	PASS	70-125
ICSA2	ICSA	1	37710.9	38455.8	98.063	PASS	70-125	1037011	1014183.3	102.25	PASS	70-125
ICSAB2	ICSAB	1	35804.3	38455.8	93.11	PASS	70-125	1001581	1014183.3	98.76	PASS	70-125
CCV5	CCV	1	31077.9	38455.8	80.81	PASS	70-125	951198.6	1014183.3	93.79	PASS	70-125
CCB5	CCB	1	26301.8	38455.8	68.39	NR!	70-125	796336.3	1014183.3	78.52	PASS	70-125
ICSA3	ICSA	1	29565.3	38455.8	76.88	PASS	70-125	858400.8	1014183.3	84.64	PASS	70-125
ICSAB3	ICSAB	1	29652.1	38455.8	77.11	PASS	70-125	839361.4	1014183.3	82.76	PASS	70-125

# SERIAL DILUTION/ POST DIGESTION SPIKE



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N032205  
Test Method: EPA 6020  
Analysis Date: 10/2/2018

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70807

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to several analytes. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032205-001D DT 5X	Arsenic	ug/L	1.447113	NA	1.557951	7.11%	10
N032205-001D DT 5X	Chromium	ug/L	1.437753	NA	1.418583	1.35%	10
N032205-001D DT 5X	Manganese	ug/L	0		0		10
N032205-001D DT 5X	Molybdenum	ug/L	15.96123	PASS	16.37062	2.50%	10
N032205-001D DT 5X	Selenium	ug/L	0	NA	1.017056	100.00%	10

Note: NA - Not applicable

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID	<b>N032205-001D-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>128979</b>		
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70807</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/2/2018</b>	SeqNo:	<b>3159624</b>		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic		12.972		0.10	10.00	1.558	114	80	120				
Manganese		113.196		0.50	100.0	0	113	80	120				
Molybdenum		28.524		0.50	10.00	16.37	122	80	120				S
Selenium		11.676		0.50	10.00	1.017	107	80	120				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032205  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>N032205-001D-PS</b>	SampType: <b>PS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159834</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	12.087	1.0	10.00	1.419	107	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Amount of Sample:** 25 mL  
**Units:** ug/L

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	LOD	PQL
ANTIMONY	0.50	0.525	0.514	0.473	0.500	0.492	0.486	0.530	0.0210	0.0660	0.100	0.50
ARSENIC	0.10	0.099	0.104	0.087	0.048	0.060	0.069	0.120	0.0259	0.0813	0.080	0.10
BARIUM	1.00	1.041	1.059	1.052	1.011	0.967	0.957	1.023	0.0403	0.1264	0.250	1.00
BERYLLIUM	0.50	0.469	0.476	0.473	0.495	0.480	0.488	0.507	0.0135	0.0424	0.100	0.50
CADMIUM	0.50	0.515	0.513	0.492	0.534	0.499	0.483	0.508	0.0168	0.0527	0.100	0.50
CHROMIUM	1.00	0.979	0.986	0.940	0.990	0.946	0.978	0.977	0.0197	0.0618	0.250	1.00
COBALT	0.50	0.499	0.489	0.486	0.488	0.465	0.502	0.505	0.0135	0.0424	0.100	0.50
COPPER	1.00	1.110	0.667	1.039	1.060	1.006	1.099	1.075	0.1544	0.4850	0.500	1.00
IRON	10.00	10.873	10.802	10.142	9.991	9.846	9.852	10.596	0.4463	1.4014	2.500	10.00
LEAD	1.00	0.928	0.931	0.899	0.996	0.990	0.987	0.997	0.0406	0.1274	0.250	1.00
MANGANESE	0.50	0.577	0.588	0.561	0.566	0.517	0.541	0.520	0.0276	0.0866	0.100	0.50
MOLYBDENUM	0.50	0.514	0.504	0.467	0.478	0.456	0.433	0.527	0.0338	0.1061	0.250	0.50
NICKEL	1.00	0.961	0.965	0.977	0.907	0.914	0.962	1.075	0.0551	0.1731	0.250	1.00
SELENIUM	0.50	0.450	0.478	0.419	0.693	0.707	0.495	0.555	0.1155	0.3628	0.400	0.50
SILVER	0.50	0.558	0.511	0.490	0.542	0.458	0.490	0.684	0.0745	0.2340	0.250	0.50
THALLIUM	0.50	0.437	0.428	0.408	0.538	0.446	0.438	0.525	0.0504	0.1583	0.250	0.50
URANIUM	0.50	0.478	0.467	0.461	0.517	0.510	0.521	0.521	0.0267	0.0838	0.100	0.50
VANADIUM	1.00	0.950	0.969	0.900	0.844	0.829	0.848	1.053	0.0820	0.2574	0.500	1.00
ZINC	10.00	11.259	11.279	10.915	9.620	9.849	9.745	10.241	0.7235	2.2717	2.500	10.00



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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Units:** ug/L

Analyte	MDLs	MDLb	MDL	LOD	PQL
ANTIMONY	0.0660	0.1564	0.1564	0.300	0.50
ARSENIC	0.0813	0.0387	0.0813	0.080	0.10
BARIUM	0.1264	0.1497	0.1497	0.300	1.00
BERYLLIUM	0.0424	0.0153	0.0424	0.100	0.50
CADMIUM	0.0527	0.0060	0.0527	0.100	0.50
CHROMIUM	0.0618	0.1298	0.1298	0.300	1.00
COBALT	0.0424	0.0339	0.0424	0.100	0.50
COPPER	0.4850	0.5459	0.5459	0.600	1.00
IRON	1.4014	4.3484	4.3484	5.000	10.00
LEAD	0.1274	0.1008	0.1274	0.300	1.00
MANGANESE	0.0866	0.2552	0.2552	0.300	0.50
MOLYBDENUM	0.1061	0.2149	0.2149	0.300	0.50
NICKEL	0.1731	0.2606	0.2606	0.300	1.00
SELENIUM	0.3628	0.0953	0.3628	0.400	0.50
SILVER	0.2340	0.2023	0.2340	0.250	0.50
THALLIUM	0.1583	0.1924	0.1924	0.300	0.50
URANIUM	0.0838	0.0020	0.0838	0.100	0.50
VANADIUM	0.2574	0.2768	0.2768	0.600	1.00
ZINC	2.2717	0.4511	2.2717	3.000	10.00



October 09, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032216

RE: PG&E Topock - GMP, RC000753.801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 25, 2018 by ASSET Laboratories .  
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in  
accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,



Quennie Manimtim  
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032216

---

**CASE NARRATIVE****SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

**Analytical Comments for EPA 218.6:**

Dilution was necessary for samples N032216-001 and -002 due to matrix interference. Samples were analyzed at lower dilution however matrix spike recovery and retention time criteria were not met indicating possible matrix interference. Samples were reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.

**Analytical Comments for EPA 6020\_Dissolved:**

Dilution was necessary on some analytes for samples N032216-002 and -003 due to associated internal standard not meeting method criteria possibly due to matrix interference. Samples were analyzed with dilution and internal standard met method criteria. Affected analytes for this failed internal standard were reported at dilution that meet internal standard recovery limit.

Matrix Spike Duplicate (MSD) is outside recovery criteria for Molybdenum in QC sample N032205-001D-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

**Analytical Comments for SM 4500-NO3F:**

Matrix Spike Duplicate (MSD) is outside recovery criteria in QC sample N032205-004CMSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



**ASSET Laboratories**

Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032216  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032216-001A	MW-60BR-245-LF_S-Q318	Groundwater	9/25/2018 11:37:00 AM	9/25/2018	10/9/2018
N032216-001B	MW-60BR-245-LF_S-Q318	Groundwater	9/25/2018 11:37:00 AM	9/25/2018	10/9/2018
N032216-001C	MW-60BR-245-LF_S-Q318	Groundwater	9/25/2018 11:37:00 AM	9/25/2018	10/9/2018
N032216-001D	MW-60BR-245-LF_S-Q318	Groundwater	9/25/2018 11:37:00 AM	9/25/2018	10/9/2018
N032216-002A	MW-60BR-245-LF_D-Q318	Groundwater	9/25/2018 12:22:00 PM	9/25/2018	10/9/2018
N032216-002B	MW-60BR-245-LF_D-Q318	Groundwater	9/25/2018 12:22:00 PM	9/25/2018	10/9/2018
N032216-002C	MW-60BR-245-LF_D-Q318	Groundwater	9/25/2018 12:22:00 PM	9/25/2018	10/9/2018
N032216-002D	MW-60BR-245-LF_D-Q318	Groundwater	9/25/2018 12:22:00 PM	9/25/2018	10/9/2018
N032216-003A	MW-60BR-245-3V-Q318	Groundwater	9/25/2018 4:23:00 PM	9/25/2018	10/9/2018
N032216-003B	MW-60BR-245-3V-Q318	Groundwater	9/25/2018 4:23:00 PM	9/25/2018	10/9/2018
N032216-003C	MW-60BR-245-3V-Q318	Groundwater	9/25/2018 4:23:00 PM	9/25/2018	10/9/2018
N032216-003D	MW-60BR-245-3V-Q318	Groundwater	9/25/2018 4:23:00 PM	9/25/2018	10/9/2018
N032216-004A	MW-702-Q318	Groundwater	9/25/2018 4:40:00 PM	9/25/2018	10/9/2018



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-001

**Client Sample ID:** MW-60BR-245-LF\_S-Q318  
**Collection Date:** 9/25/2018 11:37:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180926C</b>	QC Batch: <b>R128841</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/26/2018 11:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-002

**Client Sample ID:** MW-60BR-245-LF\_D-Q318  
**Collection Date:** 9/25/2018 12:22:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180926C</b>	QC Batch: <b>R128841</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/26/2018 11:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-003

**Client Sample ID:** MW-60BR-245-3V-Q318  
**Collection Date:** 9/25/2018 4:23:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180926C</b>	QC Batch: <b>R128841</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	16000	0.10	0.10		umhos/cm	1	9/26/2018 11:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID <b>N032216-003BDUP</b>	SampType: <b>DUP</b>	TestCode: <b>120.1_WPGE</b>	Units: <b>umhos/cm</b>	Prep Date:	RunNo: <b>128841</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128841</b>	TestNo: <b>EPA 120.1</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152567</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	15620.000	0.10						15640	0.128		2

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-001

**Client Sample ID:** MW-60BR-245-LF\_S-Q318  
**Collection Date:** 9/25/2018 11:37:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180926A</b>	QC Batch: <b>R128898</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.17	1.0		µg/L	5	9/26/2018 02:18 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	10/2/2018 01:07 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-002

**Client Sample ID:** MW-60BR-245-LF\_D-Q318  
**Collection Date:** 9/25/2018 12:22:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180926A</b>	QC Batch: <b>R128898</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	6.4	0.17	1.0		µg/L	5	9/26/2018 02:37 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>
Chromium	6.2	0.13	1.0		µg/L	1	10/2/2018 01:13 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-003

**Client Sample ID:** MW-60BR-245-3V-Q318  
**Collection Date:** 9/25/2018 4:23:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180926A</b>	QC Batch: <b>R128898</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	76	0.33	2.0		µg/L	10	9/26/2018 12:24 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>
Chromium	81	0.13	1.0		µg/L	1	10/2/2018 01:18 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-004

**Client Sample ID:** MW-702-Q318  
**Collection Date:** 9/25/2018 4:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180926A</b>	QC Batch: <b>R128898</b>			PrepDate			Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20	µg/L	1		9/26/2018 01:59 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>MB-R128898</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>
Client ID: <b>PBW</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154424</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>LCS-R128898</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154425</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.153	0.20	5.000	0	103 90 110

Sample ID <b>N032216-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154430</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	125.542	2.0	50.00	75.60	99.9 90 110

Sample ID <b>N032216-003AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154431</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	125.499	2.0	50.00	75.60	99.8 90 110 125.5 0.0343 20

Sample ID <b>N032216-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154435</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	1.086	0.20	1.000	0.06390	102 90 110

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032216-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154437</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.488	1.0	5.000	0.4415	101	90	110				

Sample ID <b>N032216-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154439</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	11.177	1.0	5.000	6.361	96.3	90	110				

Sample ID <b>N032218-001GDUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154443</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	18.016	0.40						18.04	0.143	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>MB-70807</b>	SampType: <b>MBLK</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159830</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>LCS-70807</b>	SampType: <b>LCS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159831</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	10.546	1.0	10.00	0	105	85	115				
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Sample ID <b>N032205-001D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159835</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	12.134	1.0	10.00	1.419	107	75	125				
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Sample ID <b>N032205-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159836</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	12.005	1.0	10.00	1.419	106	75	125	12.13	1.07	20	
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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**NEVADA** | P:702.307.2659 F:702.307.2691  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-001

**Client Sample ID:** MW-60BR-245-LF\_S-Q318  
**Collection Date:** 9/25/2018 11:37:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	ND	0.032	0.050	mg/L	1		10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-002

**Client Sample ID:** MW-60BR-245-LF\_D-Q318  
**Collection Date:** 9/25/2018 12:22:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	ND	0.032	0.050	mg/L	1		10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-003

**Client Sample ID:** MW-60BR-245-3V-Q318  
**Collection Date:** 9/25/2018 4:23:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.21	0.032	0.050	mg/L	1		10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R129025</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161938</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R129025</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161939</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.481	0.050	0.5000	0	96.2 85 115

Sample ID <b>N032205-004CMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161942</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	6.037	0.25	2.500	2.971	123 75 125

Sample ID <b>N032205-004CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161943</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	6.162	0.25	2.500	2.971	128 75 125 6.037 2.05 20 S

Sample ID <b>N032205-002CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161946</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	1.111	0.050			1.136 2.20 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-001

**Client Sample ID:** MW-60BR-245-LF\_S-Q318  
**Collection Date:** 9/25/2018 11:37:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	4.7	0.081	0.10	µg/L	1	10/2/2018 01:07 PM
Manganese	26	0.26	0.50	µg/L	1	10/2/2018 01:07 PM
Molybdenum	57	0.21	0.50	µg/L	1	10/2/2018 01:07 PM
Selenium	2.2	0.36	0.50	µg/L	1	10/2/2018 01:07 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-002

**Client Sample ID:** MW-60BR-245-LF\_D-Q318  
**Collection Date:** 9/25/2018 12:22:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

RunID: NV00922-ICP7_181002C	EPA 3010A			EPA 6020		
	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	5.3	0.081	0.10		µg/L	1 10/2/2018 01:13 PM
Manganese	26	0.26	0.50		µg/L	1 10/2/2018 01:13 PM
Molybdenum	57	0.21	0.50		µg/L	1 10/2/2018 01:13 PM
Selenium	ND	1.8	2.5		µg/L	5 10/2/2018 02:48 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-003

**Client Sample ID:** MW-60BR-245-3V-Q318  
**Collection Date:** 9/25/2018 4:23:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	9.1	0.081	0.10	µg/L	1	10/2/2018 01:18 PM
Manganese	11	0.26	0.50	µg/L	1	10/2/2018 01:18 PM
Molybdenum	58	1.1	2.5	µg/L	5	10/2/2018 02:53 PM
Selenium	3.6	1.8	2.5	µg/L	5	10/2/2018 02:53 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 EPA ID CA01638

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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>MB-70807</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159620</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>LCS-70807</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159621</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	9.987	0.10	10.00	0	99.9	85	115				
Manganese	106.685	0.50	100.0	0	107	85	115				
Molybdenum	9.797	0.50	10.00	0	98.0	85	115				
Selenium	10.086	0.50	10.00	0	101	85	115				

Sample ID <b>N032205-001D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159625</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	13.112	0.10	10.00	1.558	116	75	125				
Manganese	114.507	0.50	100.0	0	115	75	125				
Molybdenum	28.778	0.50	10.00	16.37	124	75	125				
Selenium	11.109	0.50	10.00	1.017	101	75	125				

Sample ID <b>N032205-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159626</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	13.254	0.10	10.00	1.558	117	75	125	13.11	1.08	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENT, ENERGY & WATER

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EPA ID CA01638

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	<b>N032205-001D-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128979</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70807</b>	TestNo:	<b>EPA 6020</b>	<b>EPA 3010A</b>		Analysis Date:	<b>10/2/2018</b>	SeqNo:	<b>3159626</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	113.674	0.50	100.0	0	114	75	125	114.5	0.730	20	
Molybdenum	28.930	0.50	10.00	16.37	126	75	125	28.78	0.528	20	S
Selenium	10.661	0.50	10.00	1.017	96.4	75	125	11.11	4.12	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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EPA ID CA01638

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 www.assetlaboratories.com

Page 1 of 1

Client: Arcadis		Report to: Dan Bush		Bill to: Marty Bloes		EDD Requirement		QA/QC		Sample Receipt Condition	
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis		Address:		Excel EDD		RTNE		1. Chilled	
Address: Roseville, CA 95661		Email: dan.bush@arcadis.com		Address:		Geotracker		RWQCB		2. Headspace	
Phone: 916-788-3302		Fax: 916-788-3302		Address: 1410 Rocky Ridge Dr # 330		Labspec		CaTrans		3. Container Intact	
Submitted By: Gantt Jeffers		Address: 1410 Rocky Ridge Dr # 330		Email to: mbloes@pivox.com		Others		LEVEL III		4. Seal Present	
Title: Geologist II		Phone: 916-788-3302		Phone: 949-727-1400, ext 200		Specify:		LEVEL IV		5. IR number #2	
Signature: [Signature]		Date: 9/25/2018		P.O.#		RWQCB		Regulatory		6. Method of Cooling: ICE	
Sampled By: Jordan Teramae		Signature: [Signature]		Date: 9/25/2018		Global ID:		Specify State:		Sample Temp: 4.0°C	
Project Name: PG&E Topock - GMP		Project Number: RC000753.801D		Matrix		Ground		x Sediment		250 mL poly	
I hereby authorize ASSET Labs to perform the tests indicated below.		I attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action.		Potable		Soil		1 liter poly		1 liter poly	
Surface		NPDES		Other Solid		125 mL poly		500 mL poly		500 mL poly	
Cr(VI) FF (E218.6)		NH4+2, SO4, NH4, OH		Alkalinity, Total as CaCO3 (SM232DB)		Bromide, Sulfate, Chloride (EPA 300.0)		Specific Conductance (EPA 120.1)		Total Dissolved Solids (SM2540C)	
Nitrate/Nitrite (SM4500N03 F) Nitrate: H2SO4		Metals Dissolved (SM6020A FF) (As, Cr, Mn, Mo, Se); HNO3		Dissolved metals (SM6010B FF) (Cr, Mo, Se); HNO3		Dissolved metals (SM6010B FF) (Cr, HNO3)		Dissolved metals (SM6010B FF) (Cr, Mn, Mo, Se); HNO3		Turn Around Time	
No. of Container		Container Type		PRESERVATION		Remarks		Courier		Tracking No.:	
Item No.		Laboratory Work Order No.		Sample ID/Location		Sample Date		Sample Time		Others	
1		N032216-01		MW-60BR-245-LF_S-Q318		9/25/2018		11:37		X	
2		-02		MW-60BR-245-LF_D-Q318		9/25/2018		12:22		X	
3		-03		MW-60BR-245-3V-Q318		9/25/2018		16:23		X	
4		-04		MW-702-Q318		9/25/2018		16:40		X	
5											
6											
7											
8											
9											
Relinquished by (Signature and Printed Name):		Date/Time:		Relinquished by (Signature and Printed Name):		Date/Time:		Turn Around Time (TAT)		Special Instruction:	
[Signature]		9/25/18 1645		[Signature]		9.25.18 / 1645		A < 24 Hrs or Same Day TAT		Title 22 Metals - Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Ti, V, Zn, K, Na	
Relinquished by (Signature and Printed Name):		Date/Time:		Relinquished by (Signature and Printed Name):		Date/Time:		B = Next Workday			
[Signature]		9/25/18 1900		[Signature]		9/25/18 1900		C = 2 Workdays			
Relinquished by (Signature and Printed Name):		Date/Time:		Relinquished by (Signature and Printed Name):		Date/Time:		D = 3 Workdays			
[Signature]				[Signature]				E = Routine 5-7 Workdays			
Terms		5. Trip Blanks and Equipment Blanks are labile samples.		Preservatives:		Container Type:		TAT Starts at 8 AM the following day if samples received after 3:00PM.			
1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report.		2. Regular TAT is 5-7 business days, surcharges will apply for rush turnarounds.		3. Late from 24 Hrs = 200% Next Day = 100% 2 Workdays = 50% 3 Workdays = 35% 4 Workdays = 20%		H+HCL		N=HNO3		S=H2SO4	
3. Custom EDD formats will be an additional 3% of the total project price.		4. Add 10% surcharges for Level II Data Packages, 15% for Level IV Data Packages. Surcharges applied on total project price.		7. Terms are net 30 days.		O=NaOH		C=4°C		T=Tube	
		8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed.		9. For subcontract analysis, TAT and Surcharges will vary.		Z=Zn(AC)2				V=VOA	
						Others/Specify:		M=Metal		P=Pin	
						B (NH4)2SO4/NH4OH				G=Glass	
										C=Can	

White=Laboratory Copy

Yellow=Customer's Copy

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 9/25/2018 Workorder: N032216  
 Rep sample Temp (Deg C): 4.0 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |  |  |  |
|---|--|--|--|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>   |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                                  |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                                  |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 11. All samples received within holding time?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>   |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input type="checkbox"/><br>Yes <input type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input checked="" type="checkbox"/><br>NA <input checked="" type="checkbox"/> |

Comments:

Checklist Completed By: YR  9/26/2018

Reviewed By:  LG 100118

# ASSET Laboratories

## WORK ORDER Summary

26-Sep-18

WorkOrder: N032216

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801D

QC Level: Level IV

Date Received: 9/25/2018

Comments: Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032216-001A	MW-60BR-245-LF_S-Q318	9/25/2018 11:37:00 AM	10/9/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-001B			10/9/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-001C			10/9/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-001D			10/9/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/9/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/9/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-002A	MW-60BR-245-LF_D-Q318	9/25/2018 12:22:00 PM	10/9/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-002B			10/9/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-002C			10/9/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-002D			10/9/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/9/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/9/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-003A	MW-60BR-245-3V-Q318	9/25/2018 4:23:00 PM	10/9/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-003B			10/9/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-003C			10/9/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-003D			10/9/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/9/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/9/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-004A	MW-702-Q318	9/25/2018 4:40:00 PM	10/9/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-005A	FOLDER	10/9/2018	10/9/2018		EDD	Client specific project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/9/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

# ASSET Laboratories

## WORK ORDER Summary

26-Sep-18

**WorkOrder:** N032216

**Client ID:** ARCUS02

**Project:** PG&E Topock - GMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 9/25/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032216-005A	FOLDER	10/9/2018	10/9/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

# ***ARCADIS***

Project: PG&E Topock - GMP

Project No.: RC000753.801D

ASSET Laboratories Work Order:  
N032216

## ***ANALYTICAL and QC RESULTS SAMPLE RECEIVING ITEMS***

***PRIVILEGED AND CONFIDENTIAL***



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P: 702.307.2659 F: 702.307.2691



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October 09, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032216

RE: PG&E Topock - GMP, RC000753.801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 25, 2018 by ASSET Laboratories .  
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in  
accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,



Quennie Manimtim  
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in  
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---

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032216

---

**CASE NARRATIVE****SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

**Analytical Comments for EPA 218.6:**

Dilution was necessary for samples N032216-001 and -002 due to matrix interference. Samples were analyzed at lower dilution however matrix spike recovery and retention time criteria were not met indicating possible matrix interference. Samples were reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.

**Analytical Comments for EPA 6020\_Dissolved:**

Dilution was necessary on some analytes for samples N032216-002 and -003 due to associated internal standard not meeting method criteria possibly due to matrix interference. Samples were analyzed with dilution and internal standard met method criteria. Affected analytes for this failed internal standard were reported at dilution that meet internal standard recovery limit.

Matrix Spike Duplicate (MSD) is outside recovery criteria for Molybdenum in QC sample N032205-001D-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

**Analytical Comments for SM 4500-NO3F:**

Matrix Spike Duplicate (MSD) is outside recovery criteria in QC sample N032205-004CMSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



**ASSET Laboratories**

Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032216  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032216-001A	MW-60BR-245-LF_S-Q318	Groundwater	9/25/2018 11:37:00 AM	9/25/2018	10/9/2018
N032216-001B	MW-60BR-245-LF_S-Q318	Groundwater	9/25/2018 11:37:00 AM	9/25/2018	10/9/2018
N032216-001C	MW-60BR-245-LF_S-Q318	Groundwater	9/25/2018 11:37:00 AM	9/25/2018	10/9/2018
N032216-001D	MW-60BR-245-LF_S-Q318	Groundwater	9/25/2018 11:37:00 AM	9/25/2018	10/9/2018
N032216-002A	MW-60BR-245-LF_D-Q318	Groundwater	9/25/2018 12:22:00 PM	9/25/2018	10/9/2018
N032216-002B	MW-60BR-245-LF_D-Q318	Groundwater	9/25/2018 12:22:00 PM	9/25/2018	10/9/2018
N032216-002C	MW-60BR-245-LF_D-Q318	Groundwater	9/25/2018 12:22:00 PM	9/25/2018	10/9/2018
N032216-002D	MW-60BR-245-LF_D-Q318	Groundwater	9/25/2018 12:22:00 PM	9/25/2018	10/9/2018
N032216-003A	MW-60BR-245-3V-Q318	Groundwater	9/25/2018 4:23:00 PM	9/25/2018	10/9/2018
N032216-003B	MW-60BR-245-3V-Q318	Groundwater	9/25/2018 4:23:00 PM	9/25/2018	10/9/2018
N032216-003C	MW-60BR-245-3V-Q318	Groundwater	9/25/2018 4:23:00 PM	9/25/2018	10/9/2018
N032216-003D	MW-60BR-245-3V-Q318	Groundwater	9/25/2018 4:23:00 PM	9/25/2018	10/9/2018
N032216-004A	MW-702-Q318	Groundwater	9/25/2018 4:40:00 PM	9/25/2018	10/9/2018



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-001

**Client Sample ID:** MW-60BR-245-LF\_S-Q318  
**Collection Date:** 9/25/2018 11:37:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180926C</b>	QC Batch: <b>R128841</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/26/2018 11:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-002

**Client Sample ID:** MW-60BR-245-LF\_D-Q318  
**Collection Date:** 9/25/2018 12:22:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180926C</b>	QC Batch: <b>R128841</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/26/2018 11:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-003

**Client Sample ID:** MW-60BR-245-3V-Q318  
**Collection Date:** 9/25/2018 4:23:00 PM  
**Matrix:** GROUNDWATER

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Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180926C</b>	QC Batch: <b>R128841</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	16000	0.10	0.10	umhos/cm	1		9/26/2018 11:00 AM

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**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out

E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID <b>N032216-003BDUP</b>	SampType: <b>DUP</b>	TestCode: <b>120.1_WPGE</b>	Units: <b>umhos/cm</b>	Prep Date:	RunNo: <b>128841</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128841</b>	TestNo: <b>EPA 120.1</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3152567</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	15620.000	0.10						15640	0.128		2

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-001

**Client Sample ID:** MW-60BR-245-LF\_S-Q318  
**Collection Date:** 9/25/2018 11:37:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_180926A	QC Batch: R128898			PrepDate	Analyst: RAB		
Hexavalent Chromium	ND	0.17	1.0	µg/L	5	9/26/2018 02:18 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
				<b>EPA 3010A</b>			
				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI	
Chromium	ND	0.13	1.0	µg/L	1	10/2/2018 01:07 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-002

**Client Sample ID:** MW-60BR-245-LF\_D-Q318  
**Collection Date:** 9/25/2018 12:22:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180926A</b>	QC Batch: <b>R128898</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	6.4	0.17	1.0		µg/L	5	9/26/2018 02:37 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>
Chromium	6.2	0.13	1.0		µg/L	1	10/2/2018 01:13 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-003

**Client Sample ID:** MW-60BR-245-3V-Q318  
**Collection Date:** 9/25/2018 4:23:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: <b>NV00922-IC7_180926A</b>	QC Batch: <b>R128898</b>			PrepDate	Analyst: <b>RAB</b>		
Hexavalent Chromium	76	0.33	2.0	µg/L	10	9/26/2018 12:24 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>			PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>	
Chromium	81	0.13	1.0	µg/L	1	10/2/2018 01:18 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-004

**Client Sample ID:** MW-702-Q318  
**Collection Date:** 9/25/2018 4:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180926A</b>	QC Batch: <b>R128898</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/26/2018 01:59 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>MB-R128898</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>
Client ID: <b>PBW</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154424</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>LCS-R128898</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154425</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.153	0.20	5.000	0	103 90 110

Sample ID <b>N032216-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154430</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	125.542	2.0	50.00	75.60	99.9 90 110

Sample ID <b>N032216-003AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154431</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	125.499	2.0	50.00	75.60	99.8 90 110 125.5 0.0343 20

Sample ID <b>N032216-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154435</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	1.086	0.20	1.000	0.06390	102 90 110

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>N032216-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154437</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.488	1.0	5.000	0.4415	101	90	110				

Sample ID <b>N032216-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154439</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	11.177	1.0	5.000	6.361	96.3	90	110				

Sample ID <b>N032218-001GDUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154443</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	18.016	0.40						18.04	0.143	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>MB-70807</b>	SampType: <b>MBLK</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159830</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>LCS-70807</b>	SampType: <b>LCS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159831</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	10.546	1.0	10.00	0	105	85	115				
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Sample ID <b>N032205-001D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159835</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	12.134	1.0	10.00	1.419	107	75	125				
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Sample ID <b>N032205-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159836</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	12.005	1.0	10.00	1.419	106	75	125	12.13	1.07	20	
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-001

**Client Sample ID:** MW-60BR-245-LF\_S-Q318  
**Collection Date:** 9/25/2018 11:37:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	ND	0.032	0.050	mg/L	1		10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-002

**Client Sample ID:** MW-60BR-245-LF\_D-Q318  
**Collection Date:** 9/25/2018 12:22:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	ND	0.032	0.050	mg/L	1		10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-003

**Client Sample ID:** MW-60BR-245-3V-Q318  
**Collection Date:** 9/25/2018 4:23:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.21	0.032	0.050		mg/L	1	10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R129025</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161938</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R129025</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161939</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.481	0.050	0.5000	0	96.2 85 115

Sample ID <b>N032205-004CMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161942</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	6.037	0.25	2.500	2.971	123 75 125

Sample ID <b>N032205-004CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161943</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	6.162	0.25	2.500	2.971	128 75 125 6.037 2.05 20 S

Sample ID <b>N032205-002CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161946</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	1.111	0.050			1.136 2.20 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-001

**Client Sample ID:** MW-60BR-245-LF\_S-Q318  
**Collection Date:** 9/25/2018 11:37:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	4.7	0.081	0.10	µg/L	1	10/2/2018 01:07 PM
Manganese	26	0.26	0.50	µg/L	1	10/2/2018 01:07 PM
Molybdenum	57	0.21	0.50	µg/L	1	10/2/2018 01:07 PM
Selenium	2.2	0.36	0.50	µg/L	1	10/2/2018 01:07 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-002

**Client Sample ID:** MW-60BR-245-LF\_D-Q318  
**Collection Date:** 9/25/2018 12:22:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	5.3	0.081	0.10	µg/L	1	10/2/2018 01:13 PM
Manganese	26	0.26	0.50	µg/L	1	10/2/2018 01:13 PM
Molybdenum	57	0.21	0.50	µg/L	1	10/2/2018 01:13 PM
Selenium	ND	1.8	2.5	µg/L	5	10/2/2018 02:48 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 09-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032216-003

**Client Sample ID:** MW-60BR-245-3V-Q318  
**Collection Date:** 9/25/2018 4:23:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

RunID: <b>NV00922-ICP7_181002C</b>	EPA 3010A		EPA 6020		PrepDate	9/27/2018	Analyst: <b>CEI</b>
	QC Batch: <b>70807</b>						
Arsenic	9.1	0.081	0.10		µg/L	1	10/2/2018 01:18 PM
Manganese	11	0.26	0.50		µg/L	1	10/2/2018 01:18 PM
Molybdenum	58	1.1	2.5		µg/L	5	10/2/2018 02:53 PM
Selenium	3.6	1.8	2.5		µg/L	5	10/2/2018 02:53 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID	<b>MB-70807</b>	SampType:	<b>MBLK</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128979</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>70807</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/2/2018</b>	SeqNo:	<b>3159620</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic		ND		0.10										
Manganese		ND		0.50										
Molybdenum		ND		0.50										
Selenium		ND		0.50										

Sample ID	<b>LCS-70807</b>	SampType:	<b>LCS</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128979</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>70807</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/2/2018</b>	SeqNo:	<b>3159621</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic		9.987		0.10	10.00	0		99.9	85	115				
Manganese		106.685		0.50	100.0	0		107	85	115				
Molybdenum		9.797		0.50	10.00	0		98.0	85	115				
Selenium		10.086		0.50	10.00	0		101	85	115				

Sample ID	<b>N032205-001D-MS</b>	SampType:	<b>MS</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128979</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>70807</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/2/2018</b>	SeqNo:	<b>3159625</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic		13.112		0.10	10.00	1.558		116	75	125				
Manganese		114.507		0.50	100.0	0		115	75	125				
Molybdenum		28.778		0.50	10.00	16.37		124	75	125				
Selenium		11.109		0.50	10.00	1.017		101	75	125				

Sample ID	<b>N032205-001D-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128979</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>70807</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/2/2018</b>	SeqNo:	<b>3159626</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic		13.254		0.10	10.00	1.558		117	75	125	13.11	1.08	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	<b>N032205-001D-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128979</b>
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70807</b>	TestNo:	<b>EPA 6020</b>	<b>EPA 3010A</b>		Analysis Date:	<b>10/2/2018</b>	SeqNo:	<b>3159626</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	113.674	0.50	100.0	0	114	75	125	114.5	0.730	20	
Molybdenum	28.930	0.50	10.00	16.37	126	75	125	28.78	0.528	20	S
Selenium	10.661	0.50	10.00	1.017	96.4	75	125	11.11	4.12	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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 EPA ID CA01638

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# SAMPLE RECEIVING ITEMS



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# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 9/25/2018 Workorder: N032216  
 Rep sample Temp (Deg C): 4.0 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |   |                             |   |
|---|---|-----------------------------|---|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/>            |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 11. All samples received within holding time?   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/>                     |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/>          |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/>                     |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/>                     |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/>          |
|   | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/>          |

Comments:

Checklist Completed By: YR  9/26/2018

Reviewed By:  LG 100118

# ASSET Laboratories

## WORK ORDER Summary

26-Sep-18

WorkOrder: N032216

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801D

QC Level: Level IV

Date Received: 9/25/2018

Comments: Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032216-001A	MW-60BR-245-LF_S-Q318	9/25/2018 11:37:00 AM	10/9/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-001B			10/9/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-001C			10/9/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-001D			10/9/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/9/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/9/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-002A	MW-60BR-245-LF_D-Q318	9/25/2018 12:22:00 PM	10/9/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-002B			10/9/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-002C			10/9/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-002D			10/9/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/9/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/9/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-003A	MW-60BR-245-3V-Q318	9/25/2018 4:23:00 PM	10/9/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-003B			10/9/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-003C			10/9/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-003D			10/9/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/9/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/9/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-004A	MW-702-Q318	9/25/2018 4:40:00 PM	10/9/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032216-005A	FOLDER	10/9/2018	10/9/2018		EDD	Client specific project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/9/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

# ASSET Laboratories

## WORK ORDER Summary

26-Sep-18

**WorkOrder:** N032216

**Client ID:** ARCUS02

**Project:** PG&E Topock - GMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 9/25/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032216-005A	FOLDER	10/9/2018	10/9/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

## List of Analysts

### ASSET Laboratories Work Order: N032216

NAME	TEST METHOD
Quennie Manimtim	SM 4500-NO3F
Claire Ignacio	EPA 6020_Dissolved
Ria Abes	EPA 218.6
Lilia Ramit	EPA 120.1



# EPA 120.1



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R128841

Analyst: LSR

ASSET #: N032216

Date Analyzed: 26-Sep

Method: EPA 120.1

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
<b>Sample Information</b>						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X			J		
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.			X			
11. LCS compounds within control limits.			X			
12. MS/MSD, RPD's are within control limits	X			J		
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X			J		
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X			J		
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct	J		
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Julia Ramit

Date: 10/4/2018

2nd Level Reviewer Nancy 10/9/2018

Date:



# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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# Conductivity Logbook

Date: 9/26/18 1100

Analyst: LKR

Standard	Std ID	Reading	Comments
9.91 $\mu\text{S}/\text{cm}$	CIMV-180731G	10.23 @ 25.0°C	% Rec: (90-110%)
1413	180515C	1426 @ 25.1°C	
9988	180731H	10060 @ 25.1°C	
9993	180515D	99500 @ 25.1°C	

Sample ID	Matrix	Reading	Comments
1 N032216-001B	H <sub>2</sub> O	15390 @ 21.1°C	
2 2B		15110 @ 21.0°C	
3 3B		15640 @ 21.5°C	
4 3B DUP		15620 @ 21.8°C	

*Julia Ramit*

10/4/2018

8 1413 $\mu\text{S}/\text{cm}$	CIMV-180417B	1412 @ 24.7°C	
9 10000	180516A	10180 @ 25.0°C	
10 99601	180521B	98200 @ 24.5°C	2% nitrate used

Accept: 10% water, 20% soil

% Rec: (90-110%)

Date: 9/27/18 1000

Analyst: LKR

Standard	Std ID	Reading	Comments
9.91 $\mu\text{S}/\text{cm}$	CIMV-180731G	9.99 @ 22.4°C	% Rec: (90-110%)
1413	180515C	1444 @ 22.5°C	
9988	180731H	10140 @ 22.5°C	
9993	180515D	101800 @ 22.6°C	

Sample ID	Matrix	Reading	Comments
1 N032216-001B	H <sub>2</sub> O	14950 @ 21.6°C	
2 2B		15060 @ 21.8°C	
3 2B DUP		10090 @ 22.0°C	
4 3B		15030 @ 22.0°C	
5 4B		14690 @ 22.5°C	
6 5B		4010 @ 21.6°C	
7 6B		3850 @ 21.5°C	
8 7B/8B		11900 @ 21.5°C	
9 1413 $\mu\text{S}/\text{cm}$	CIMV-180417B	1425 @ 22.8°C	

2% NaCl used

Accept: 10% water, 20% soil

% Rec: (90-110%)

Logbook # 6



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# EPA 218.6



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IC Technical Batch Review Checklist (ARCUS02)  
**ASSET LABORATORIES - LAS VEGAS**

IC ARCUS  
 REV 2.0  
 011416

QC Batch Number: R128898  
 ASSET #: N032216

Instrument ID: IC-07  
 Analyst: RBA  
 Date Analyzed: 9/26/2018

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)	X					
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?	X					
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?	X					
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)	X					
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X					
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?	X					
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)	X					
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X					
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments: Dilutions necessary for N032216-001A and -002A due to matrix interference.

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer RBA

Date: 10/7/2018

2nd Level Reviewer Theresa 10/9/2018

Date: -

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
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## Sample Calculation

**METHOD:** EPA 218.6  
**TEST NAME:** HEXAVALENT CHROMIUM BY IC  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Hexavalent Chromium concentration, in  $\mu\text{g/L}$ , in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

A =  $\mu\text{g/L}$ , IC Cr+6 calculated concentration

DF = dilution factor

For Sample **N032216-002A**, the concentration in  $\mu\text{g/L}$  is calculated as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = 1.2722 * 5$$

$$\text{Cr}^{+6}, \mu\text{g/L} = 6.3610$$

Reporting results in two significant figures,

$$\text{Cr}^{+6}, \mu\text{g/L} = 6.4$$

*rba* 10/7/2018

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
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**INJECTION LOG: 180921A**

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	ICV	ICV	1	Hexavalent Chromium	09/21/18 4:09 PM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/21/18 4:18 PM	Reported
11	ICB	ICB	1	Hexavalent Chromium	09/21/18 4:28 PM	Reported



## Injection Log Summary

### Sequence Details

Name:	IC-07_180921A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	25/Sep/18 09:28:56
No. of Injections:	14	Updated By:	ics 5000

### Injection Details

No.	Injection Name	Position	Volume μL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	ICV.ICV,1,	10	1000	Unknown		09/21/2018 16:09	Finished	ICV @5ppb, IWST-180622B
10	PQL@0.2ppb.CCV2,	11	1000	Unknown		09/21/2018 16:18	Finished	PQL @ 0.2ppb
11	ICB.ICB,1,	12	1000	Unknown		09/21/2018 16:28	Finished	ICB R180919A
12	SHUTDOWN	14	1000	Unknown		09/21/2018 16:45	Finished	
13	Eluent: R180917A	14	1000	Unknown		n.a.	Finished	Eluent
14	PCR: R180921A	15	1000	Unknown		n.a.	Finished	Post-Column Reagent

**INJECTION LOG: 180926A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	09/26/18 10:39 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	09/26/18 10:50 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	09/26/18 10:59 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/26/18 11:08 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	09/26/18 11:18 AM	Reported
14	MB-R128898	MBLK	1	Hexavalent Chromium	09/26/18 11:27 AM	Reported
15	LCS-R128898	LCS	1	Hexavalent Chromium	09/26/18 11:37 AM	Reported
16	N032218-001G	SAMP	1	Hexavalent Chromium	09/26/18 11:46 AM	Not Reported
17	N032219-001G	SAMP	1	Hexavalent Chromium	09/26/18 11:56 AM	Reported
18	N032220-001G	SAMP	1	Hexavalent Chromium	09/26/18 12:05 PM	Reported
19	N032221-001G	SAMP	1	Hexavalent Chromium	09/26/18 12:15 PM	Reported
20	N032216-003A	SAMP	10	Hexavalent Chromium	09/26/18 12:24 PM	Reported
21	N032216-003AMS	MS	10	Hexavalent Chromium	09/26/18 12:34 PM	Reported
22	N032216-003AMSD	MSD	10	Hexavalent Chromium	09/26/18 12:43 PM	Reported
23	N032218-001GDUP	DUP	1	Hexavalent Chromium	09/26/18 12:52 PM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	09/26/18 1:02 PM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	09/26/18 1:11 PM	Reported
26	N032216-001A	SAMP	1	Hexavalent Chromium	09/26/18 1:21 PM	Not Reported
27	N032216-001AMS	MS	1	Hexavalent Chromium	09/26/18 1:30 PM	Not Reported
28	N032216-002A	SAMP	1	Hexavalent Chromium	09/26/18 1:40 PM	Not Reported
29	N032216-002AMS	MS	1	Hexavalent Chromium	09/26/18 1:49 PM	Not Reported
30	N032216-004A	SAMP	1	Hexavalent Chromium	09/26/18 1:59 PM	Reported
31	N032216-004AMS	MS	1	Hexavalent Chromium	09/26/18 2:08 PM	Reported
32	N032216-001A	SAMP	5	Hexavalent Chromium	09/26/18 2:18 PM	Reported
33	N032216-001AMS	MS	5	Hexavalent Chromium	09/26/18 2:27 PM	Reported
34	N032216-002A	SAMP	5	Hexavalent Chromium	09/26/18 2:37 PM	Reported
35	N032216-002AMS	MS	5	Hexavalent Chromium	09/26/18 2:46 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	09/26/18 2:55 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	09/26/18 3:05 PM	Reported
38	N032218-001G	SAMP	2	Hexavalent Chromium	09/26/18 3:47 PM	Reported
39	N032218-001GDUP	DUP	2	Hexavalent Chromium	09/26/18 3:58 PM	Reported
40	N032238-001D	SAMP	1	Hexavalent Chromium	09/26/18 4:08 PM	Reported
41	CCV-4	CCV1	1	Hexavalent Chromium	09/26/18 4:27 PM	Reported
42	CCB-4	CCB	1	Hexavalent Chromium	09/26/18 4:36 PM	Reported

### Injection Log Summary

**Sequence Details**

Name:	IC-07_180926A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	27/Sep/18 09:16:44
No. of Injections:	45	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume $\mu$ L	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	BLANK	1	1000	Unknown		09/26/2018 10:39	Finished	BLANK
10	BLANK	2	1000	Unknown		09/26/2018 10:50	Finished	BLANK
11	CCV-1.CCV.1.	3	1000	Unknown		09/26/2018 10:59	Finished	CCV @5ppb, IWST-180622A
12	PQL@0.2ppb.CCV2.	4	1000	Unknown		09/26/2018 11:08	Finished	PQL @ 0.2ppb
13	CCB-1.CCB.1.	5	1000	Unknown		09/26/2018 11:18	Finished	CCB R180919A
14	MB-H2O.MBLK.1.	6	1000	Unknown		09/26/2018 11:27	Finished	MB R180919A
15	LCS-H2O.LCS.1.	7	1000	Unknown		09/26/2018 11:37	Finished	LCS @5ppb, IWST-180622B
16	N032218-001G.SAMP	8	1000	Unknown		09/26/2018 11:46	Finished	SAMP,10mL
17	N032219-001G.SAMP	9	1000	Unknown		09/26/2018 11:56	Finished	SAMP,10mL
18	N032220-001G.SAMP	10	1000	Unknown		09/26/2018 12:05	Finished	SAMP,10mL
19	N032221-001G.SAMP	11	1000	Unknown		09/26/2018 12:15	Finished	SAMP,10mL
20	N032216-003A.SAMP	12	1000	Unknown		09/26/2018 12:24	Finished	SAMP,1>10mL
21	N032216-003AMS.MS	13	1000	Unknown		09/26/2018 12:34	Finished	MS (5ppb), IWST-180622B,1>10mL
22	N032216-003AMSD.MS	14	1000	Unknown		09/26/2018 12:43	Finished	MSD (5ppb), IWST-180622B,1>10mL
23	N032218-001GDUP.D	15	1000	Unknown		09/26/2018 12:52	Finished	DUP,10mL
24	CCV-2.CCV1.1.	16	1000	Unknown		09/26/2018 13:02	Finished	CCV @10ppb, IWST-180622A
25	CCB-2.CCB.1.	17	1000	Unknown		09/26/2018 13:11	Finished	CCB R180919A
26	N032216-001A.SAMP	18	1000	Unknown		09/26/2018 13:21	Finished	SAMP,10mL
27	N032216-001AMS.MS	19	1000	Unknown		09/26/2018 13:30	Finished	MS (1ppb), IWST-180622B,10mL
28	N032216-002A.SAMP	20	1000	Unknown		09/26/2018 13:40	Finished	SAMP,10mL
29	N032216-002AMS.MS	21	1000	Unknown		09/26/2018 13:49	Finished	MS (1ppb), IWST-180622B,10mL
30	N032216-004A.SAMP	22	1000	Unknown		09/26/2018 13:59	Finished	SAMP,10mL
31	N032216-004AMS.MS	23	1000	Unknown		09/26/2018 14:08	Finished	MS (1ppb), IWST-180622B,10mL
32	N032216-001A.SAMP	24	1000	Unknown		09/26/2018 14:18	Finished	SAMP,2>10mL
33	N032216-001AMS.MS	25	1000	Unknown		09/26/2018 14:27	Finished	MS (1ppb), IWST-180622B,2>10mL
34	N032216-002A.SAMP	26	1000	Unknown		09/26/2018 14:37	Finished	SAMP,2>10mL
35	N032216-002AMS.MS	27	1000	Unknown		09/26/2018 14:46	Finished	MS (1ppb), IWST-180622B,2>10mL
36	CCV-3.CCV.1.	28	1000	Unknown		09/26/2018 14:55	Finished	CCV @5ppb, IWST-180622A
37	CCB-3.CCB.1.	29	1000	Unknown		09/26/2018 15:05	Finished	CCB R180919A
38	N032218-001G.SAMP	1	1000	Unknown		09/26/2018 15:47	Finished	SAMP,5>10mL
39	N032218-001GDUP.D	2	1000	Unknown		09/26/2018 15:58	Finished	DUP,5>10mL
40	N032238-001D.SAMP	3	1000	Unknown		09/26/2018 16:08	Finished	SAMP,10mL
41	CCV-4.CCV1.1.	5	1000	Unknown		09/26/2018 16:27	Finished	CCV @10ppb, IWST-180622A
42	CCB-4.CCB.1.	6	1000	Unknown		09/26/2018 16:36	Finished	CCB R180919A
43	SHUTDOWN	7	1000	Unknown		09/26/2018 16:46	Finished	
44	Eluent: R180924B	8	1000	Unknown		n.a.	Finished	Eluent
45	PCR: R180926B	9	1000	Unknown		n.a.	Finished	Post-Column Reagent

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## Hexavalent Chromium Preparation and Runlog

Sample Preparation						
Date Prepared:	9/24/18	<i>Slope: 98.82</i>	Reagent ID:			
Time Prepared:	11 PM	<i>pH 4: 4.02 @ 0.0°C</i>	Sulfuric Acid:	10 mM		
Prepared By:	MSB	<i>7: 7.01 @ 0.0°C</i>	Diphenylcarbazide:	CUNV-15276B		
		<i>10: 1.02 @ 0.0°C</i>	NH4OH + NH4SO4 eluent:	MS80924B		
			NH4OH + NH4SO4 buffer:	MS80919A		
Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1) N032216-001A	9.78	-	~200ul	~200ul		
2) 2A	9.44	-				
3) 3A	9.43	-				
4) 4A	9.59	-				
5) N032218-1G	8.18					
6) N032219-1G	9.03					
7) N032220-1G	9.15					
8) N032221-1G	9.14					
9)						
10)						
11)						
12)						
13)						
14)						
15)						

Sample Preparation						
Date Prepared:	9/27/18	<i>Slope: 98.47</i>	Reagent ID:			
Time Prepared:	10:58H	<i>pH 4: 4.02 @ 0.0°C</i>	Sulfuric Acid:	10 mM		
Prepared By:	MSA	<i>7: 7.00 @ 0.0°C</i>	Diphenylcarbazide:	CUNV-15276B		
		<i>10: 1.01 @ 0.0°C</i>	NH4OH + NH4SO4 eluent:	MS80927A		
		<i>15: 1.02 @ 0.0°C</i>	NH4OH + NH4SO4 buffer:	MS80919A		
Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1) N032246-1A	9.34	-	~200ul	~200ul		
2) 2A	9.42	-				
3) 3A	9.43	-				
4) 4A	9.48	-				
5) 5A	9.30	-				
6) 6A	9.30	-				
7) 7A	9.18	-				
8) 8A	9.22	9.32				
9) 9A	9.54	-				Final result
10)						
11)						
12)						
13)						
14)						
15)						

Logbook No. 15

*msa* 10/7/2018



**ASSET LABORATORIES**

CALIFORNIA | P: 562.219.7435 F: 562.219.7436  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703

NEVADA | P: 702.307.2659 F: 702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118

ELAP Cert 2921

ELAP Cert 2676 | NV Cert NV00922

ORELAP/NELAP Cert 4046

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR CONSTRUCTION AND INFRASTRUCTURE

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07  
Date Calibrated: 9/21/2018

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R <sup>2</sup>
Area,mAU*min	0.0462	0.2400	1.2761	2.5253	3.8020	5.0460	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST-170814H	IWST-180622A

Calibration Acceptance Criteria: > 0.999 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3154418</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.047	0.20	5.000	0	101	90	110				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3154419</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.187	0.20	0.2000	0	93.2	80	120				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154421</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.049	0.20	5.000	0	101	95	105				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154422</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.191	0.20	0.2000	0	95.5	80	120				

Sample ID <b>CCV-2</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154432</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.266	0.20	10.00	0	103	95	105				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154440</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.049	0.20	5.000	0	101	95	105				

Sample ID <b>CCV-4</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154445</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.356	0.20	10.00	0	104	95	105				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>
Client ID: <b>ICB</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3154420</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154423</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154433</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154441</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128898</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128898</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/26/2018</b>	SeqNo: <b>3154446</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 9/26/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.115	
CCV-1	4.123	
CCV-2	4.123	
CCV-3	4.123	
CCV-4	4.123	

**Average** 4.123  
**Actual RT Window** 4.043 - 4.203  
**Applied RT Window** 3.923 - 4.323

MB-H <sub>2</sub> O R128898	N.A.	N.A.
LCS-H <sub>2</sub> O R128898	4.123	PASS
N032218-001G	4.123	PASS
N032219-001G	4.123	PASS
N032220-001G	4.123	PASS
N032221-001G	4.123	PASS
N032216-003A	4.090	PASS
N032216-003AMS	4.090	PASS
N032216-003AMSD	4.090	PASS
N032218-001GDUP	4.123	PASS
N032216-001A	N.A.	N.A.
N032216-001AMS	N.A.	N.A.
N032216-002A	N.A.	N.A.
N032216-002AMS	N.A.	N.A.
N032216-004A	4.115	PASS
N032216-004AMS	4.131	PASS
N032216-001A	4.040	PASS
N032216-001AMS	4.048	PASS
N032216-002A	4.048	PASS
N032216-002AMS	4.056	PASS
N032218-001G	4.115	PASS
N032218-001GDUP	4.115	PASS
N032238-001D	4.106	PASS

*rba* 10/7/2018

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## METHOD DETECTION LIMIT 2017

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**  
 Method Number: EPA 218.6  
 Analysis Date(s): 5/5/2017, 5/8/2017, 5/9/2017, 5/10/2017, 5/11/2017, 5/12/2017, 5/15/2017  
 Analyst: Ria Abes

Matrix: **WATER**  
 Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

	Datafile	170505	170508	170509	170510	170511	170512	170515						
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	t <sub>(n-1)</sub> value	MDL	PQL	Remarks	
Hexavalent Chromium	0.1949	0.2135	0.1840	0.1828	0.2011	0.1936	0.1911	0.20	0.0105	3.143	<b>0.0331</b>	<b>0.20</b>	OK,meets criteria	

Students' t Values at 99% CL

#	t <sub>(n-1)</sub>
10	2.821
9	2.896
8	2.998
7	3.143



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL AND INDUSTRIAL APPLICATIONS

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

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## LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Hexavalent Chromium by IC**                      Matrix: **WATER**  
 Method Number: EPA Method 218.6/7199                      Unit:  $\mu\text{g/L}$   
 Analysis Date(s): 3/21/2018  
 Analyst: Ria Abes  
  
 Instrument Name: **IC-07**

Compound	MDL	LOD Spike Conc., $\mu\text{g/L}$	LOD actual Conc., $\mu\text{g/L}$
Hexavalent Chromium	0.0331	0.100	0.116

Compound	PQL	PQL Spike Conc., $\mu\text{g/L}$	PQL actual Conc., $\mu\text{g/L}$	% Recovery
Hexavalent Chromium	0.200	0.200	0.201	<u>100</u>



# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436



NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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# INITIAL CALIBRATION



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"

INJECTION LOG: 180921A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	ICV	ICV	1	Hexavalent Chromium	09/21/18 4:09 PM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/21/18 4:18 PM	Reported
11	ICB	ICB	1	Hexavalent Chromium	09/21/18 4:28 PM	Reported

*rba* 9/30/2018

*Nancy* 10/8/2018

IC7 RBA 9/26/2018 8:55 AM

## Injection Log Summary

### Sequence Details

Name:	IC-07_180921A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	25/Sep/18 09:28:56
No. of Injections:	14	Updated By:	ics 5000

### Injection Details

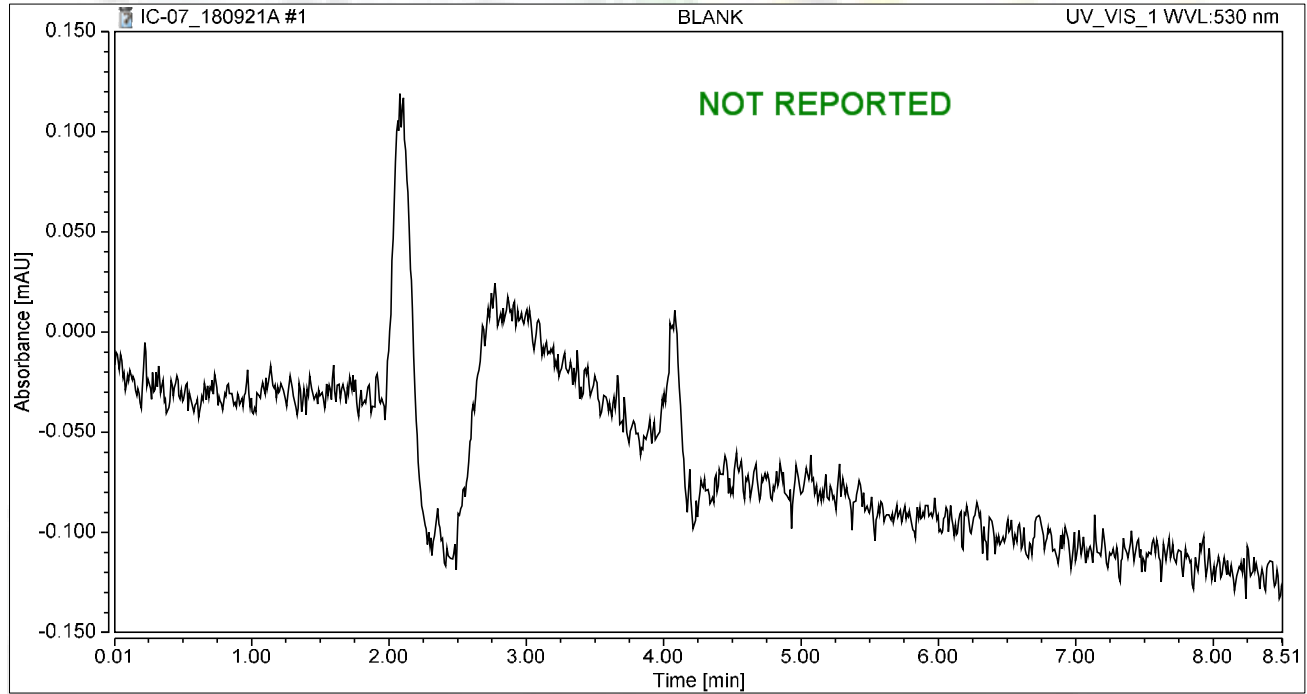
No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	ICV.ICV,1,	10	1000	Unknown		09/21/2018 16:09	Finished	ICV @5ppb, IWST-180622B
10	PQL@0.2ppb,CCV2,	11	1000	Unknown		09/21/2018 16:18	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	12	1000	Unknown		09/21/2018 16:28	Finished	ICB R180919A
12	SHUTDOWN	14	1000	Unknown		09/21/2018 16:45	Finished	
13	Eluent: R180917A	14	1000	Unknown		n.a.	Finished	Eluent
14	PCR: R180921A	15	1000	Unknown		n.a.	Finished	Post-Column Reagent

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

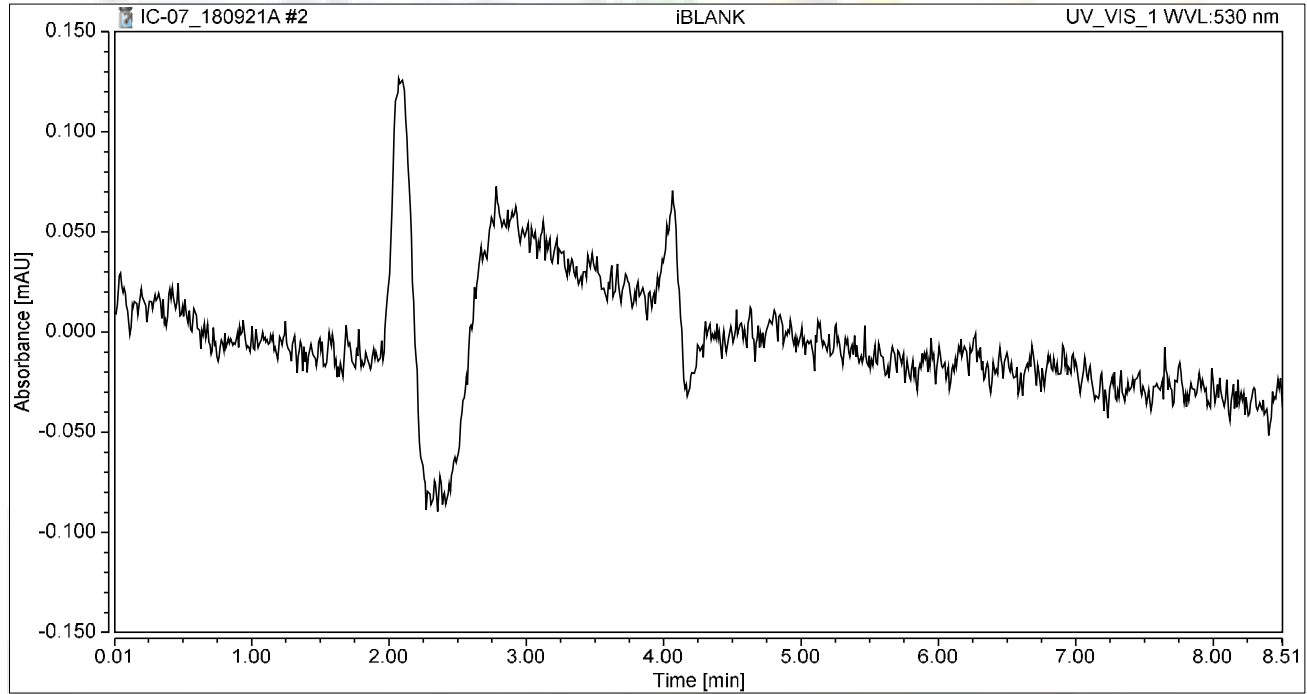
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	iBLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

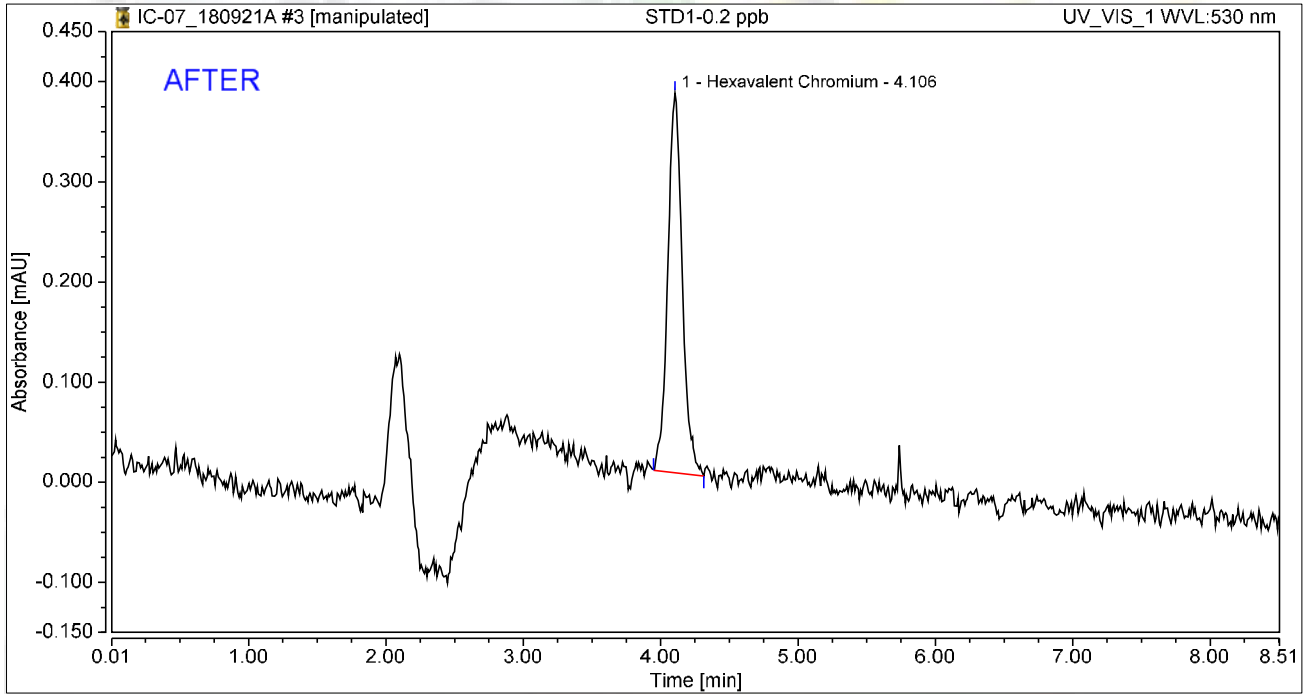
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.046	0.379	100.00	100.00	0.1830
<b>Total:</b>			<b>0.046</b>	<b>0.379</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/30/2018

Reviewed by:  
*Murray* 10/8/2018

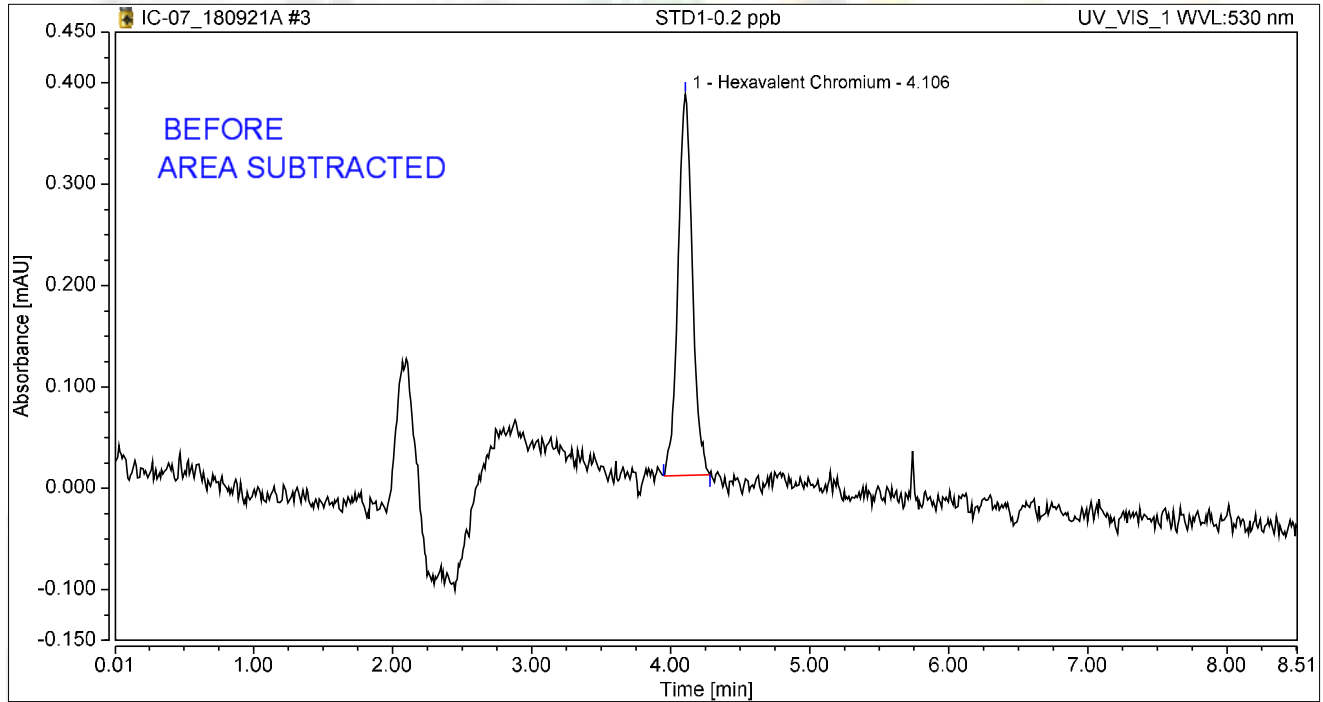


### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.045	0.376	100.00	100.00	0.1723
<b>Total:</b>			<b>0.045</b>	<b>0.376</b>	<b>100.00</b>	<b>100.00</b>	

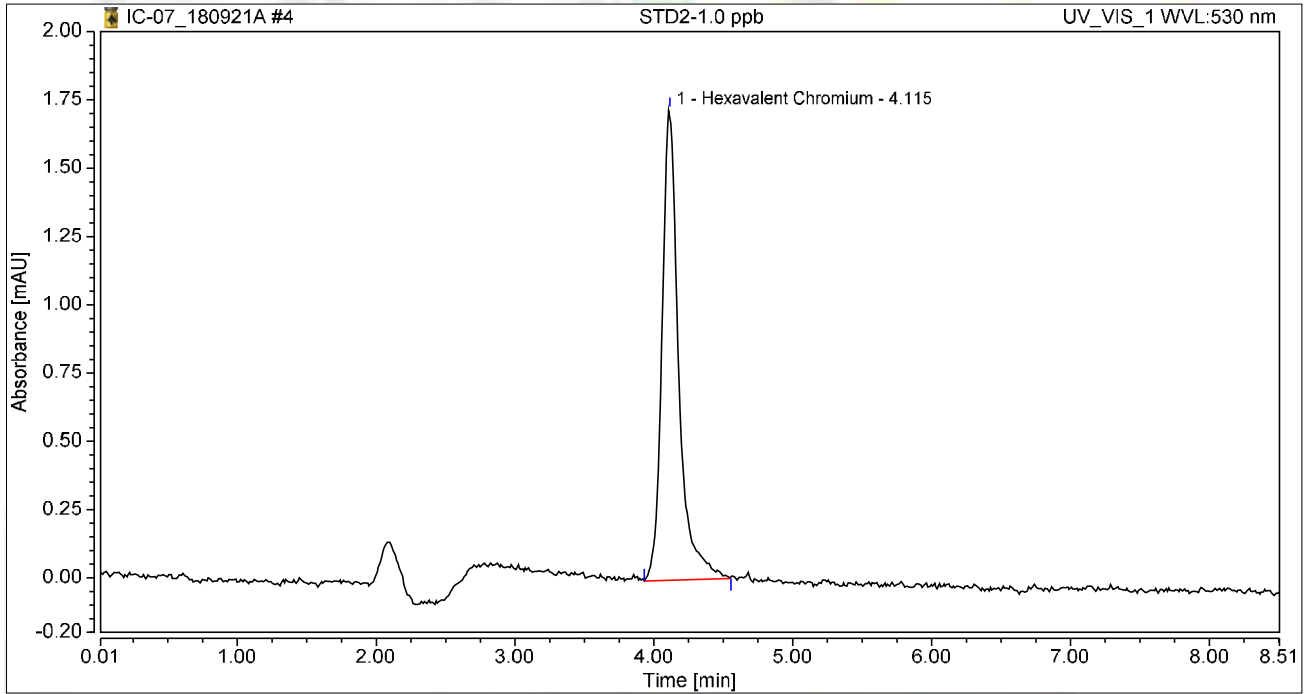
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD2-1.0 ppb	Run Time (min):	8.49
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	02	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:47	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

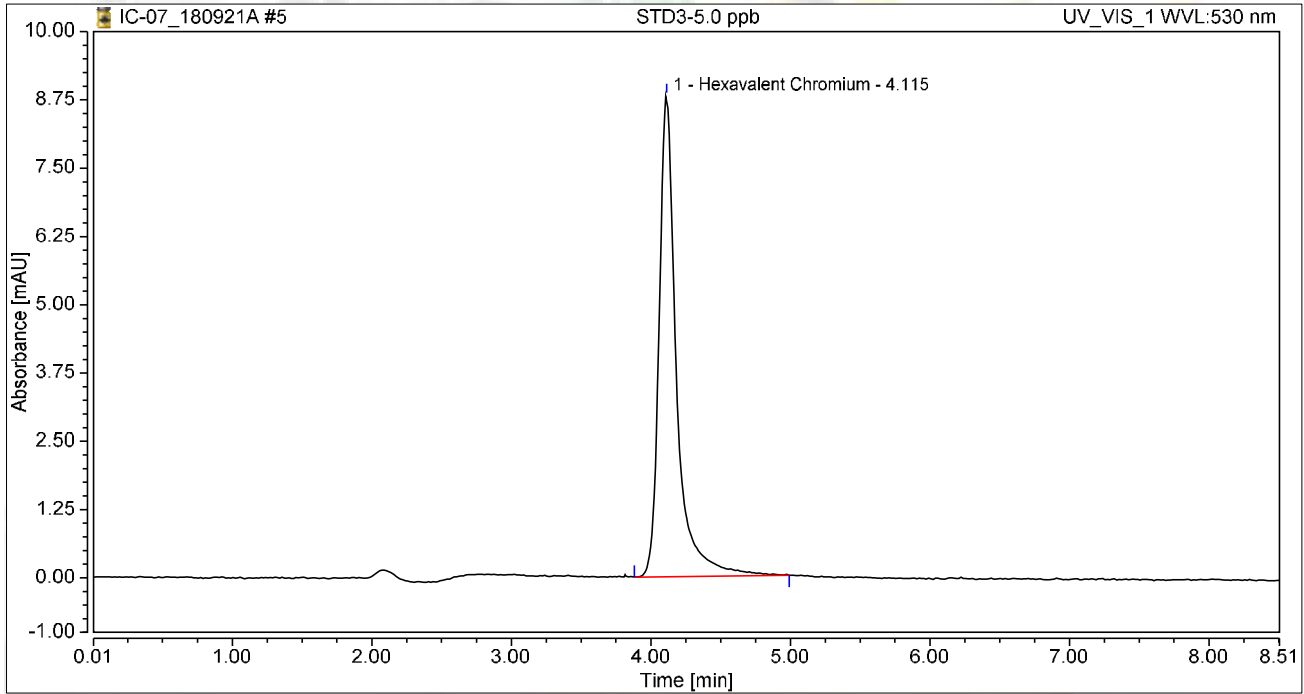
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.240	1.724	100.00	100.00	0.9494
<b>Total:</b>			<b>0.240</b>	<b>1.724</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD3-5.0 ppb	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	03	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

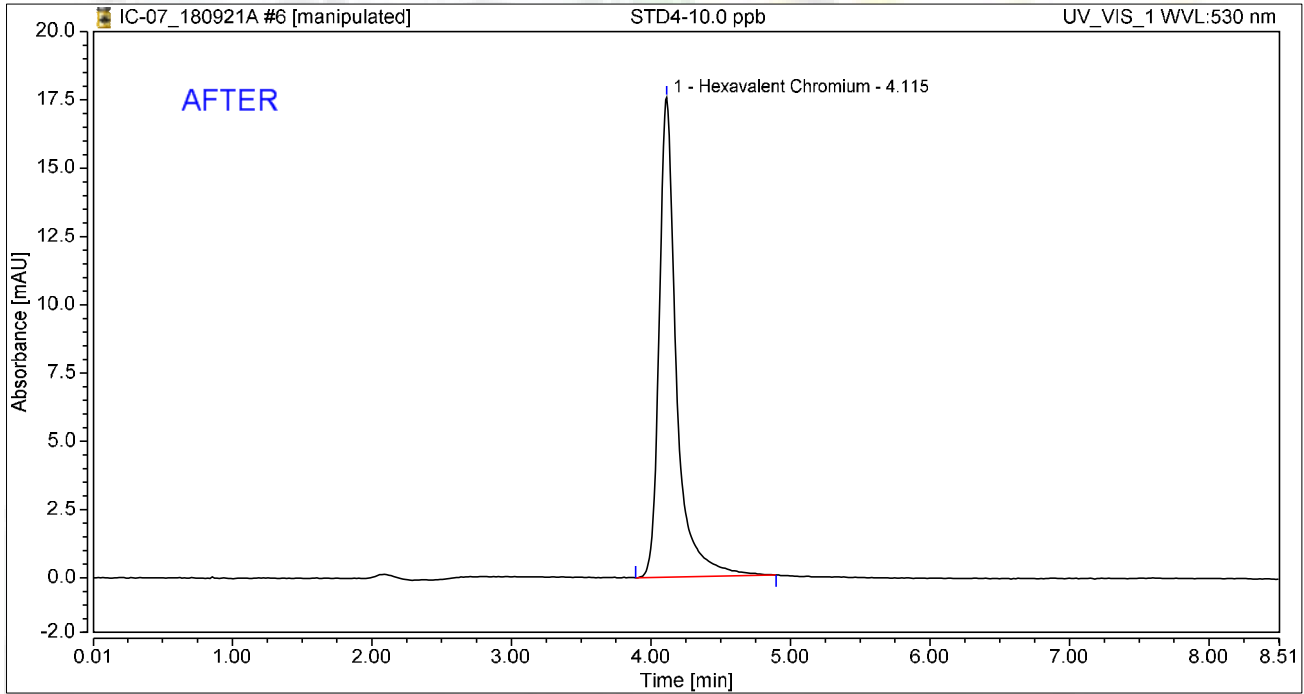
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.276	8.809	100.00	100.00	5.0487
<b>Total:</b>			<b>1.276</b>	<b>8.809</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.525	17.564	100.00	100.00	9.9908
<b>Total:</b>			<b>2.525</b>	<b>17.564</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Reviewed by:

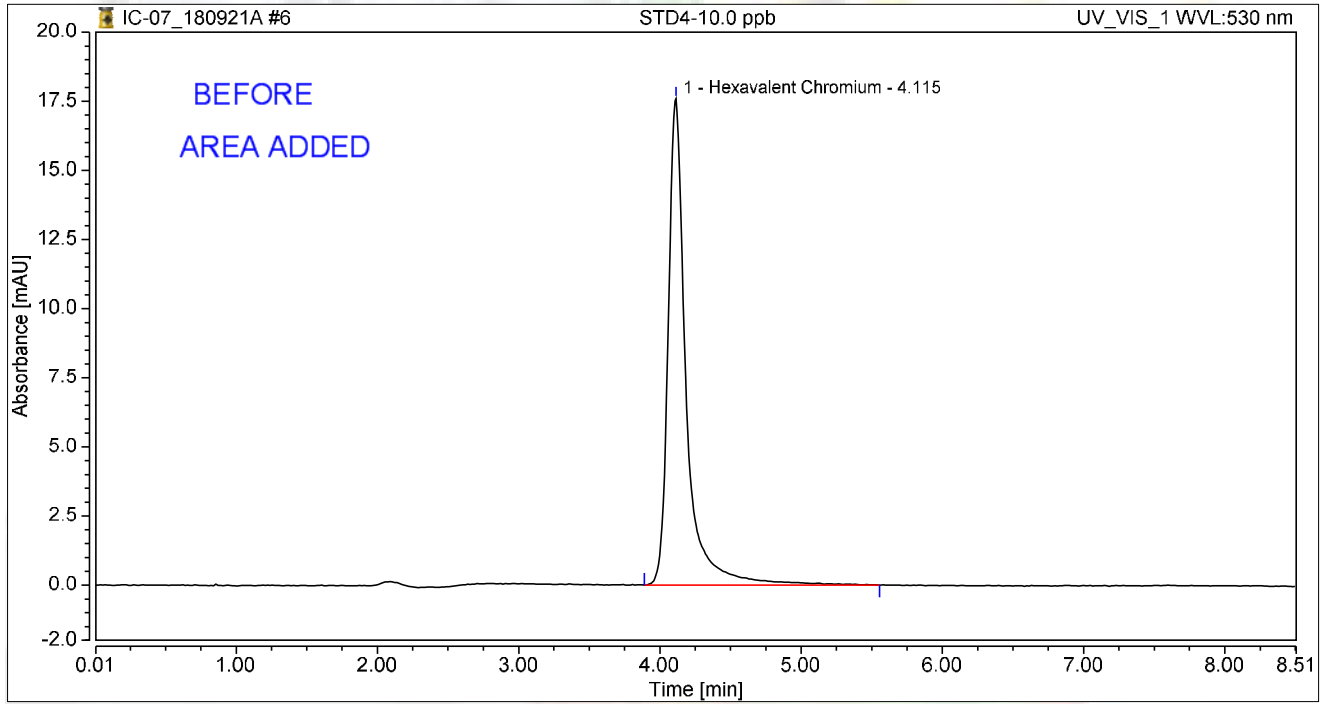
My first report integration  
Mony 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.611	17.589	100.00	100.00	10.0182
<b>Total:</b>			<b>2.611</b>	<b>17.589</b>	<b>100.00</b>	<b>100.00</b>	

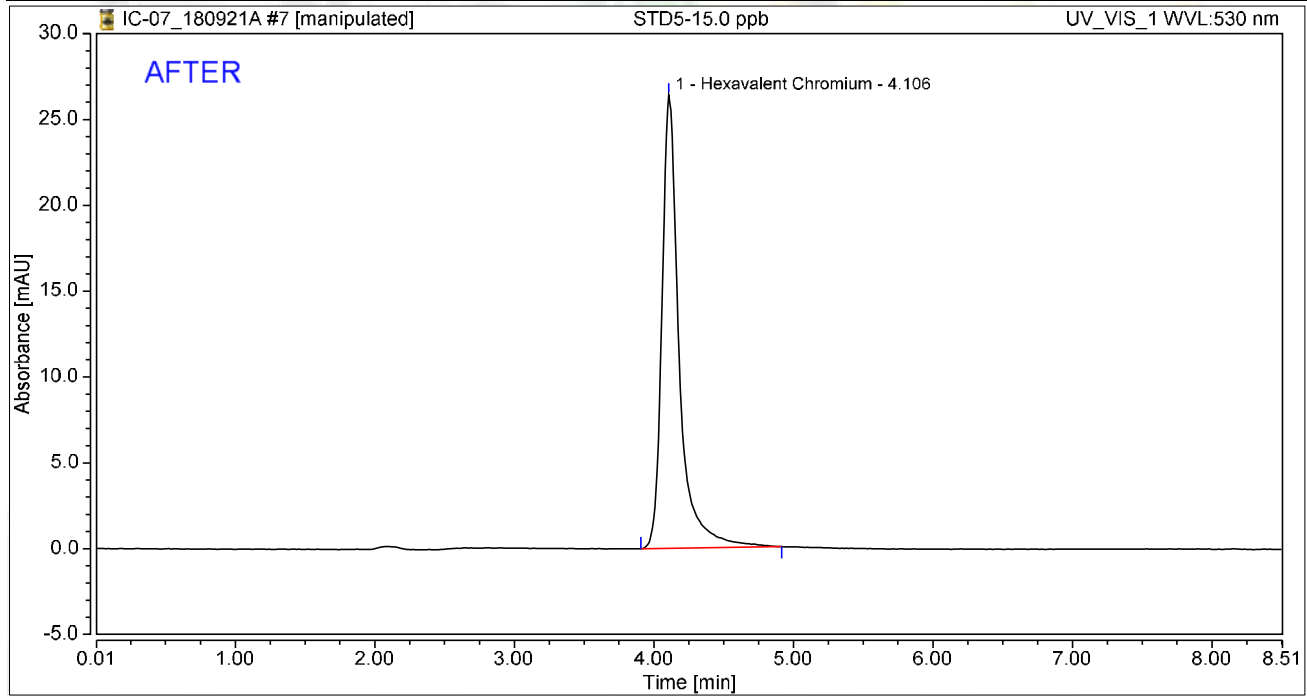
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	3.802	26.404	100.00	100.00	15.0421
<b>Total:</b>			<b>3.802</b>	<b>26.404</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

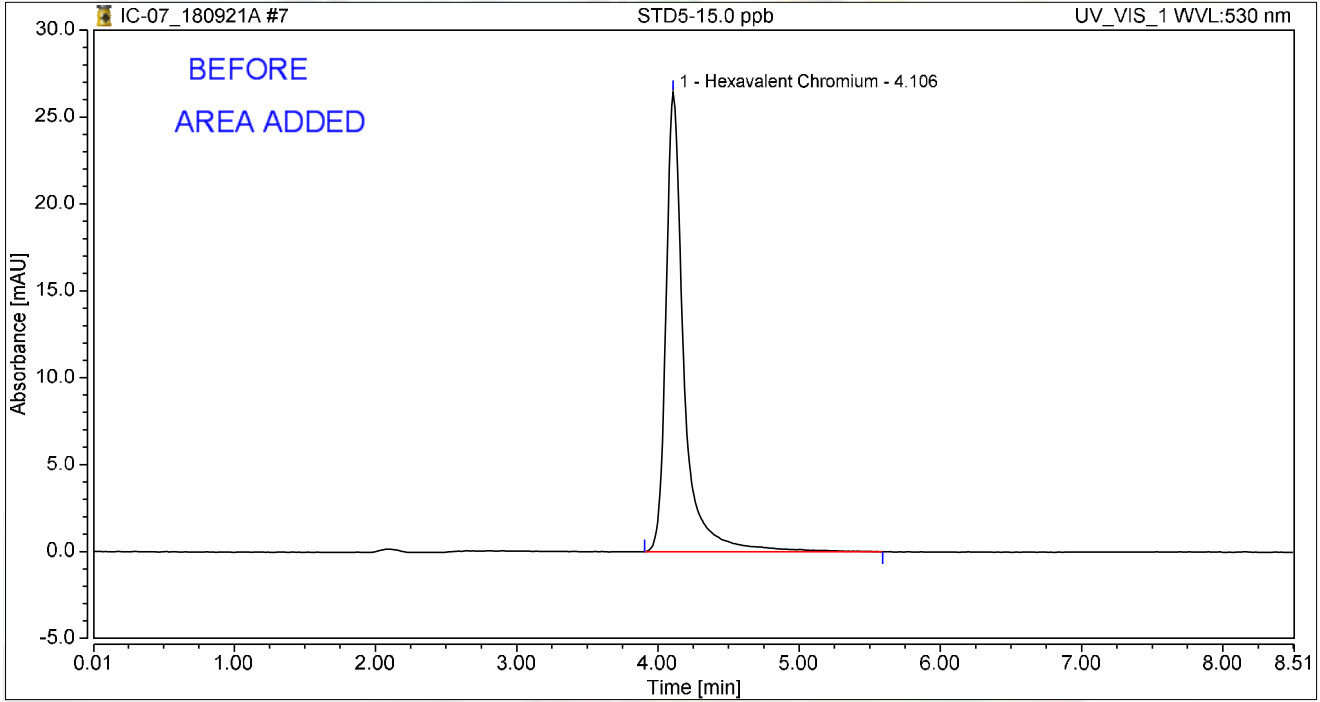
Reviewed by:  
 Nancy 10/8/2018  
 My first report/integration

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	3.918	26.433	100.00	100.00	15.0352
<b>Total:</b>			<b>3.918</b>	<b>26.433</b>	<b>100.00</b>	<b>100.00</b>	

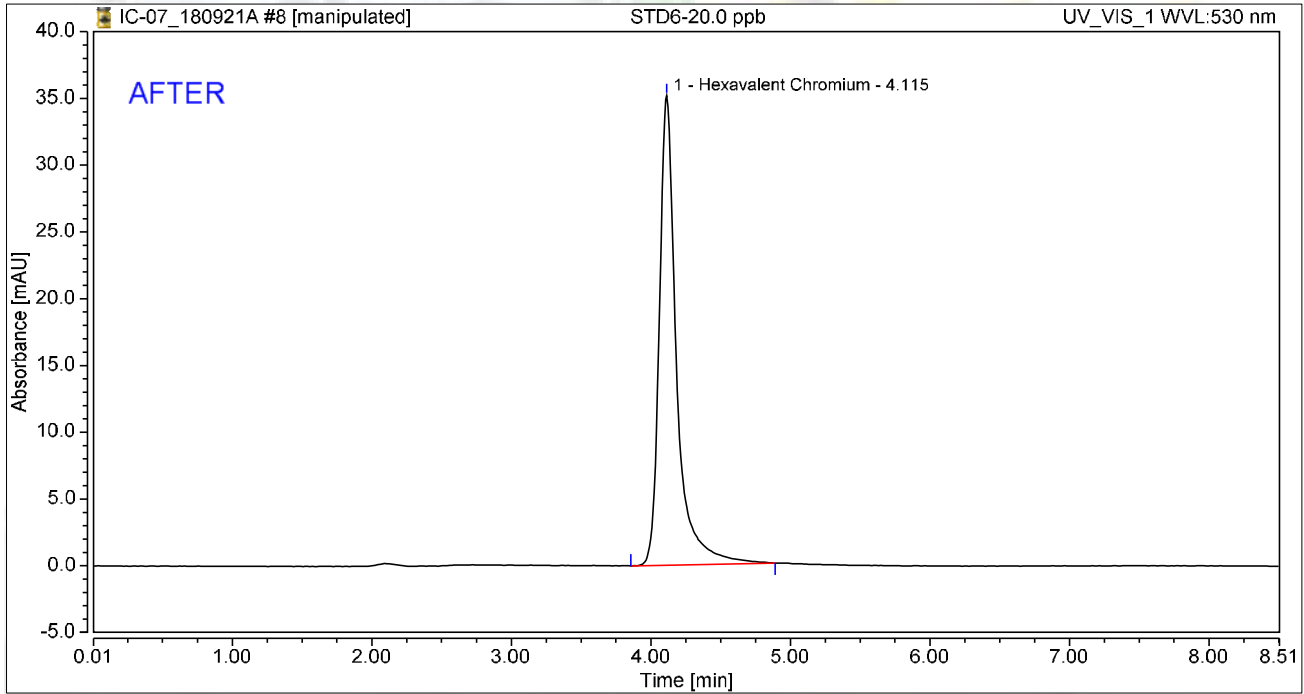
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:25	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	5.046	35.157	100.00	100.00	19.9635
<b>Total:</b>			<b>5.046</b>	<b>35.157</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Reviewed by:  
*Arney* 10/8/2018

My first report/Integration

Chromeleon (c) Dionex  
Version 7.1.1.1127

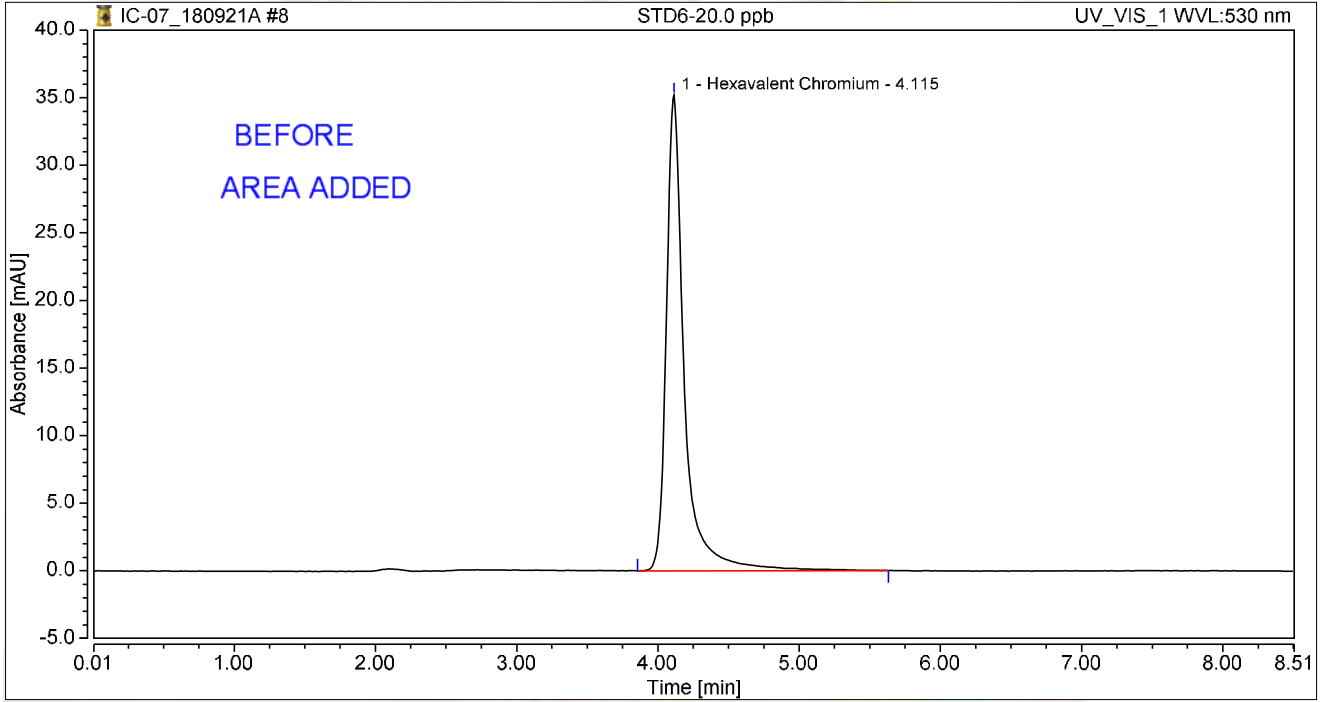


### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:25	Sample Weight:	1.0000

**Chromatogram**

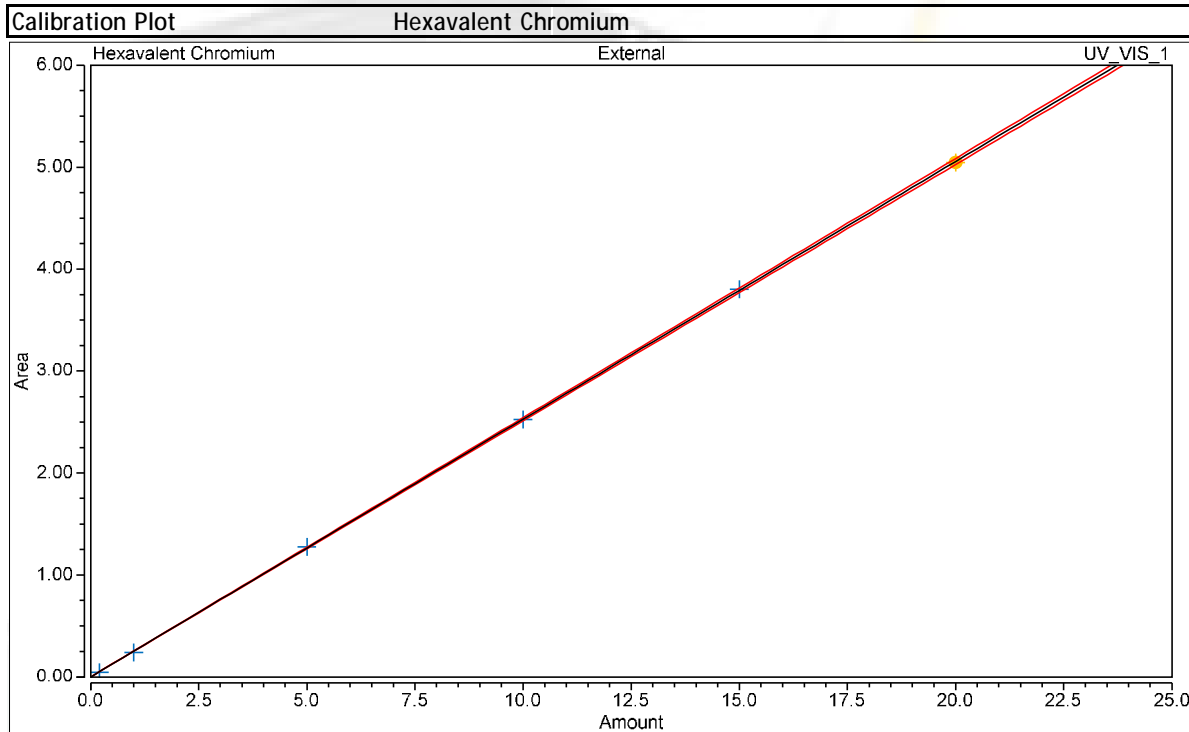


**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	5.210	35.207	100.00	100.00	19.9945
<b>Total:</b>			<b>5.210</b>	<b>35.207</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Initial Calibration Summary			
Calibration Details		Hexavalent Chromium	
Calibration Type	Lin	Offset (C0)	0.0000
Evaluation Type	Area	Slope (C1)	0.2528
Number of Calibration Points	6	Curve (C2)	0.0000
Number of disabled Calibration Points	0	R-Square	0.99997



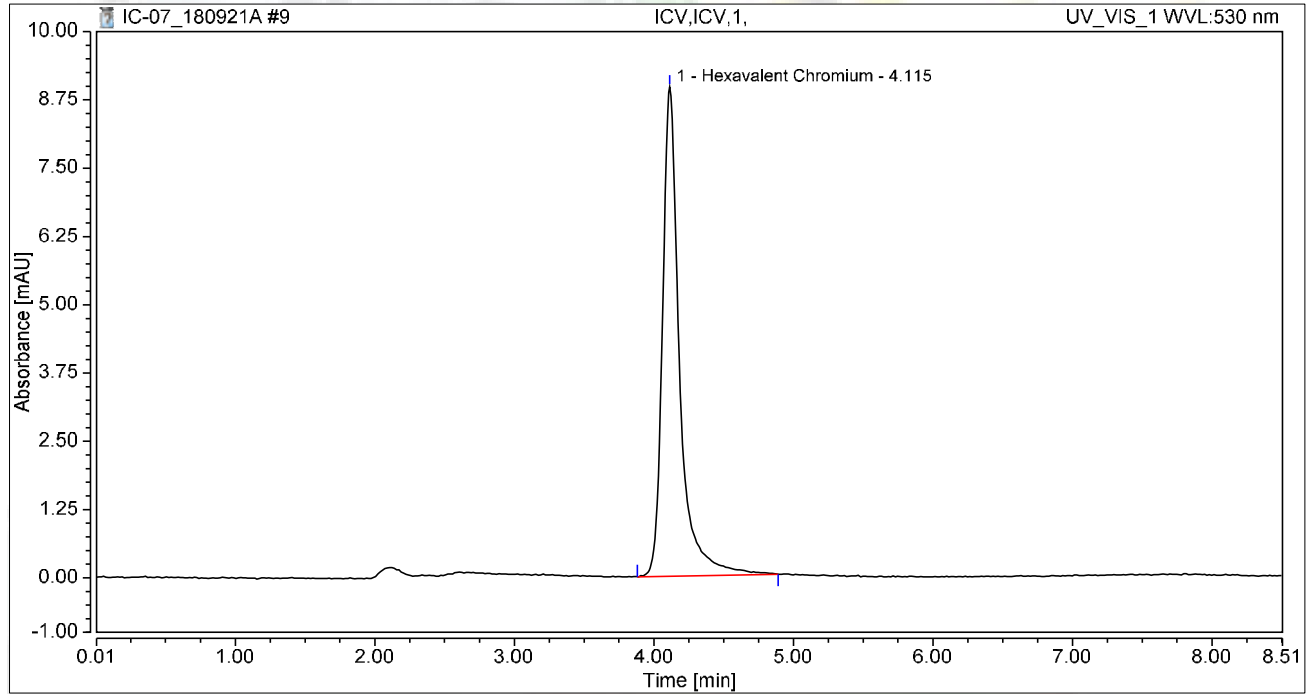
Calibration Results		Hexavalent Chromium				
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
3	STD1-0.2 ppb	01	0.2000	0.0462	0.046	0.379
4	STD2-1.0 ppb	02	1.0000	0.2400	0.240	1.724
5	STD3-5.0 ppb	03	5.0000	1.2761	1.276	8.809
6	STD4-10.0 ppb	04	10.0000	2.5253	2.525	17.564
7	STD5-15.0 ppb	05	15.0000	3.8020	3.802	26.404
8	STD6-20.0 ppb	06	20.0000	5.0460	5.046	35.157

### Chromatogram and Results

**Injection Details**

Injection Name:	ICV,ICV,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

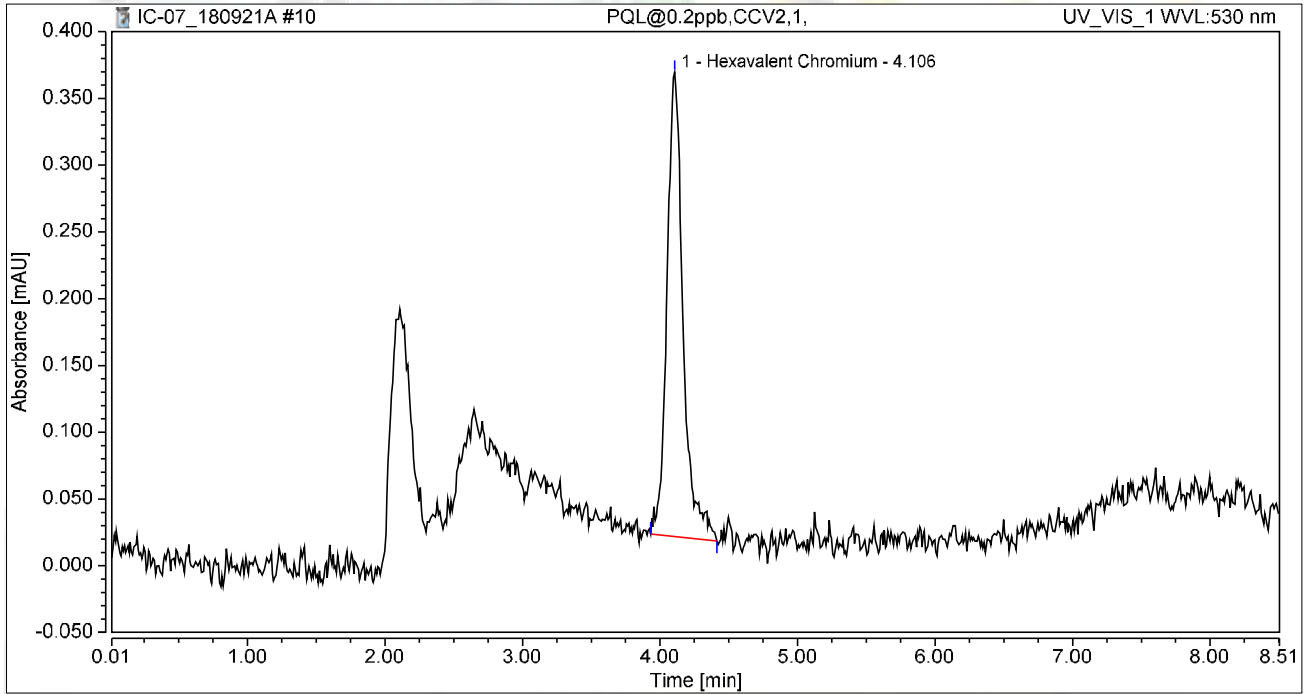
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.276	8.956	100.00	100.00	5.0467
<b>Total:</b>			<b>1.276</b>	<b>8.956</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

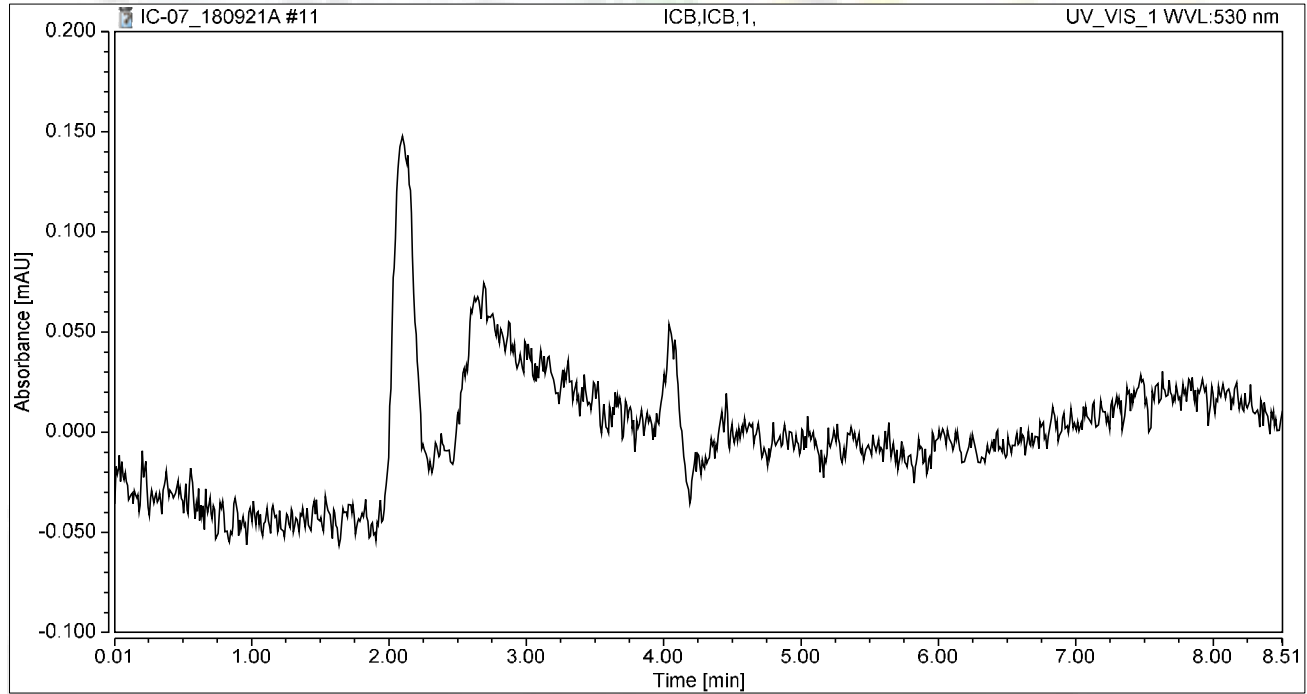
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.047	0.348	100.00	100.00	0.1865
<b>Total:</b>			<b>0.047</b>	<b>0.348</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	ICB,ICB,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2691 F: 702.307.2691



**INJECTION LOG: 180926A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	09/26/18 10:39 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	09/26/18 10:50 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	09/26/18 10:59 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/26/18 11:08 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	09/26/18 11:18 AM	Reported
14	MB-R128898	MBLK	1	Hexavalent Chromium	09/26/18 11:27 AM	Reported
15	LCS-R128898	LCS	1	Hexavalent Chromium	09/26/18 11:37 AM	Reported
16	N032218-001G	SAMP	1	Hexavalent Chromium	09/26/18 11:46 AM	Not Reported
17	N032219-001G	SAMP	1	Hexavalent Chromium	09/26/18 11:56 AM	Reported
18	N032220-001G	SAMP	1	Hexavalent Chromium	09/26/18 12:05 PM	Reported
19	N032221-001G	SAMP	1	Hexavalent Chromium	09/26/18 12:15 PM	Reported
20	N032216-003A	SAMP	10	Hexavalent Chromium	09/26/18 12:24 PM	Reported
21	N032216-003AMS	MS	10	Hexavalent Chromium	09/26/18 12:34 PM	Reported
22	N032216-003AMSD	MSD	10	Hexavalent Chromium	09/26/18 12:43 PM	Reported
23	N032218-001GDUP	DUP	1	Hexavalent Chromium	09/26/18 12:52 PM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	09/26/18 1:02 PM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	09/26/18 1:11 PM	Reported
26	N032216-001A	SAMP	1	Hexavalent Chromium	09/26/18 1:21 PM	Not Reported
27	N032216-001AMS	MS	1	Hexavalent Chromium	09/26/18 1:30 PM	Not Reported
28	N032216-002A	SAMP	1	Hexavalent Chromium	09/26/18 1:40 PM	Not Reported
29	N032216-002AMS	MS	1	Hexavalent Chromium	09/26/18 1:49 PM	Not Reported
30	N032216-004A	SAMP	1	Hexavalent Chromium	09/26/18 1:59 PM	Reported
31	N032216-004AMS	MS	1	Hexavalent Chromium	09/26/18 2:08 PM	Reported
32	N032216-001A	SAMP	5	Hexavalent Chromium	09/26/18 2:18 PM	Reported
33	N032216-001AMS	MS	5	Hexavalent Chromium	09/26/18 2:27 PM	Reported
34	N032216-002A	SAMP	5	Hexavalent Chromium	09/26/18 2:37 PM	Reported
35	N032216-002AMS	MS	5	Hexavalent Chromium	09/26/18 2:46 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	09/26/18 2:55 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	09/26/18 3:05 PM	Reported
38	N032218-001G	SAMP	2	Hexavalent Chromium	09/26/18 3:47 PM	Reported
39	N032218-001GDUP	DUP	2	Hexavalent Chromium	09/26/18 3:58 PM	Reported
40	N032238-001D	SAMP	1	Hexavalent Chromium	09/26/18 4:08 PM	Reported
41	CCV-4	CCV1	1	Hexavalent Chromium	09/26/18 4:27 PM	Reported
42	CCB-4	CCB	1	Hexavalent Chromium	09/26/18 4:36 PM	Reported

*Nancy* 10/9/2018

IC-07 RBA 10/1/2018 11:19 AM

*rba* 10/7/2018

### Injection Log Summary

**Sequence Details**

Name:	IC-07_180926A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	27/Sep/18 09:16:44
No. of Injections:	45	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	BLANK	1	1000	Unknown		09/26/2018 10:39	Finished	BLANK
10	BLANK	2	1000	Unknown		09/26/2018 10:50	Finished	BLANK
11	CCV-1,CCV,1,	3	1000	Unknown		09/26/2018 10:59	Finished	CCV @5ppb, IWST-180622A
12	PQL@0.2ppb,CCV2,	4	1000	Unknown		09/26/2018 11:08	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		09/26/2018 11:18	Finished	CCB R180919A
14	MB-H2O,MBLK,1,	6	1000	Unknown		09/26/2018 11:27	Finished	MB R180919A
15	LCS-H2O,LCS,1,	7	1000	Unknown		09/26/2018 11:37	Finished	LCS @5ppb, IWST-180622B
16	N032218-001G,SAMP	8	1000	Unknown		09/26/2018 11:46	Finished	SAMP,10mL
17	N032219-001G,SAMP	9	1000	Unknown		09/26/2018 11:56	Finished	SAMP,10mL
18	N032220-001G,SAMP	10	1000	Unknown		09/26/2018 12:05	Finished	SAMP,10mL
19	N032221-001G,SAMP	11	1000	Unknown		09/26/2018 12:15	Finished	SAMP,10mL
20	N032216-003A,SAMP	12	1000	Unknown		09/26/2018 12:24	Finished	SAMP,1>10mL
21	N032216-003AMS,MS	13	1000	Unknown		09/26/2018 12:34	Finished	MS (5ppb), IWST-180622B,1>10mL
22	N032216-003AMSD,MS	14	1000	Unknown		09/26/2018 12:43	Finished	MSD (5ppb), IWST-180622B,1>10mL
23	N032218-001GDUP,D	15	1000	Unknown		09/26/2018 12:52	Finished	DUP,10mL
24	CCV-2,CCV1,1,	16	1000	Unknown		09/26/2018 13:02	Finished	CCV @10ppb, IWST-180622A
25	CCB-2,CCB,1,	17	1000	Unknown		09/26/2018 13:11	Finished	CCB R180919A
26	N032216-001A,SAMP	18	1000	Unknown		09/26/2018 13:21	Finished	SAMP,10mL
27	N032216-001AMS,MS	19	1000	Unknown		09/26/2018 13:30	Finished	MS (1ppb), IWST-180622B,10mL
28	N032216-002A,SAMP	20	1000	Unknown		09/26/2018 13:40	Finished	SAMP,10mL
29	N032216-002AMS,MS	21	1000	Unknown		09/26/2018 13:49	Finished	MS (1ppb), IWST-180622B,10mL
30	N032216-004A,SAMP	22	1000	Unknown		09/26/2018 13:59	Finished	SAMP,10mL
31	N032216-004AMS,MS	23	1000	Unknown		09/26/2018 14:08	Finished	MS (1ppb), IWST-180622B,10mL
32	N032216-001A,SAMP	24	1000	Unknown		09/26/2018 14:18	Finished	SAMP,2>10mL
33	N032216-001AMS,MS	25	1000	Unknown		09/26/2018 14:27	Finished	MS (1ppb), IWST-180622B,2>10mL
34	N032216-002A,SAMP	26	1000	Unknown		09/26/2018 14:37	Finished	SAMP,2>10mL
35	N032216-002AMS,MS	27	1000	Unknown		09/26/2018 14:46	Finished	MS (1ppb), IWST-180622B,2>10mL
36	CCV-3,CCV,1,	28	1000	Unknown		09/26/2018 14:55	Finished	CCV @5ppb, IWST-180622A
37	CCB-3,CCB,1,	29	1000	Unknown		09/26/2018 15:05	Finished	CCB R180919A
38	N032218-001G,SAMP	1	1000	Unknown		09/26/2018 15:47	Finished	SAMP,5>10mL
39	N032218-001GDUP,D	2	1000	Unknown		09/26/2018 15:58	Finished	DUP,5>10mL
40	N032238-001D,SAMP	3	1000	Unknown		09/26/2018 16:08	Finished	SAMP,10mL
41	CCV-4,CCV1,1,	5	1000	Unknown		09/26/2018 16:27	Finished	CCV @10ppb, IWST-180622A
42	CCB-4,CCB,1,	6	1000	Unknown		09/26/2018 16:36	Finished	CCB R180919A
43	SHUTDOWN	7	1000	Unknown		09/26/2018 16:46	Finished	
44	Eluent: R180924B	8	1000	Unknown		n.a.	Finished	Eluent
45	PCR: R180926B	9	1000	Unknown		n.a.	Finished	Post-Column Reagent

nba 10/7/2018

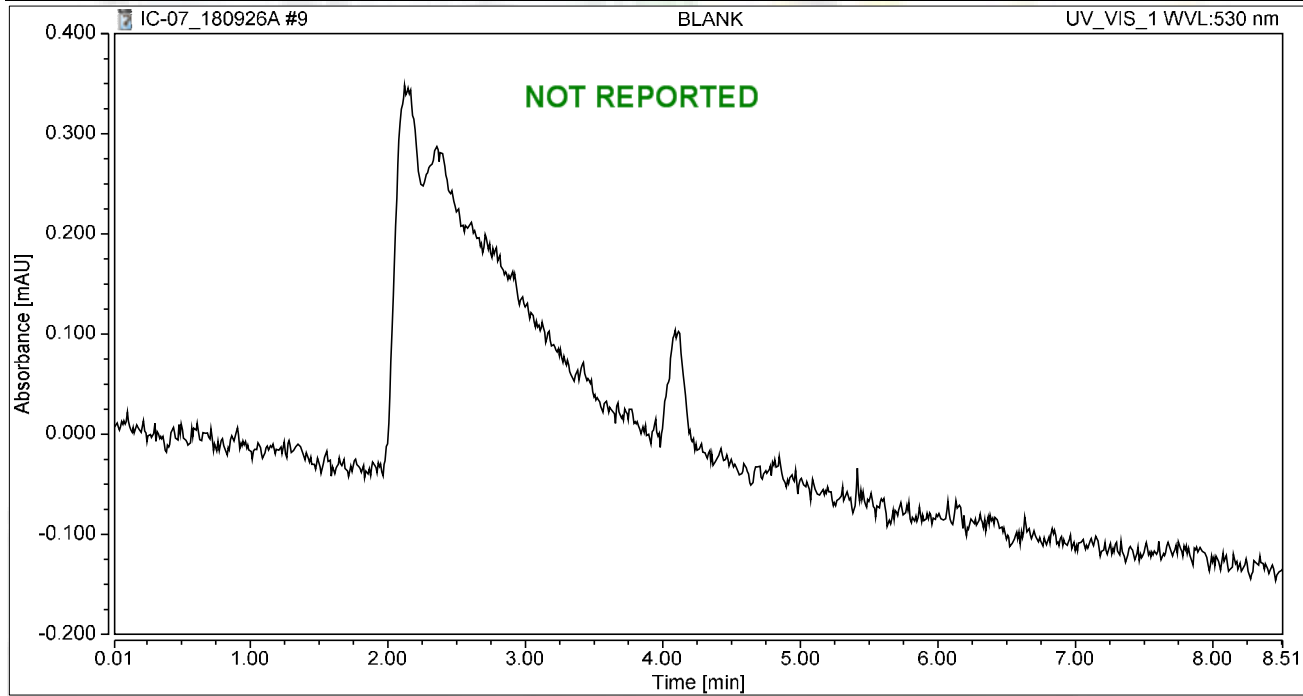


### Chromatogram and Results

**Injection Details**

Injection Name:	<b>BLANK</b>	Run Time (min):	<b>8.49</b>
Vial Number:	<b>1</b>	Injection Volume:	<b>1000.00</b>
Injection Type:	<b>Unknown</b>	Channel:	<b>UV_VIS_1</b>
Calibration Level:		Wavelength:	<b>530.0</b>
Instrument Method:	<b>Hex Chrom 4 mm</b>	Bandwidth:	<b>n.a.</b>
Processing Method:	<b>180921_IC-07_Cr6_218_6_HIGH</b>	Dilution Factor:	<b>1.0000</b>
Injection Date/Time:	<b>26/Sep/18 10:39</b>	Sample Weight:	<b>1.0000</b>

**Chromatogram**



**Integration Results**

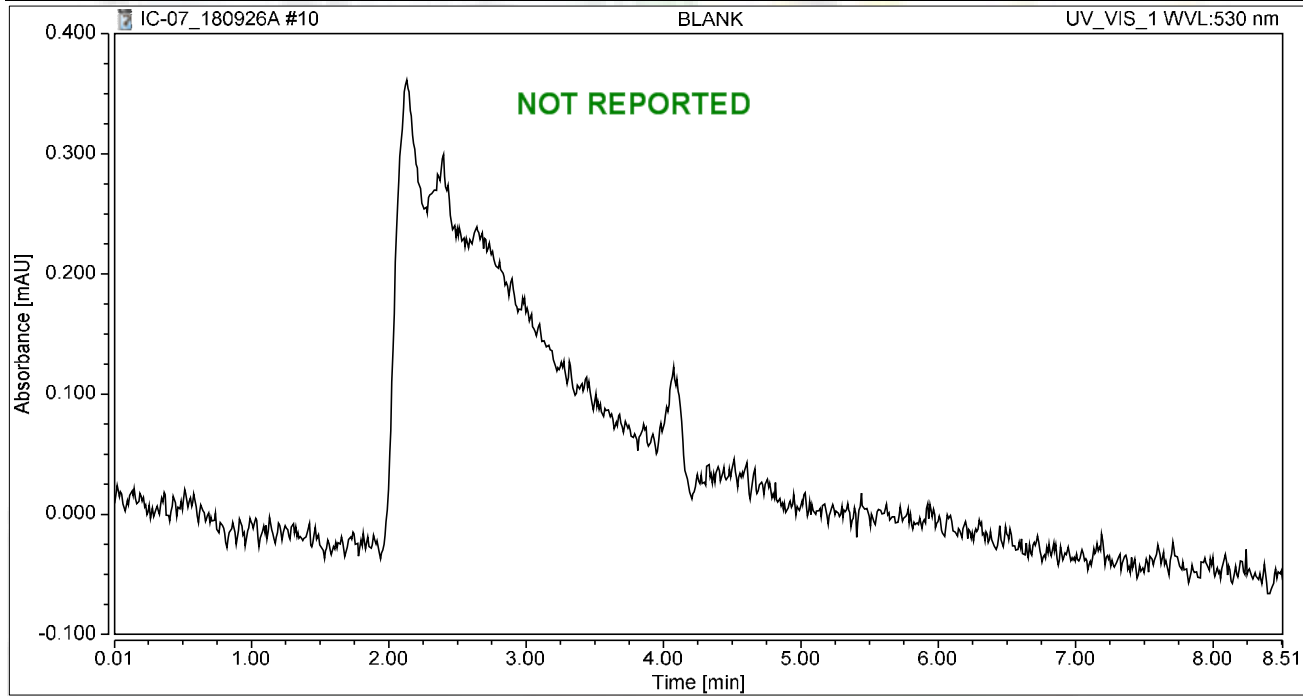
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	<b>BLANK</b>	Run Time (min):	<b>8.50</b>
Vial Number:	<b>2</b>	Injection Volume:	<b>1000.00</b>
Injection Type:	<b>Unknown</b>	Channel:	<b>UV_VIS_1</b>
Calibration Level:		Wavelength:	<b>530.0</b>
Instrument Method:	<b>Hex Chrom 4 mm</b>	Bandwidth:	<b>n.a.</b>
Processing Method:	<b>180921_IC-07_Cr6_218_6_HIGH</b>	Dilution Factor:	<b>1.0000</b>
Injection Date/Time:	<b>26/Sep/18 10:50</b>	Sample Weight:	<b>1.0000</b>

**Chromatogram**



**Integration Results**

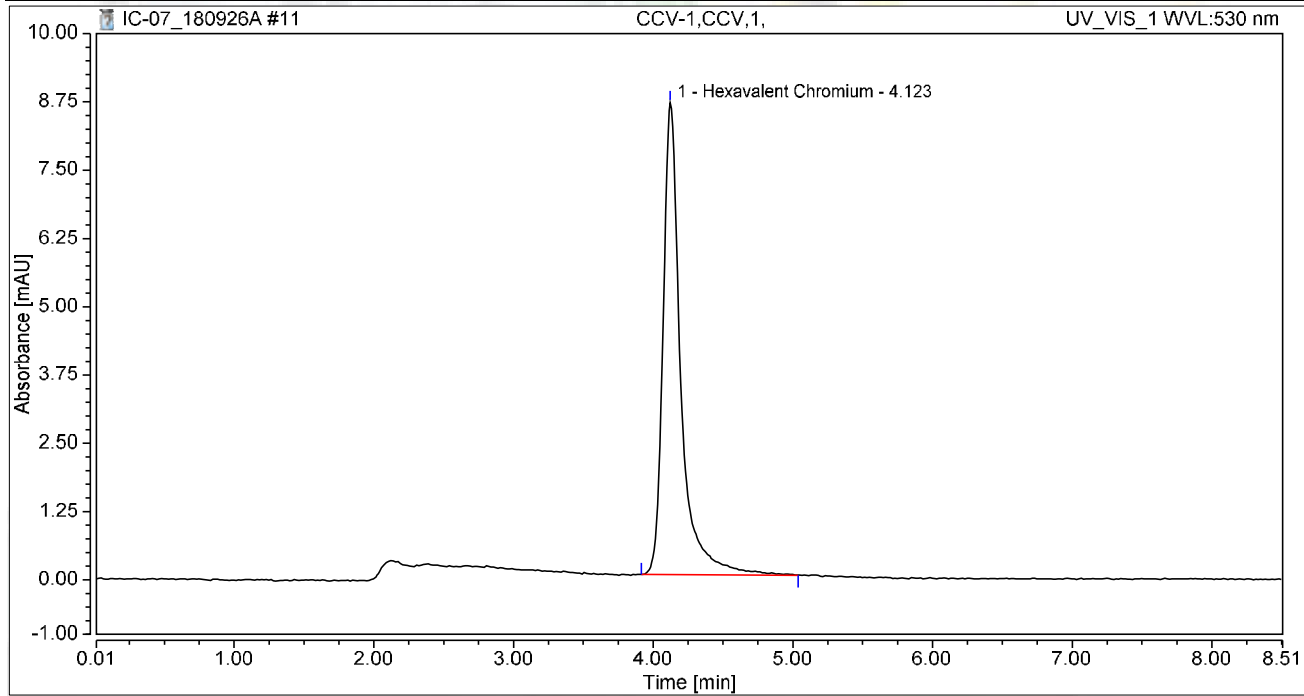
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-1,CCV,1,	Run Time (min):	8.49
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 10:59	Sample Weight:	1.0000

**Chromatogram**



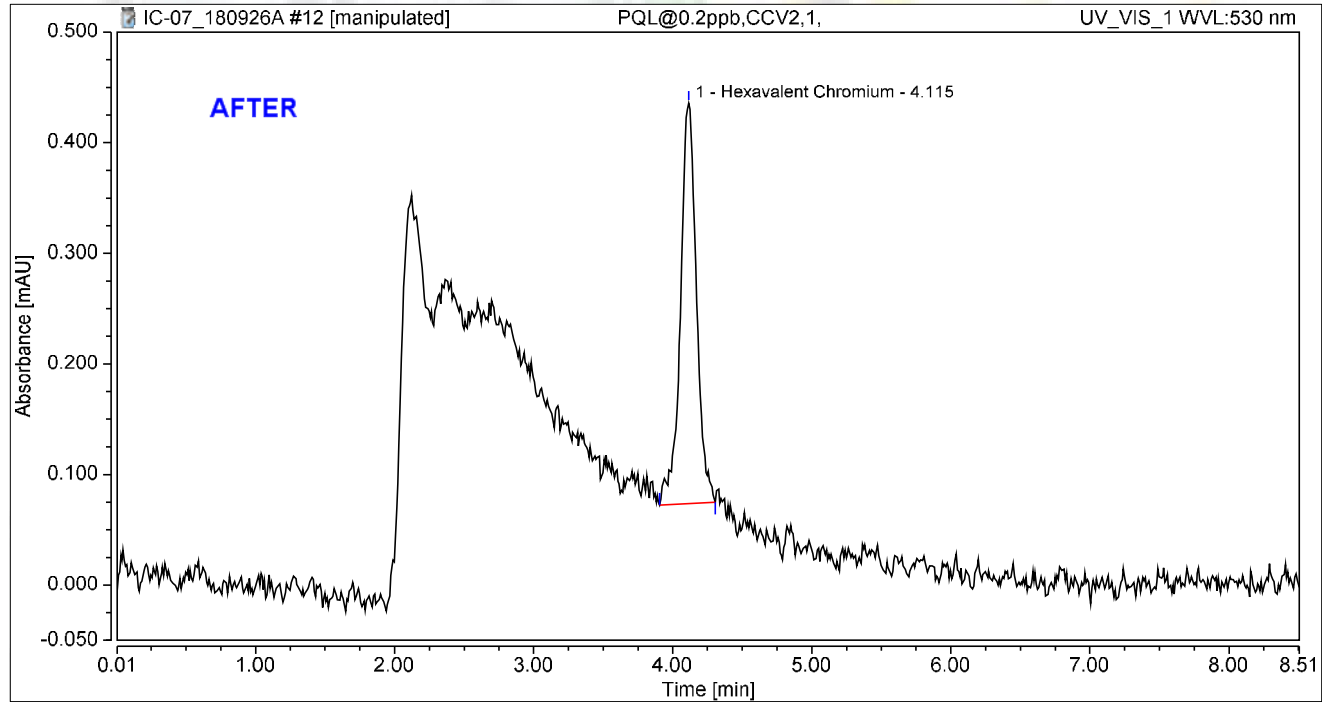
**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	1.276	8.642	100.00	100.00	5.0488
<b>Total:</b>			<b>1.276</b>	<b>8.642</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

Injection Details		
Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min): <b>8.50</b>
Vial Number:	<b>4</b>	Injection Volume: <b>1000.00</b>
Injection Type:	<b>Unknown</b>	Channel: <b>UV_VIS_1</b>
Calibration Level:		Wavelength: <b>530.0</b>
Instrument Method:	<b>Hex Chrom 4 mm</b>	Bandwidth: <b>n.a.</b>
Processing Method:	<b>180921_IC-07_Cr6_218_6_HIGH</b>	Dilution Factor: <b>1.0000</b>
Injection Date/Time:	<b>26/Sep/18 11:08</b>	Sample Weight: <b>1.0000</b>

### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.048	0.362	100.00	100.00	0.1909
<b>Total:</b>			<b>0.048</b>	<b>0.362</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/7/2018

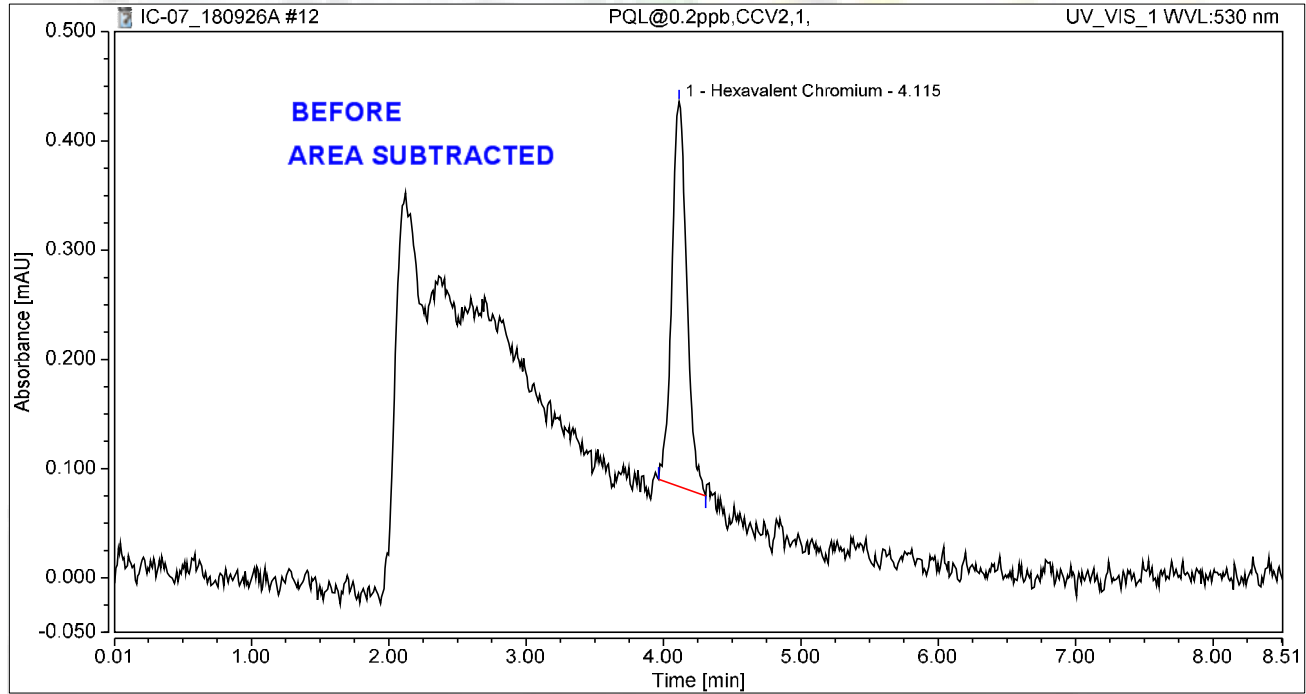
Reviewed by:  
*Monney* 10/9/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 11:08	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.044	0.352	100.00	100.00	0.1750
<b>Total:</b>			<b>0.044</b>	<b>0.352</b>	<b>100.00</b>	<b>100.00</b>	

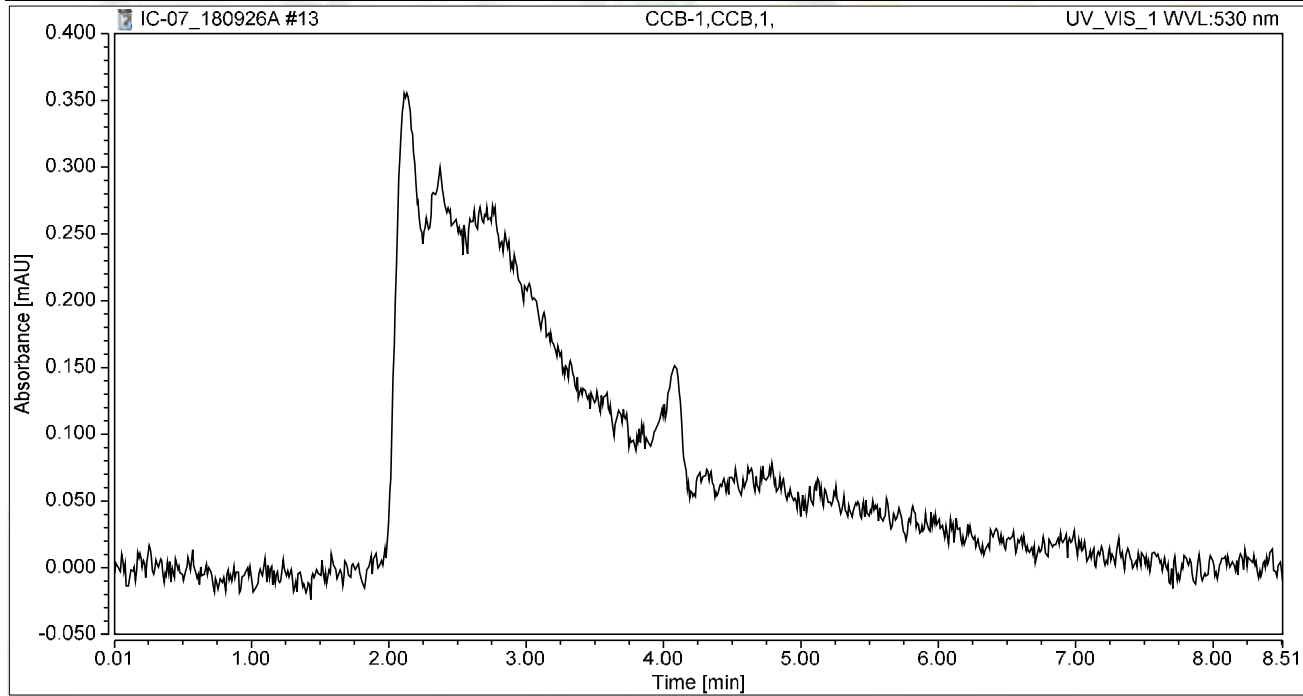
*rba* 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-1,CCB,1,	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 11:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

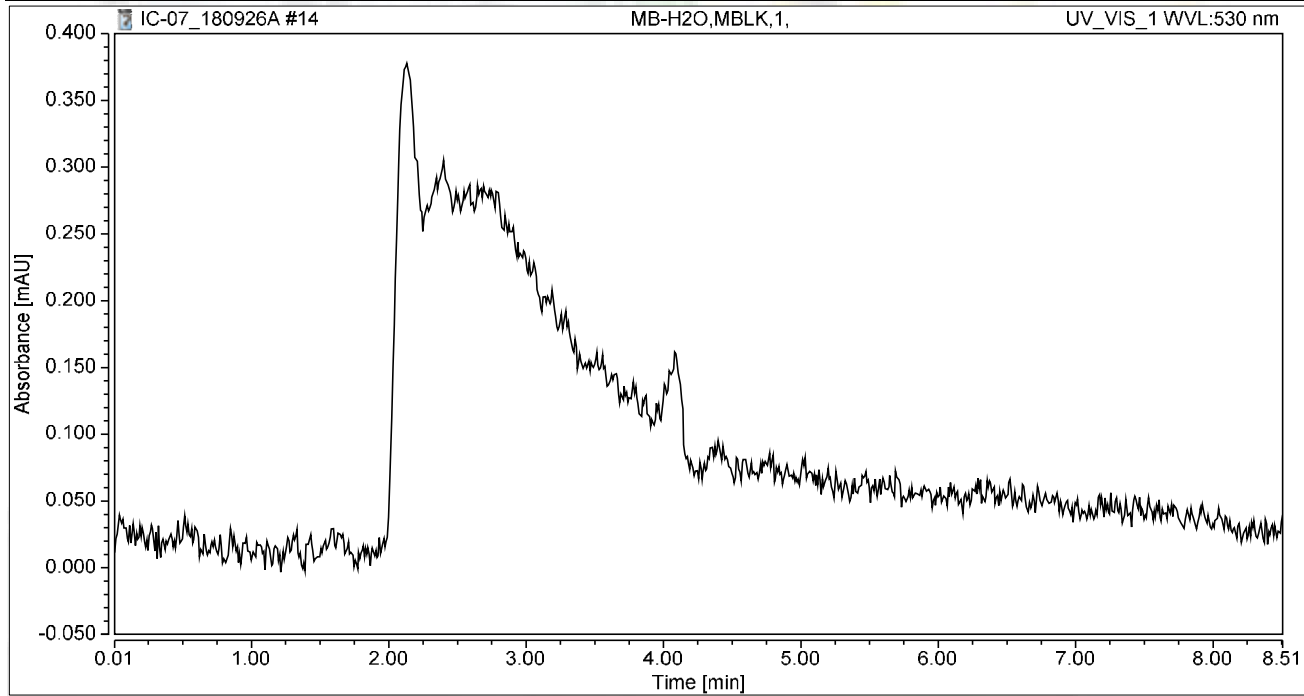
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	MB-H2O,MBLK,1,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 11:27	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

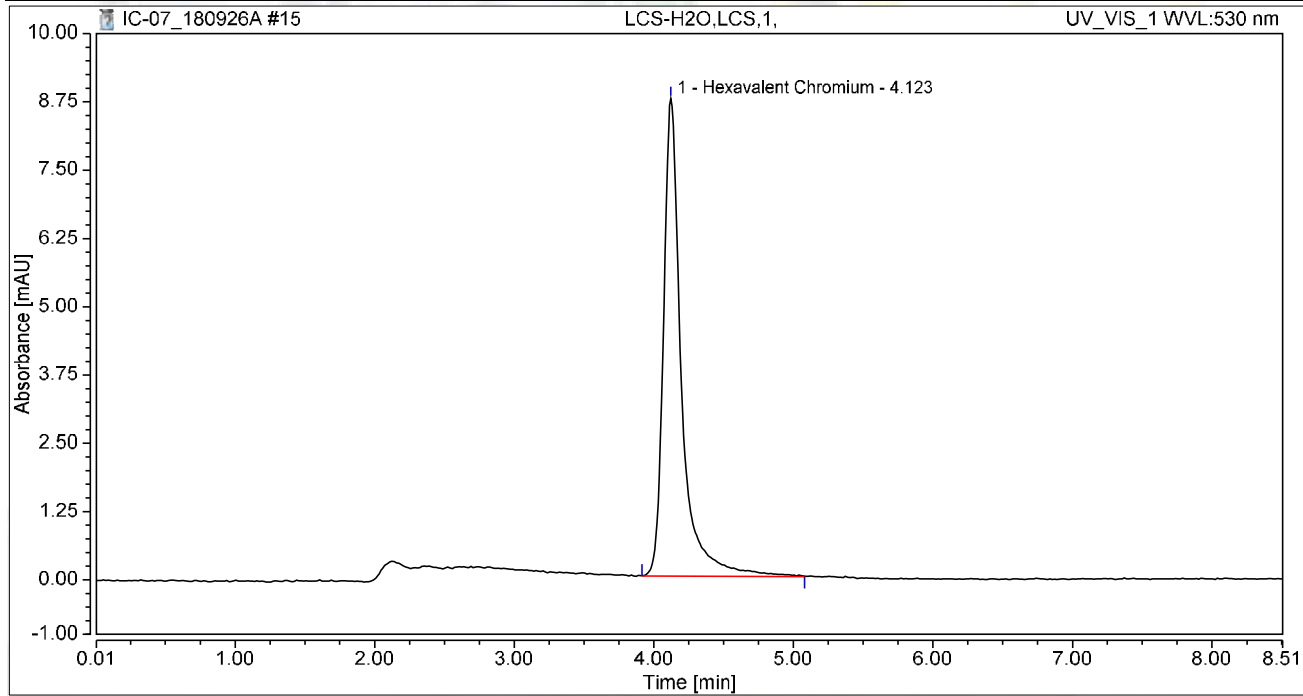
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	LCS-H2O,LCS,1,	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 11:37	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	1.302	8.740	100.00	100.00	5.1530
<b>Total:</b>			<b>1.302</b>	<b>8.740</b>	<b>100.00</b>	<b>100.00</b>	

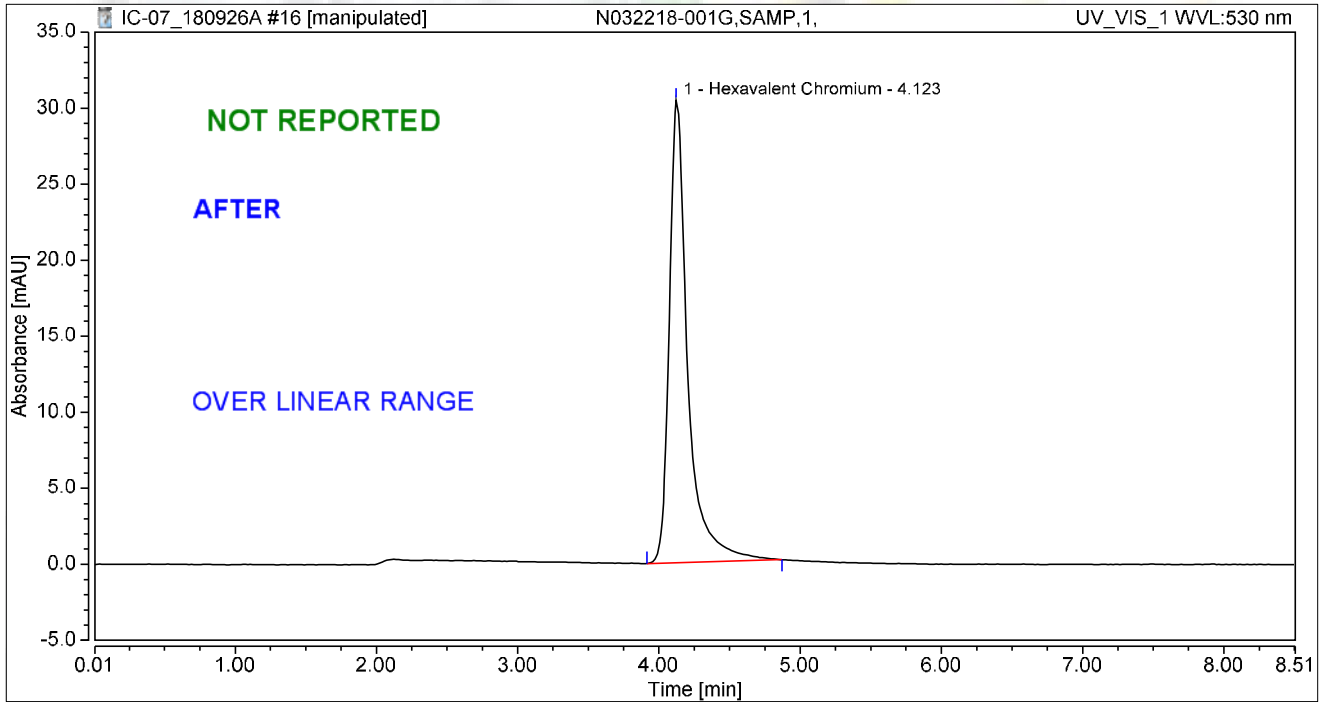


### Chromatogram and Results

**Injection Details**

Injection Name:	N032218-001G,SAMP,1,	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 11:46	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

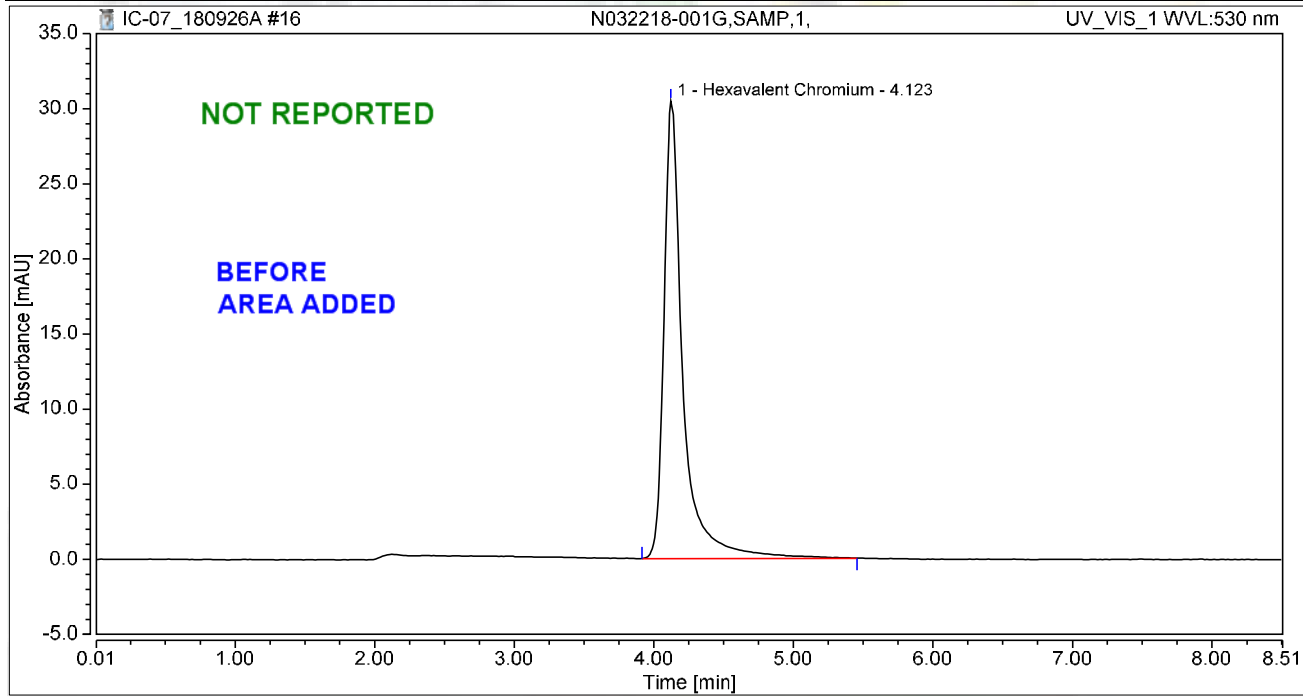
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	4.624	30.414	100.00	100.00	18.2946
<b>Total:</b>			<b>4.624</b>	<b>30.414</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032218-001G,SAMP,1,	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 11:46	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

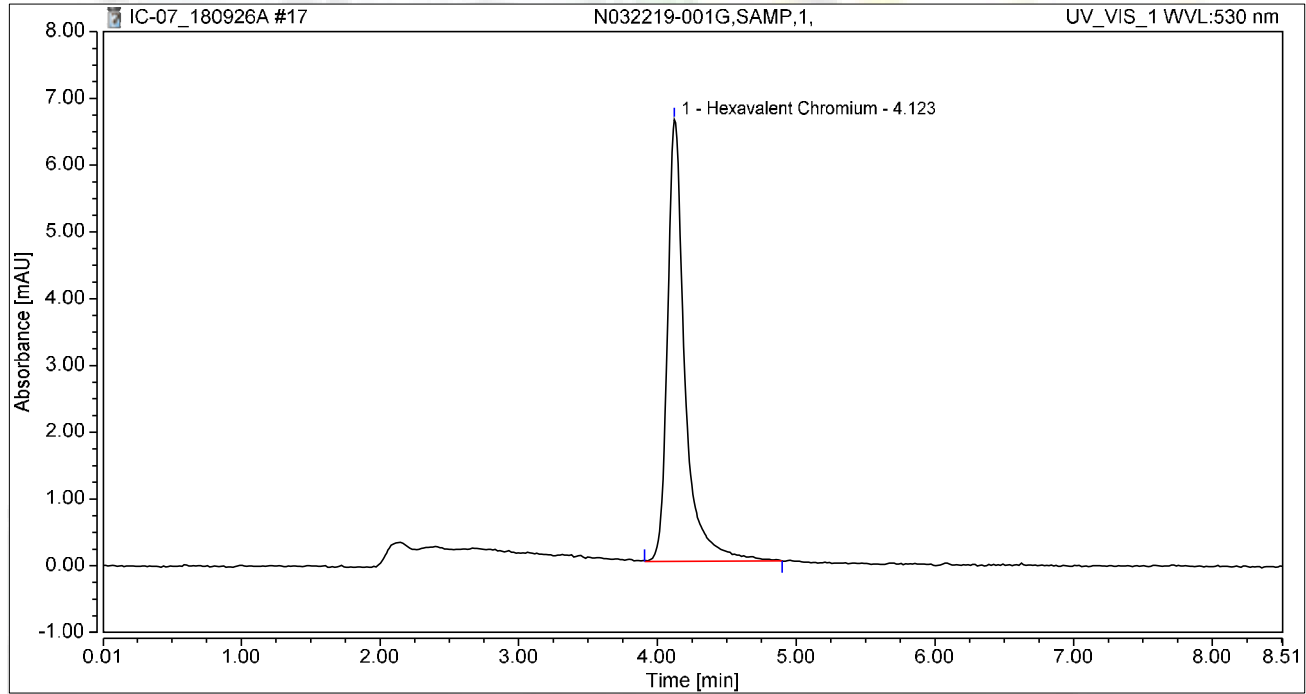
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	4.809	30.470	100.00	100.00	19.0241
<b>Total:</b>			<b>4.809</b>	<b>30.470</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032219-001G,SAMP,1,	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 11:56	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

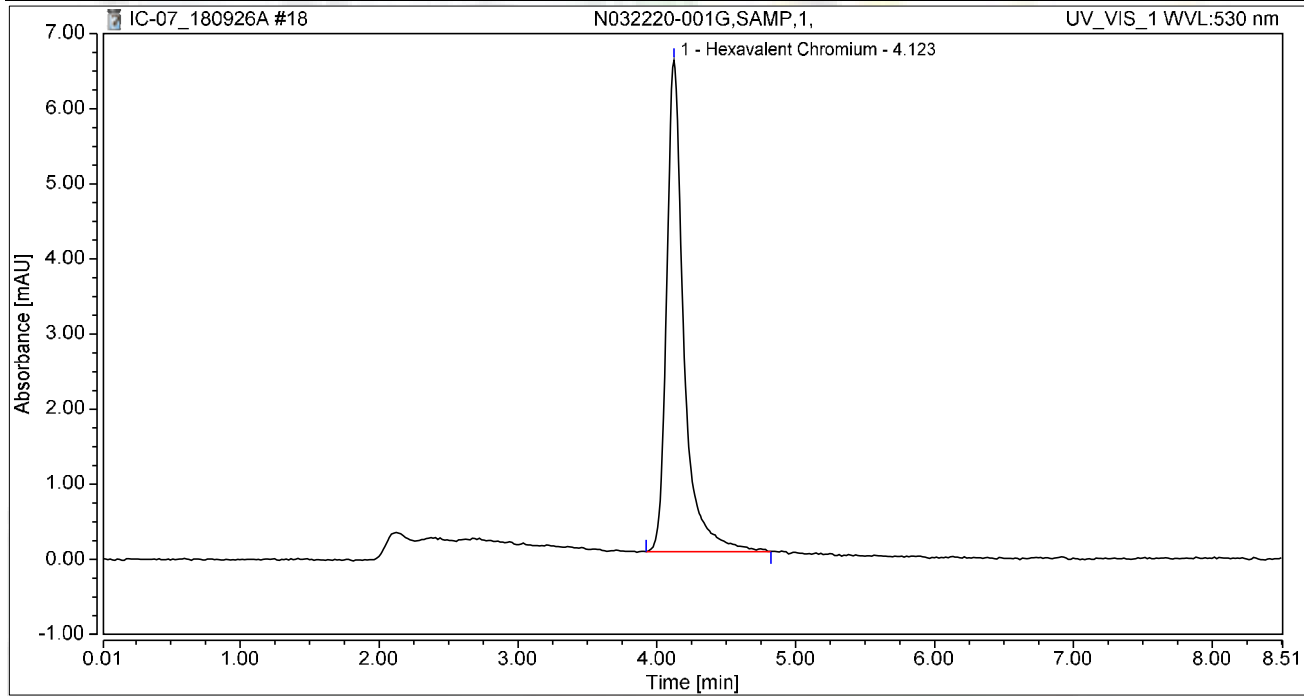
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.965	6.616	100.00	100.00	3.8174
<b>Total:</b>			<b>0.965</b>	<b>6.616</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032220-001G,SAMP,1,	Run Time (min):	8.49
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 12:05	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

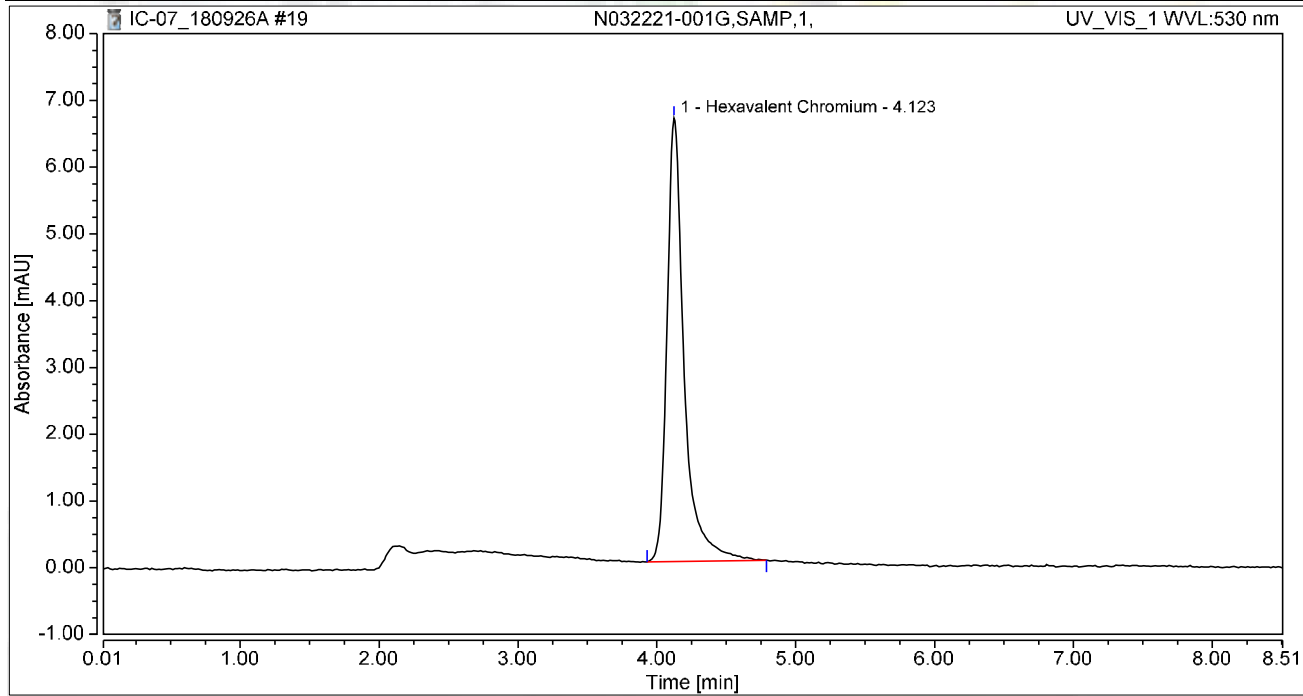
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.945	6.546	100.00	100.00	3.7368
<b>Total:</b>			<b>0.945</b>	<b>6.546</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032221-001G,SAMP,1,	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 12:15	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

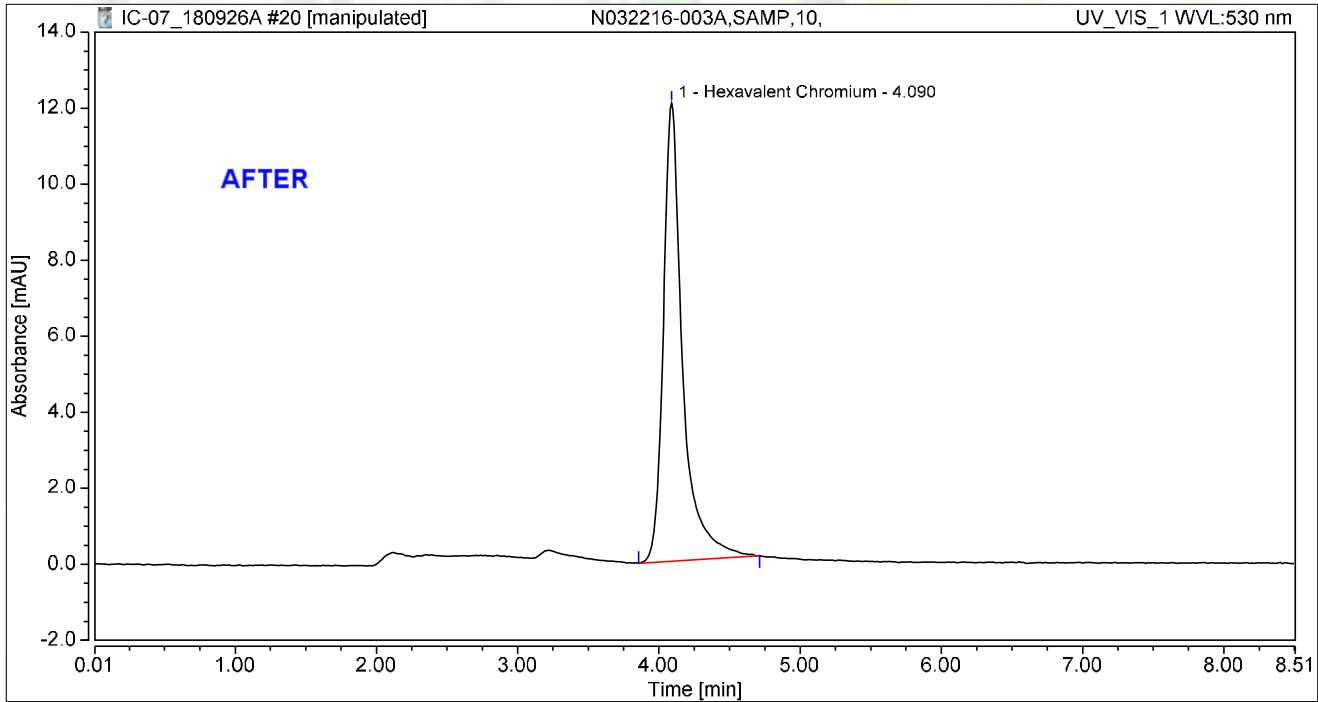
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.954	6.643	100.00	100.00	3.7754
<b>Total:</b>			<b>0.954</b>	<b>6.643</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-003A,SAMP,10,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 12:24	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	1.911	12.053	100.00	100.00	7.5603
<b>Total:</b>			<b>1.911</b>	<b>12.053</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/7/2018

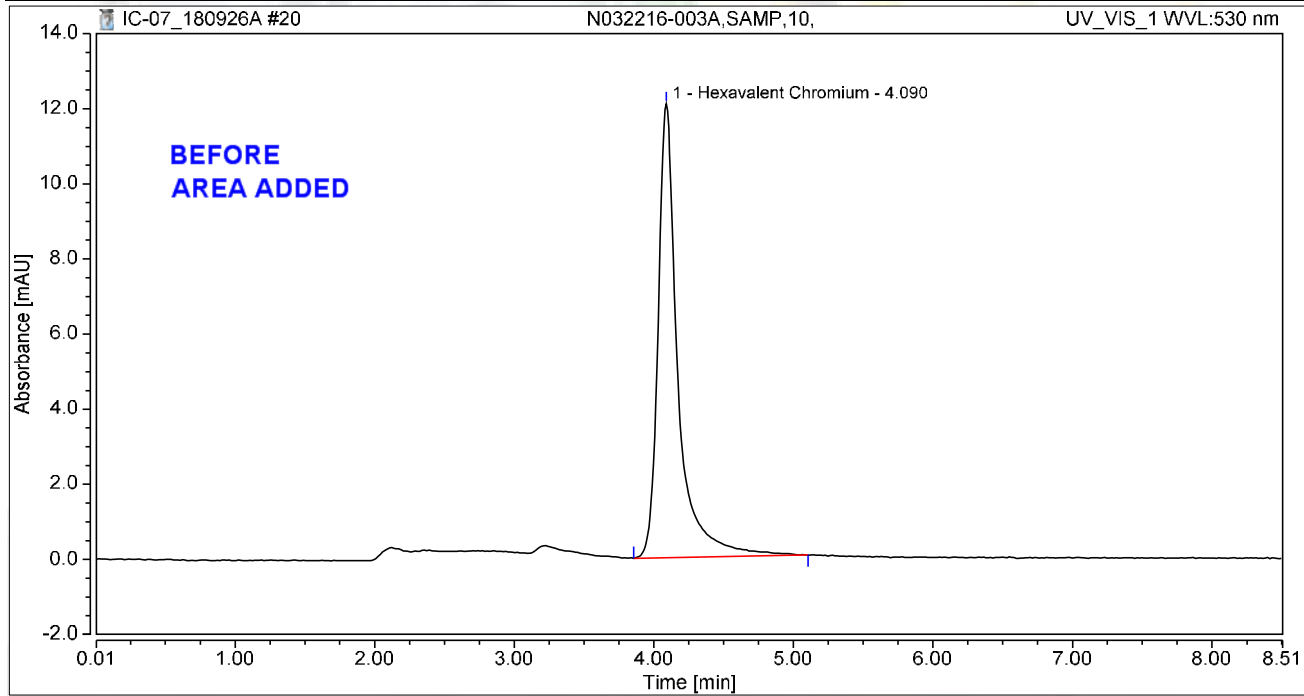
Reviewed by:  
*Mancy* 10/9/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-003A,SAMP,10,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 12:24	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	1.987	12.088	100.00	100.00	7.8626
<b>Total:</b>			<b>1.987</b>	<b>12.088</b>	<b>100.00</b>	<b>100.00</b>	

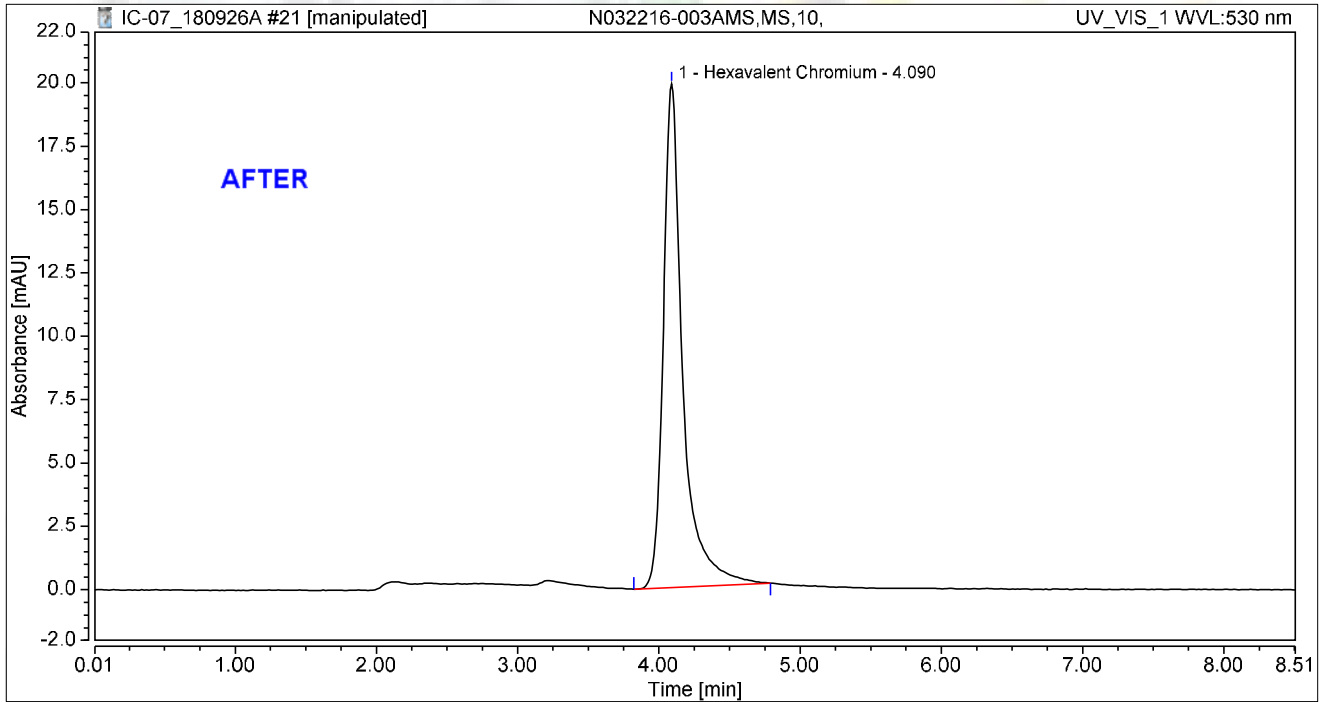
rba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-003AMS,MS,10,	Run Time (min):	8.50
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 12:34	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	3.173	19.878	100.00	100.00	12.5542
<b>Total:</b>			<b>3.173</b>	<b>19.878</b>	<b>100.00</b>	<b>100.00</b>	

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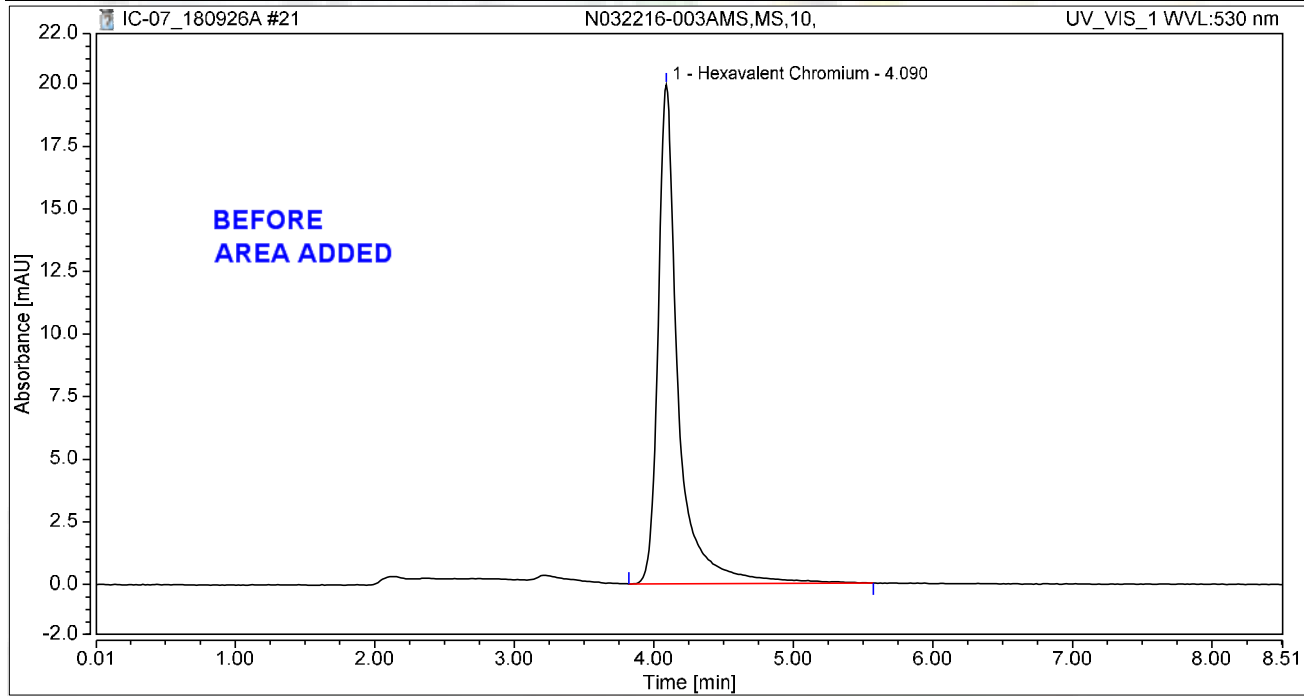


### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-003AMS,MS,10,	Run Time (min):	8.50
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 12:34	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

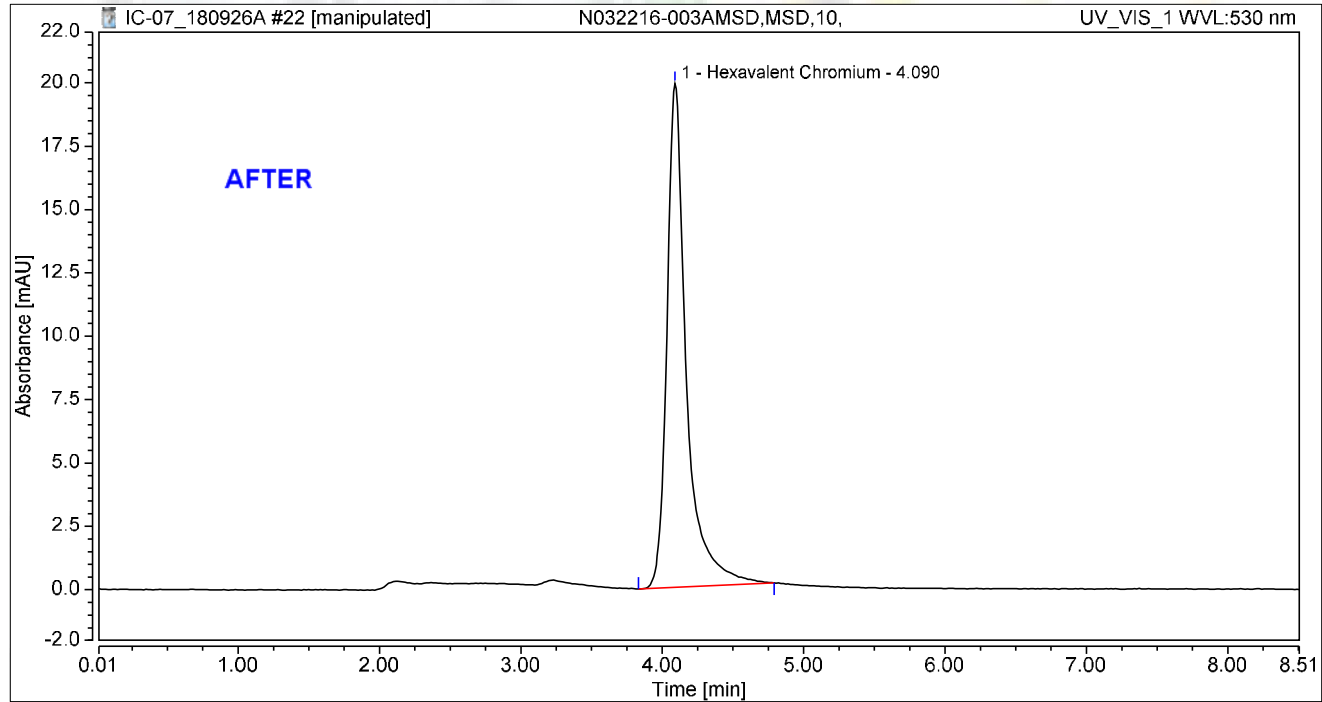
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	3.345	19.938	100.00	100.00	13.2322
<b>Total:</b>			<b>3.345</b>	<b>19.938</b>	<b>100.00</b>	<b>100.00</b>	

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### Chromatogram and Results

Injection Details		
Injection Name:	N032216-003AMSD,MSD,10,	Run Time (min): 8.49
Vial Number:	14	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	26/Sep/18 12:43	Sample Weight: 1.0000

### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	3.172	19.874	100.00	100.00	12.5499
<b>Total:</b>			<b>3.172</b>	<b>19.874</b>	<b>100.00</b>	<b>100.00</b>	

rba 10/7/2018

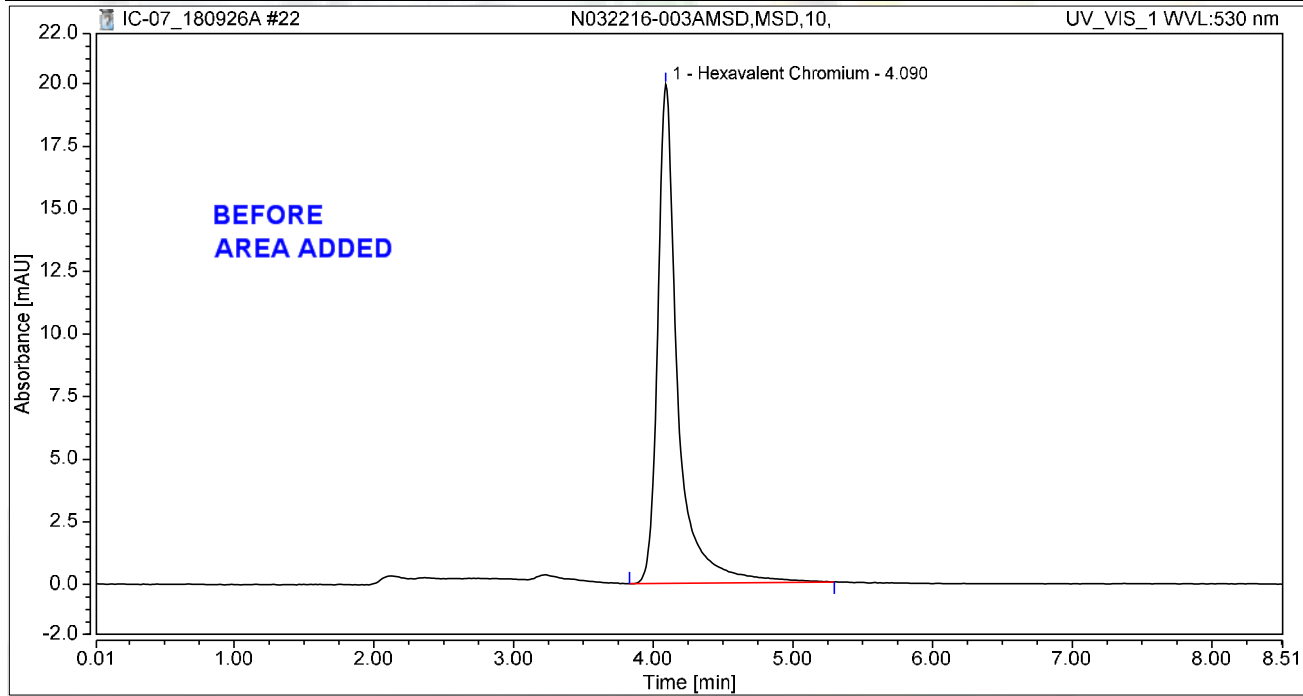
Reviewed by:  
*Money* 10/9/2018  
 My first report/Integration

### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-003AMSD,MSD,10,	Run Time (min):	8.49
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 12:43	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	3.311	19.928	100.00	100.00	13.1003
<b>Total:</b>			<b>3.311</b>	<b>19.928</b>	<b>100.00</b>	<b>100.00</b>	

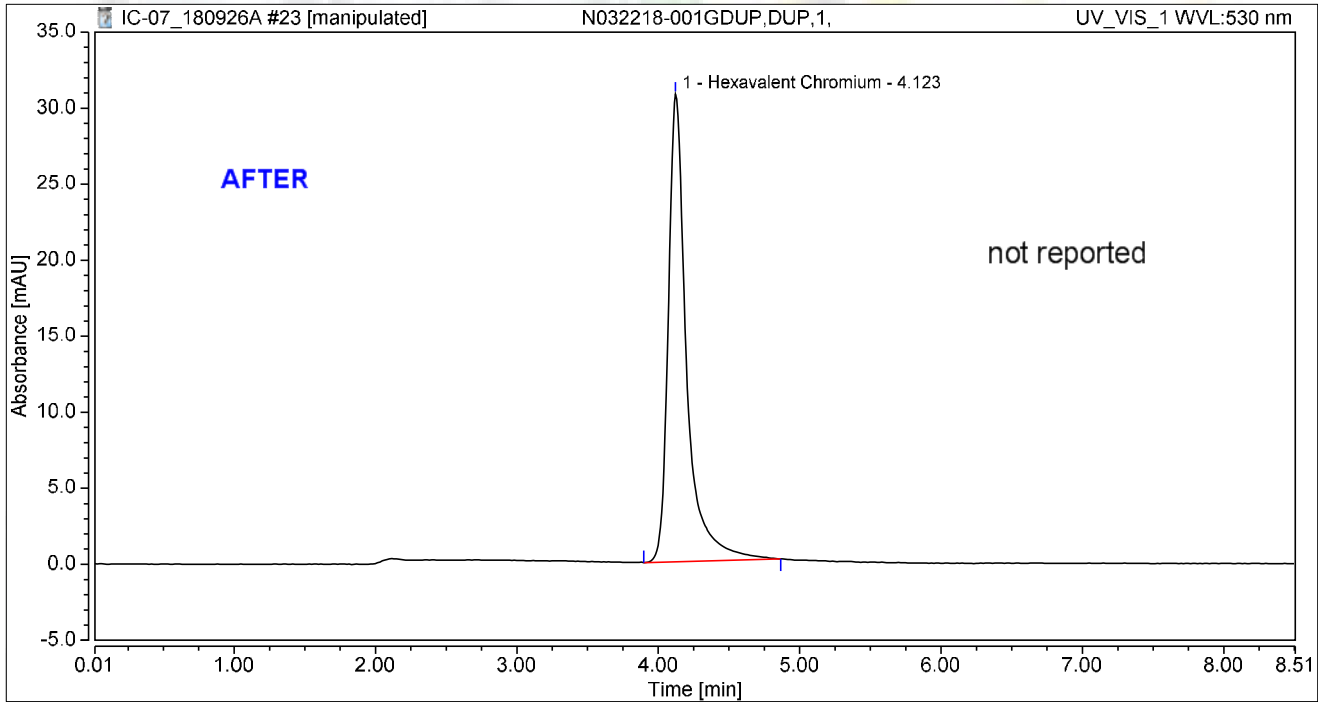
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### Chromatogram and Results

**Injection Details**

Injection Name:	N032218-001GDUP,DUP,1,	Run Time (min):	8.49
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 12:52	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	4.622	30.747	100.00	100.00	18.2868
<b>Total:</b>			<b>4.622</b>	<b>30.747</b>	<b>100.00</b>	<b>100.00</b>	

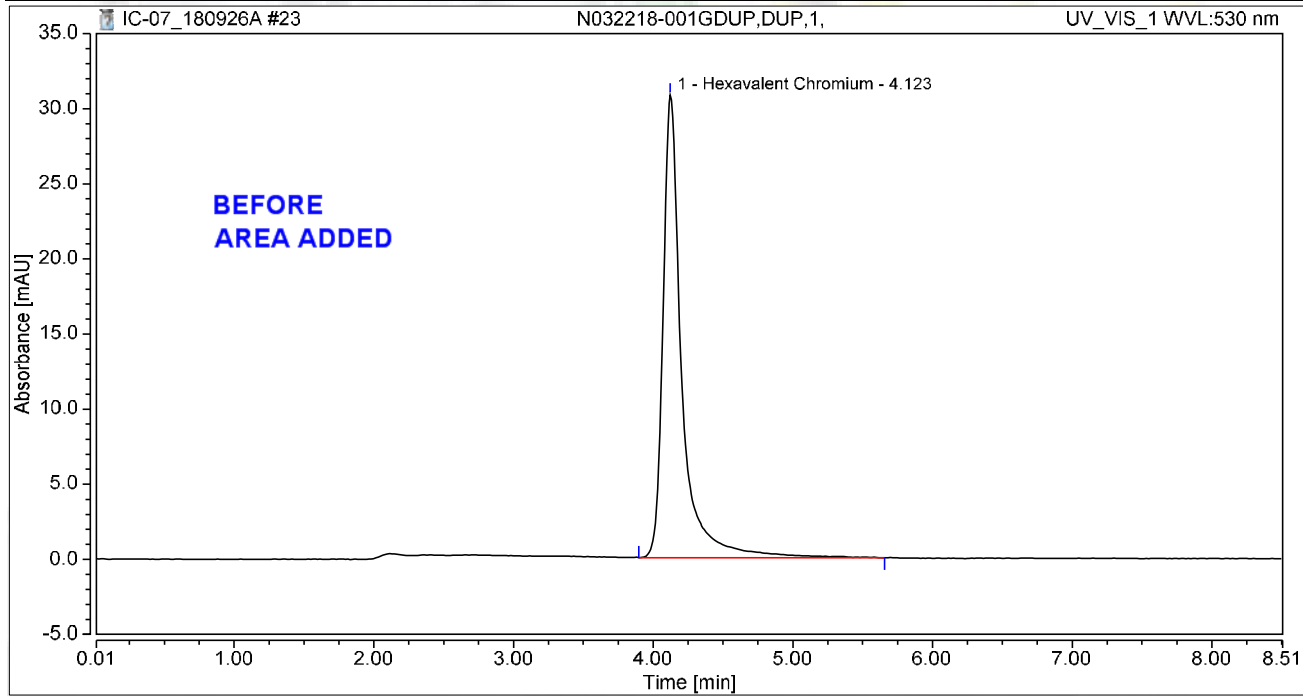
jba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032218-001GDUP,DUP,1,	Run Time (min):	8.49
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 12:52	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	4.817	30.804	100.00	100.00	19.0580
<b>Total:</b>			<b>4.817</b>	<b>30.804</b>	<b>100.00</b>	<b>100.00</b>	

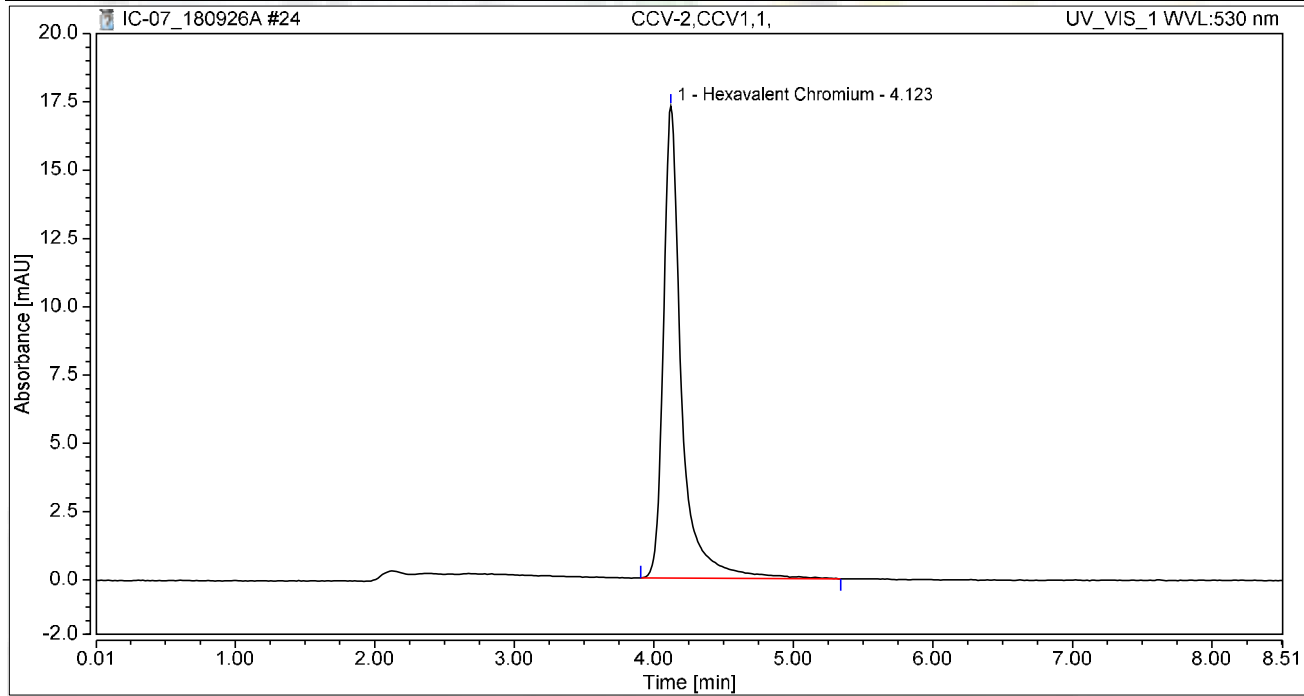
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### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-2,CCV1,1,	Run Time (min):	8.50
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 13:02	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

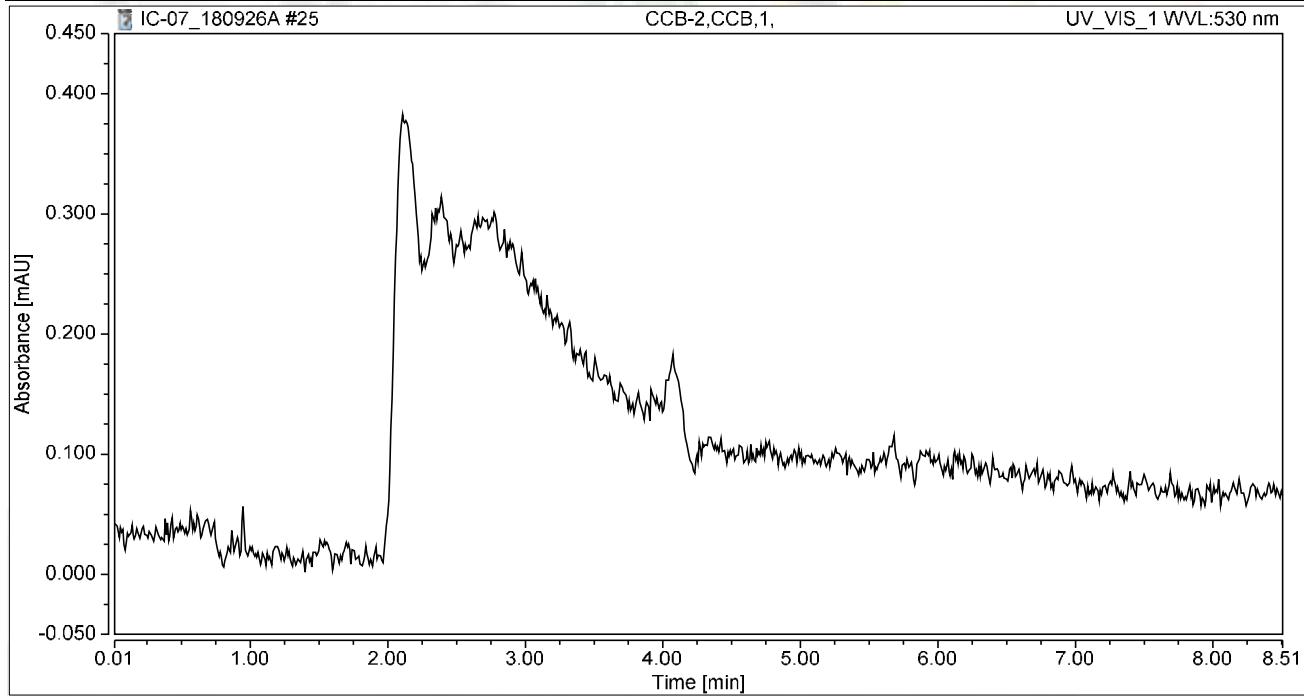
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	2.595	17.286	100.00	100.00	10.2662
<b>Total:</b>			<b>2.595</b>	<b>17.286</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-2,CCB,1,	Run Time (min):	8.49
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 13:11	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

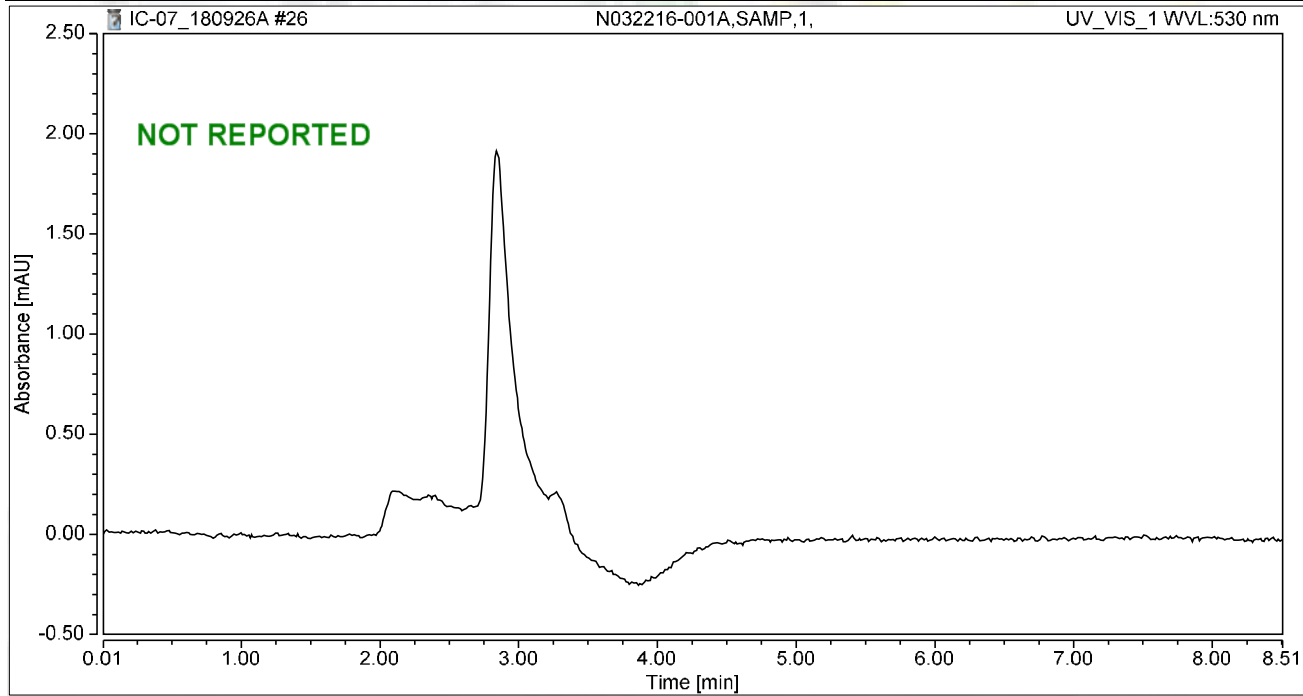
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	18	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 13:21	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

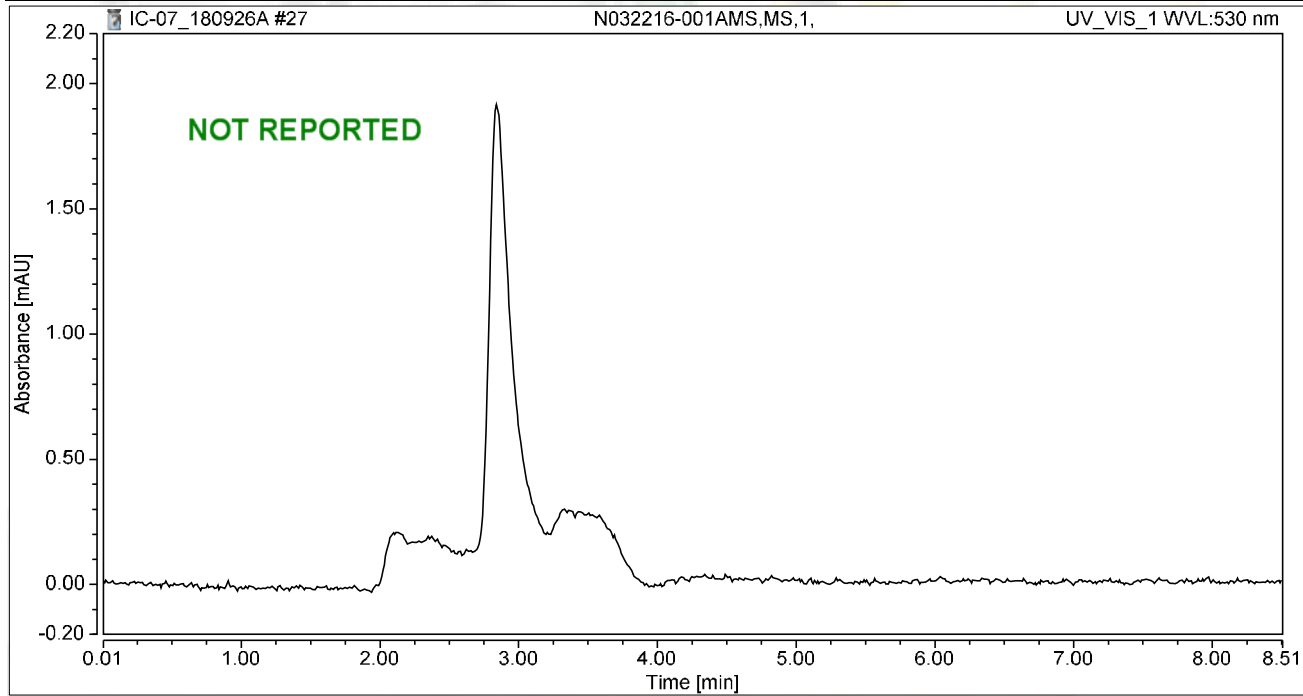


### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 13:30	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

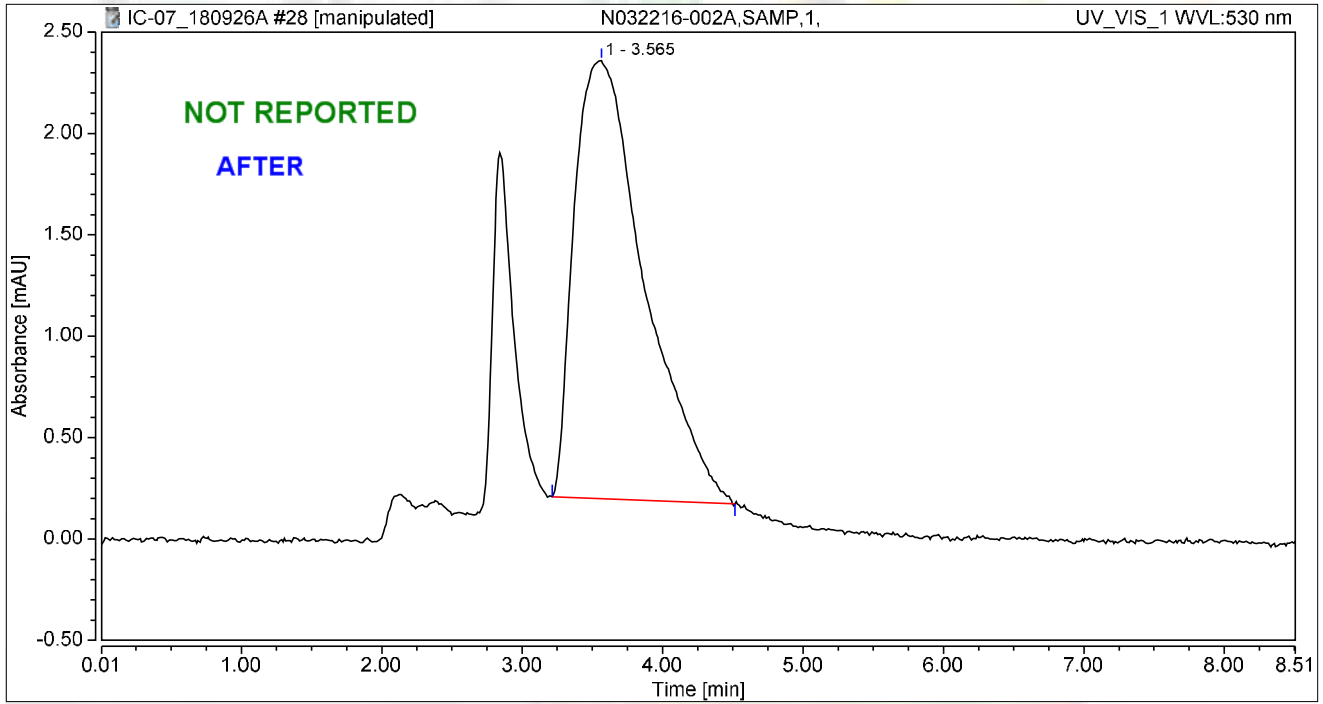
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-002A,SAMP,1,	Run Time (min):	8.50
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 13:40	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1		3.565	1.250	2.160	100.00	100.00	n.a.
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>1.250</b>	<b>2.160</b>	<b>100.00</b>	<b>100.00</b>	

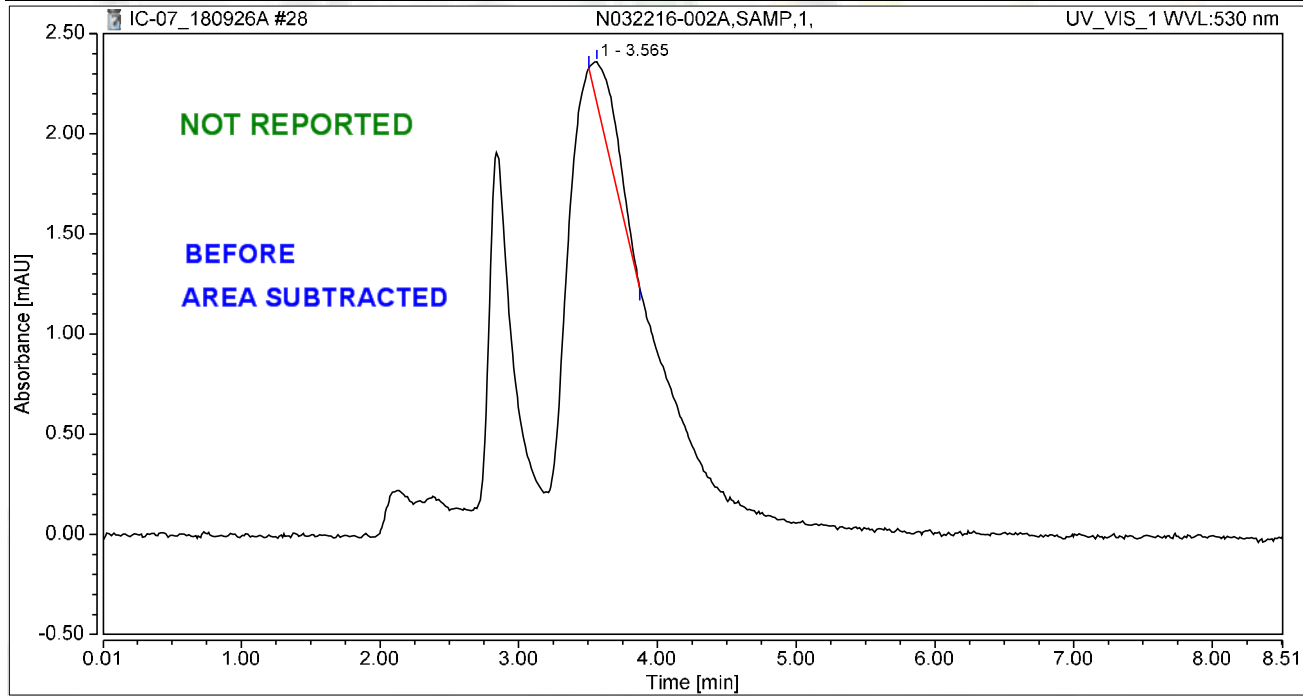
*rba* 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-002A,SAMP,1,	Run Time (min):	8.50
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 13:40	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

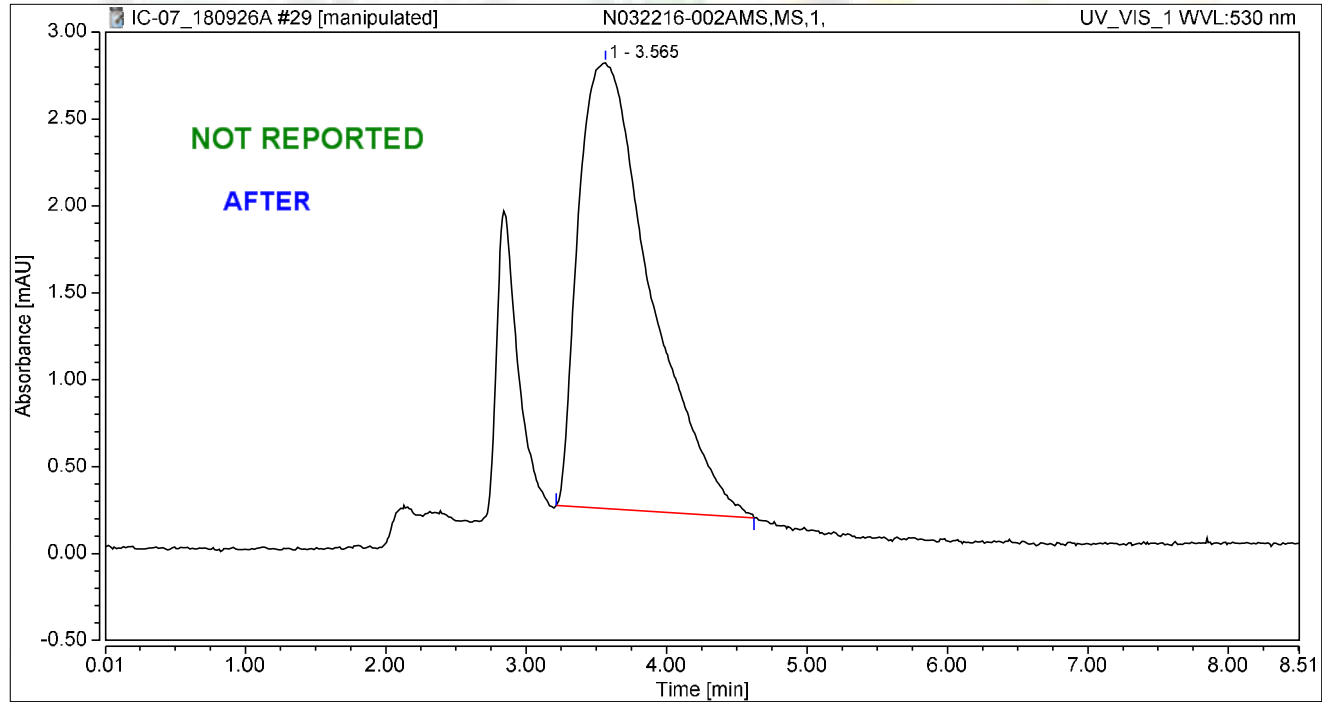
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1		3.565	0.067	0.207	100.00	100.00	n.a.
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.067</b>	<b>0.207</b>	<b>100.00</b>	<b>100.00</b>	

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### Chromatogram and Results

Injection Details		
Injection Name:	N032216-002AMS,MS,1,	Run Time (min): 8.50
Vial Number:	21	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	26/Sep/18 13:49	Sample Weight: 1.0000

#### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1		3.565	1.529	2.566	100.00	100.00	n.a.
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>1.529</b>	<b>2.566</b>	<b>100.00</b>	<b>100.00</b>	

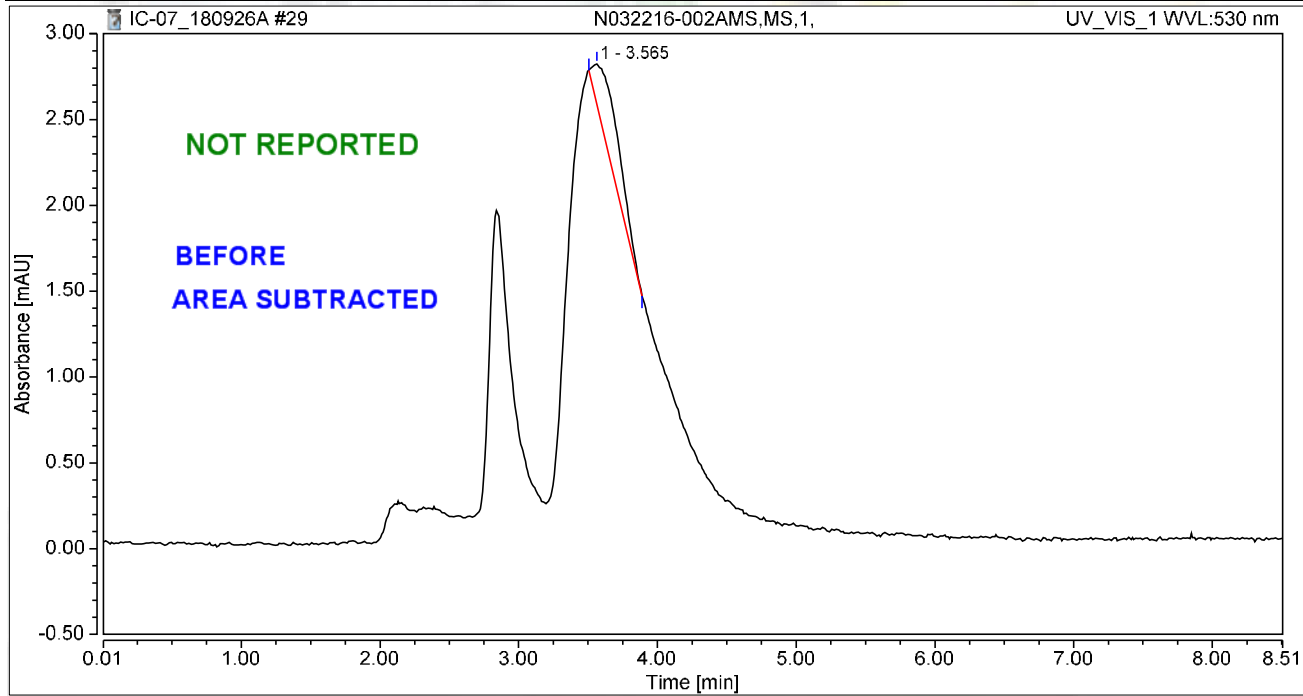
*nba* 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-002AMS,MS,1,	Run Time (min):	8.50
Vial Number:	21	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 13:49	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1		3.565	0.080	0.238	100.00	100.00	n.a.
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.080</b>	<b>0.238</b>	<b>100.00</b>	<b>100.00</b>	

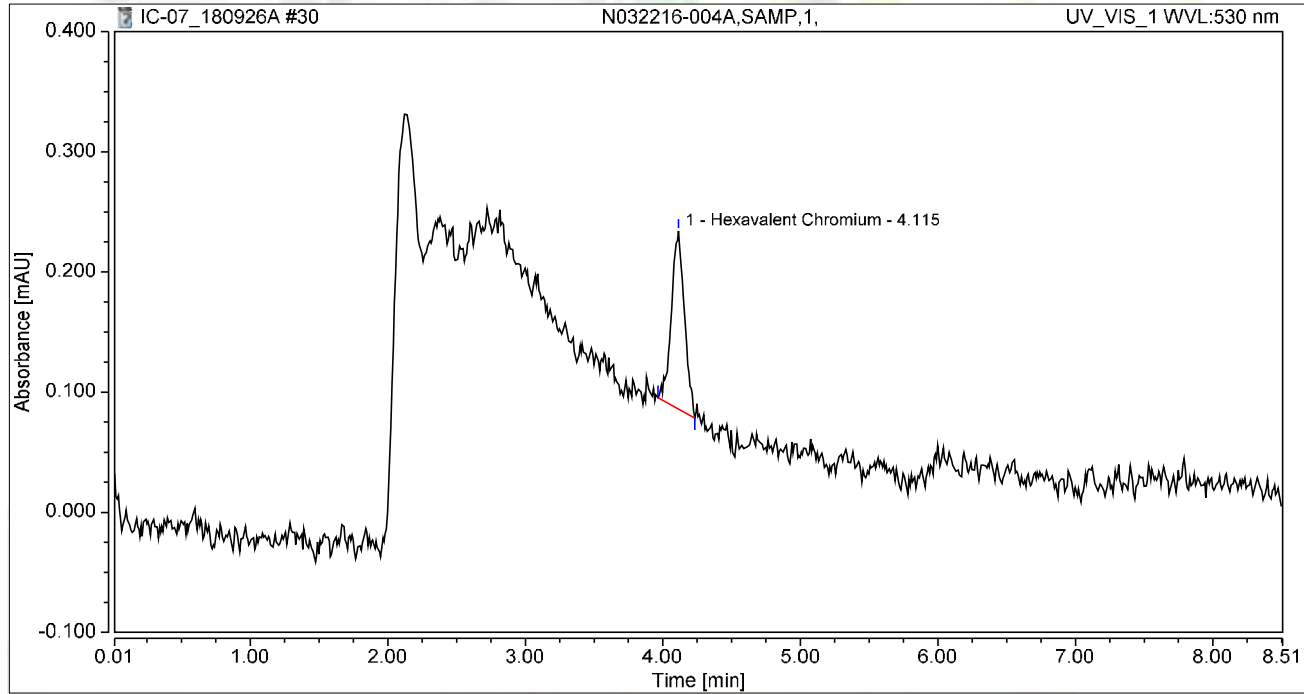
*rba* 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-004A,SAMP,1,	Run Time (min):	8.49
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 13:59	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

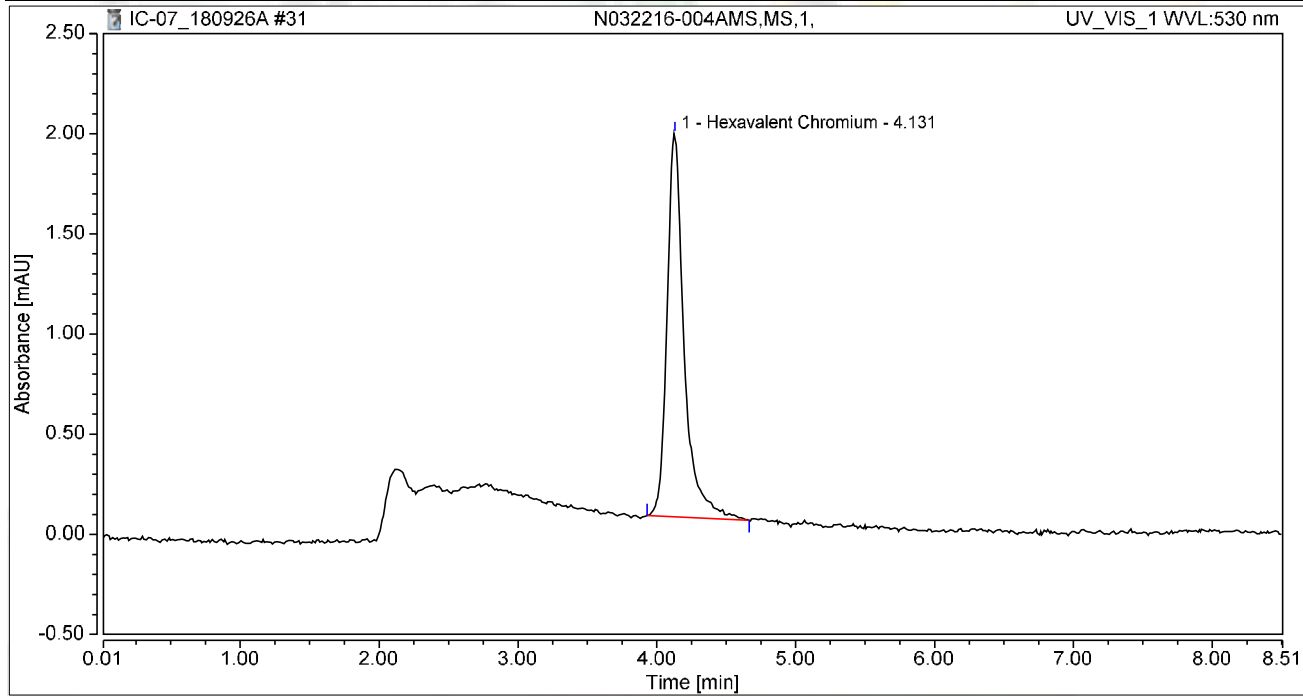
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.016	0.148	100.00	100.00	0.0639
<b>Total:</b>			<b>0.016</b>	<b>0.148</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-004AMS,MS,1,	Run Time (min):	8.49
Vial Number:	23	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 14:08	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

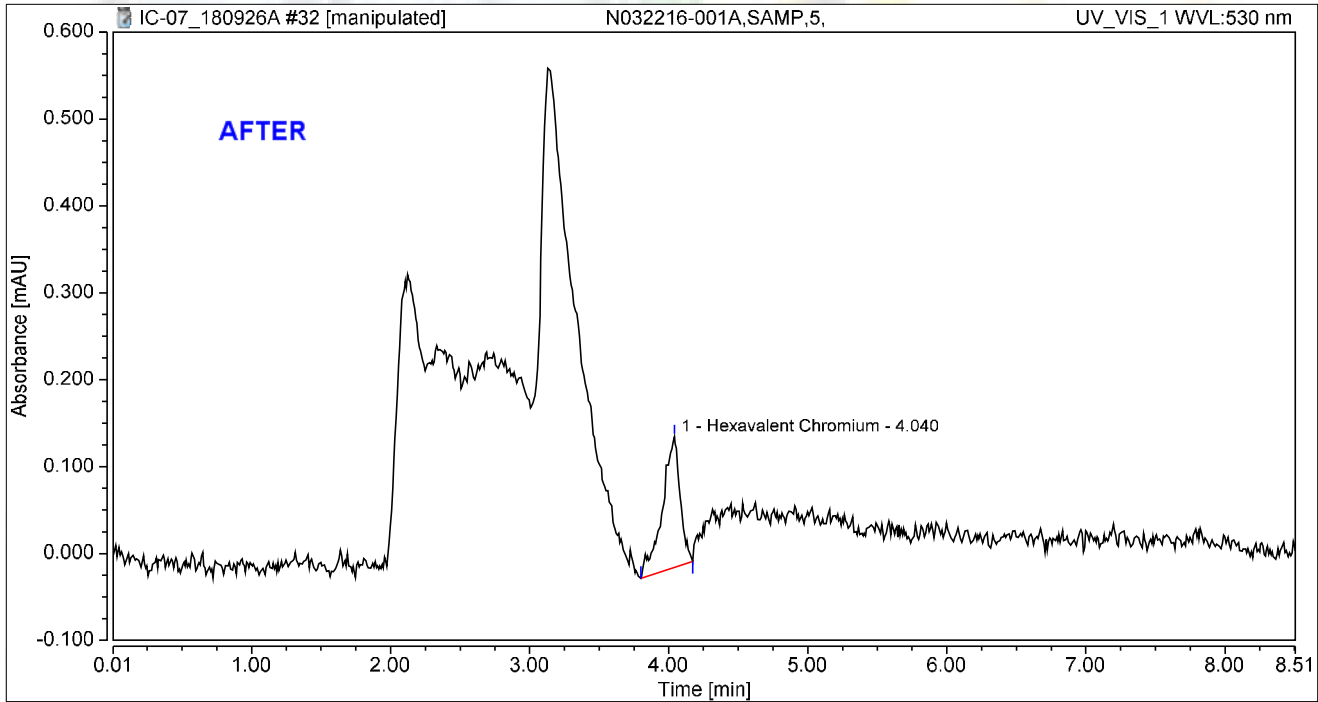
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.275	1.913	100.00	100.00	1.0864
<b>Total:</b>			<b>0.275</b>	<b>1.913</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-001A,SAMP,5,	Run Time (min):	8.50
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 14:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.040	0.022	0.150	100.00	100.00	0.0883
<b>Total:</b>			<b>0.022</b>	<b>0.150</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/7/2018

Reviewed by:  
*Money* 10/9/2018

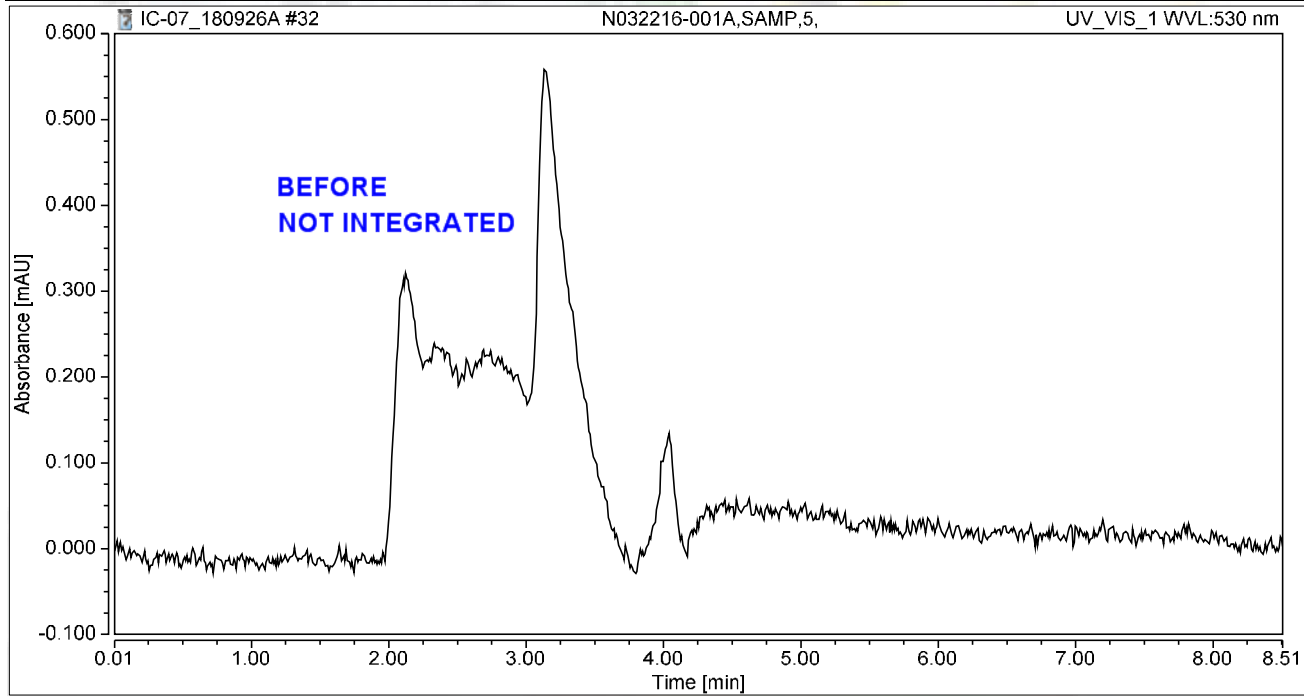


### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-001A,SAMP,5,	Run Time (min):	8.50
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 14:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

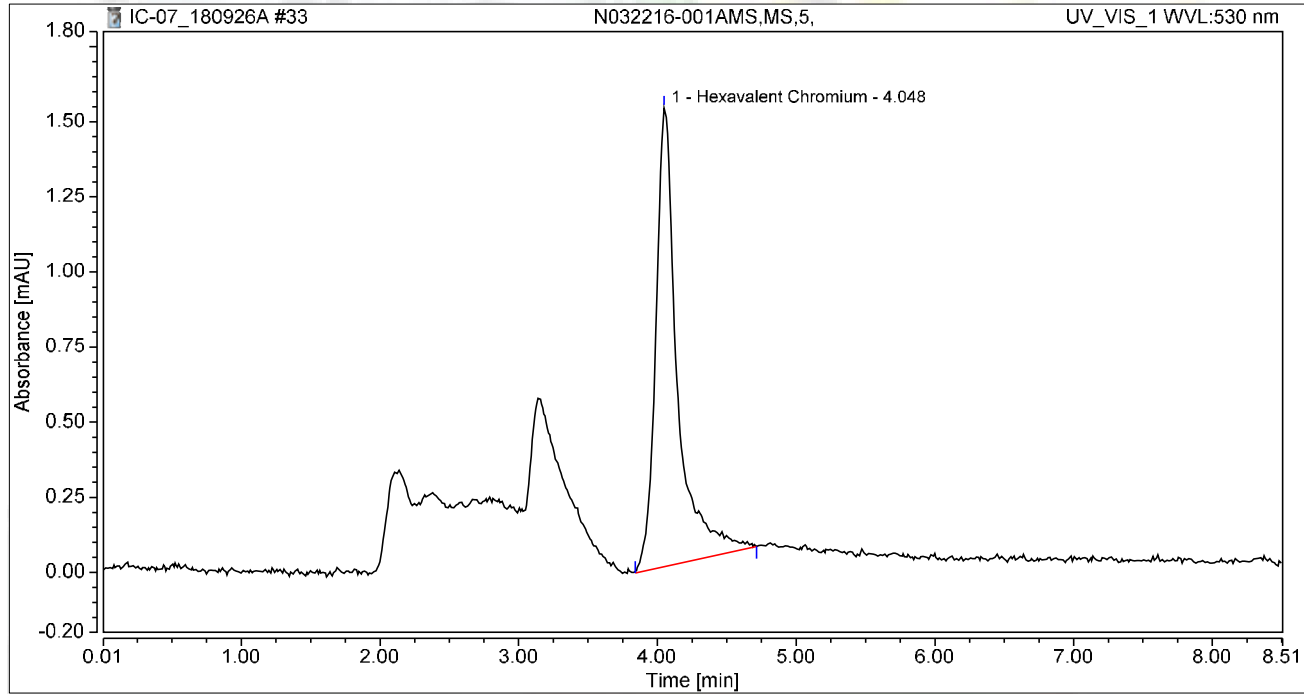
rba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-001AMS,MS,5,	Run Time (min):	8.50
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 14:27	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

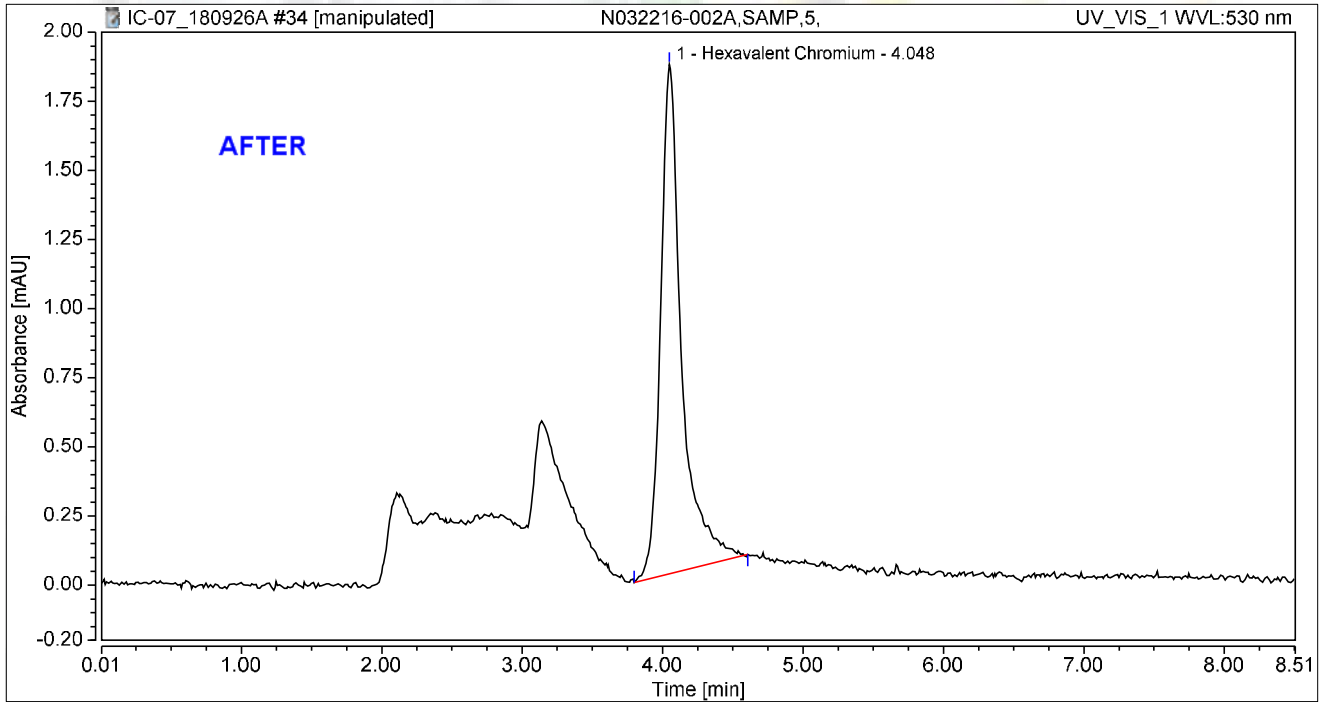
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.048	0.277	1.527	100.00	100.00	1.0975
<b>Total:</b>			<b>0.277</b>	<b>1.527</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-002A,SAMP,5,	Run Time (min):	8.50
Vial Number:	26	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 14:37	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.048	0.322	1.842	100.00	100.00	1.2722
<b>Total:</b>			<b>0.322</b>	<b>1.842</b>	<b>100.00</b>	<b>100.00</b>	

rba 10/7/2018

Reviewed by:

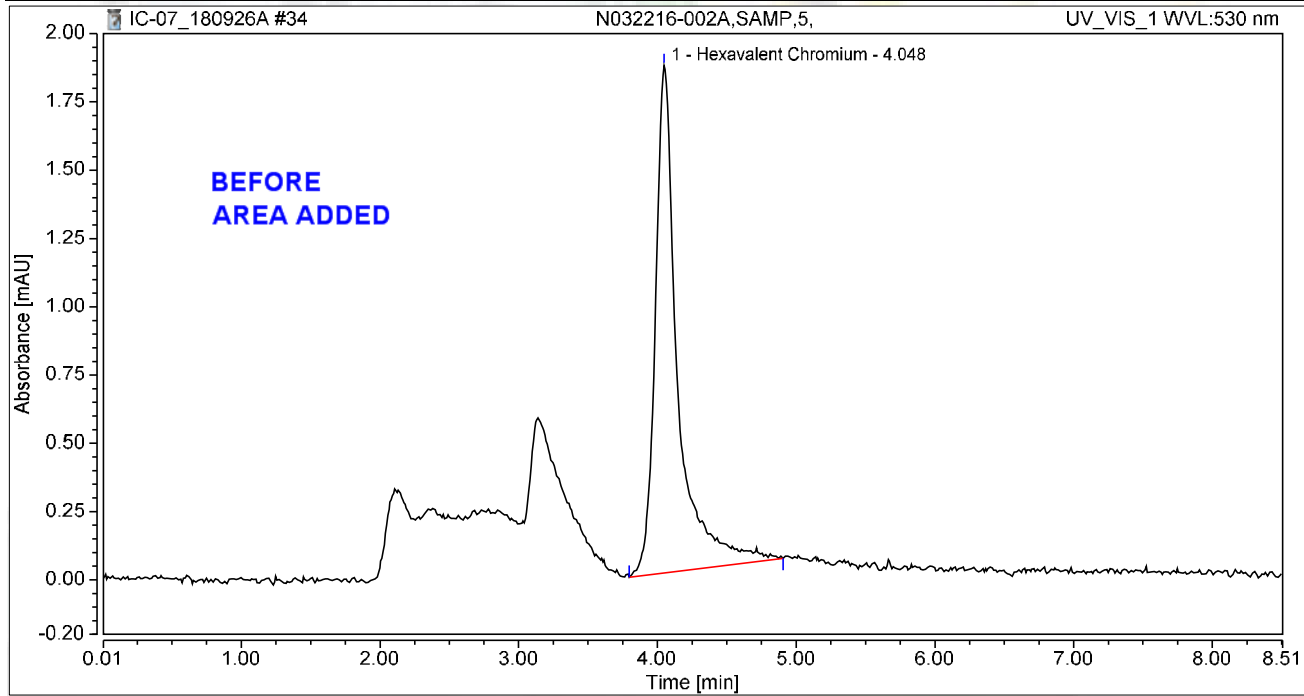
Denny 10/9/2018  
My first report/Integration

### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-002A,SAMP,5,	Run Time (min):	8.50
Vial Number:	26	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 14:37	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.048	0.350	1.858	100.00	100.00	1.3849
<b>Total:</b>			<b>0.350</b>	<b>1.858</b>	<b>100.00</b>	<b>100.00</b>	

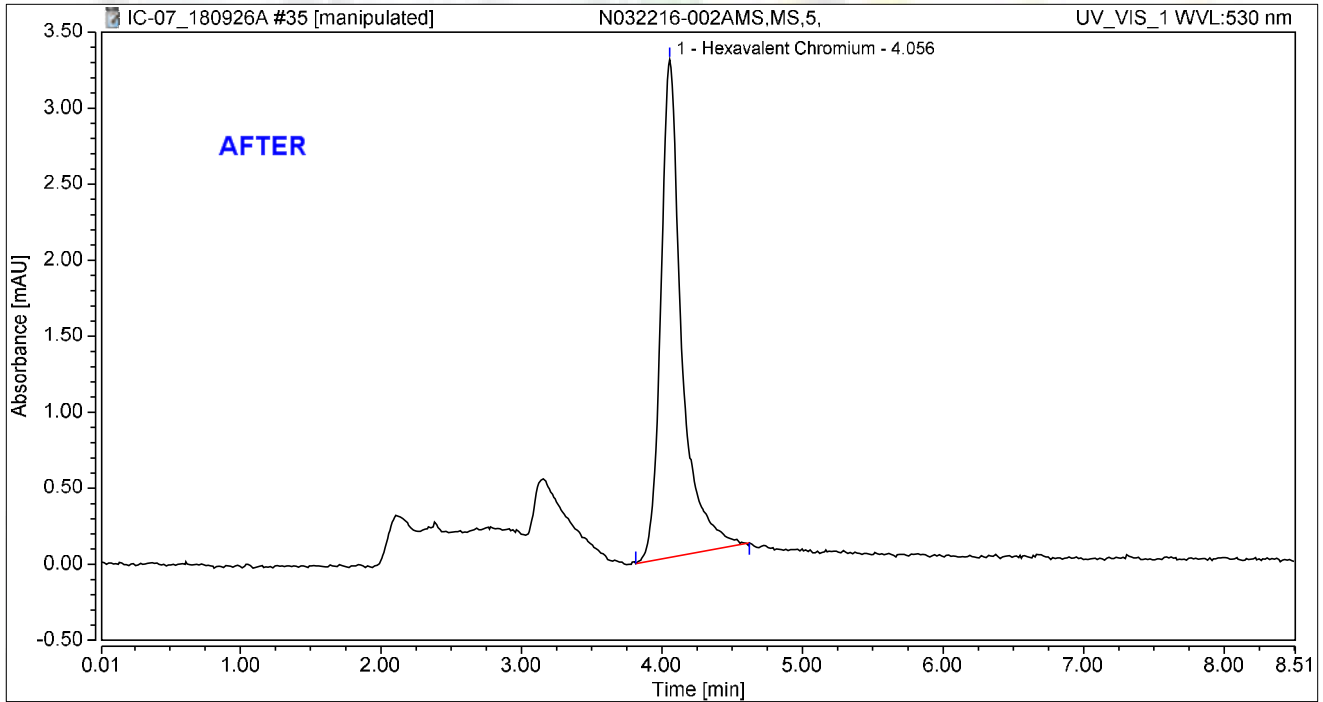
rba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-002AMS,MS,5,	Run Time (min):	8.49
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 14:46	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.056	0.565	3.273	100.00	100.00	2.2353
<b>Total:</b>			<b>0.565</b>	<b>3.273</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/7/2018

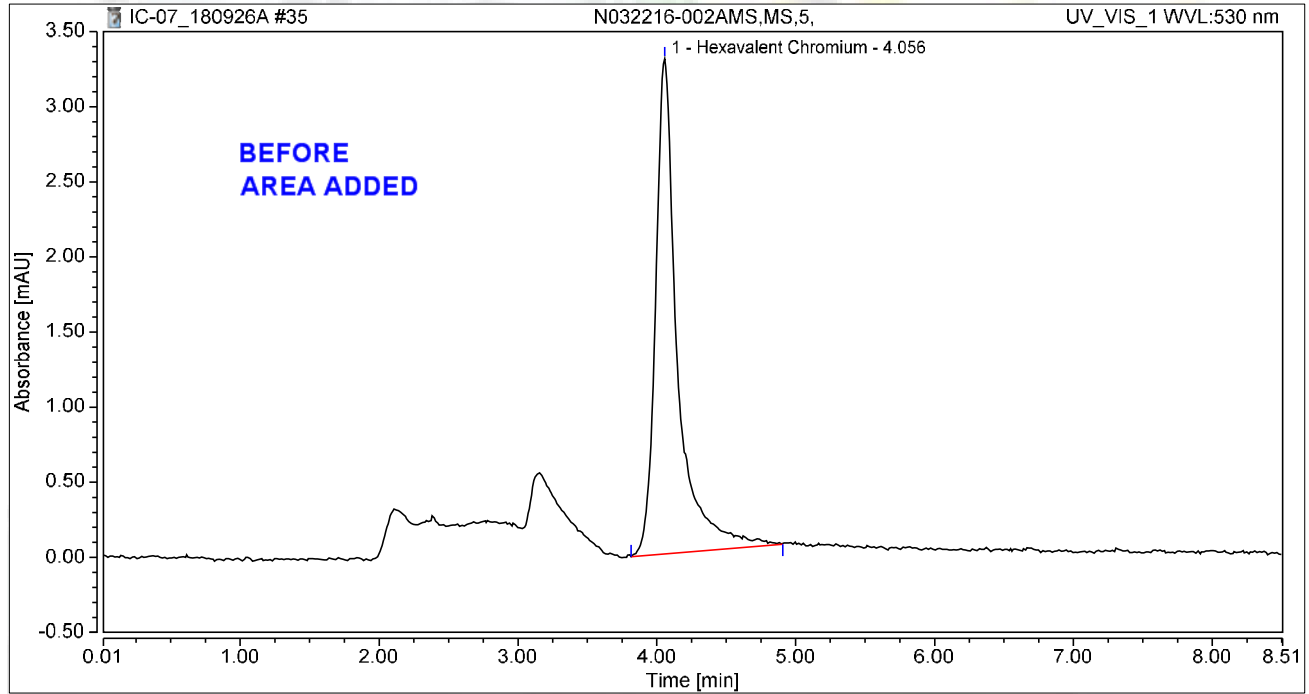
Reviewed by:  
*Noney* 10/9/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032216-002AMS,MS,5,	Run Time (min):	8.49
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 14:46	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.056	0.605	3.295	100.00	100.00	2.3918
<b>Total:</b>			<b>0.605</b>	<b>3.295</b>	<b>100.00</b>	<b>100.00</b>	

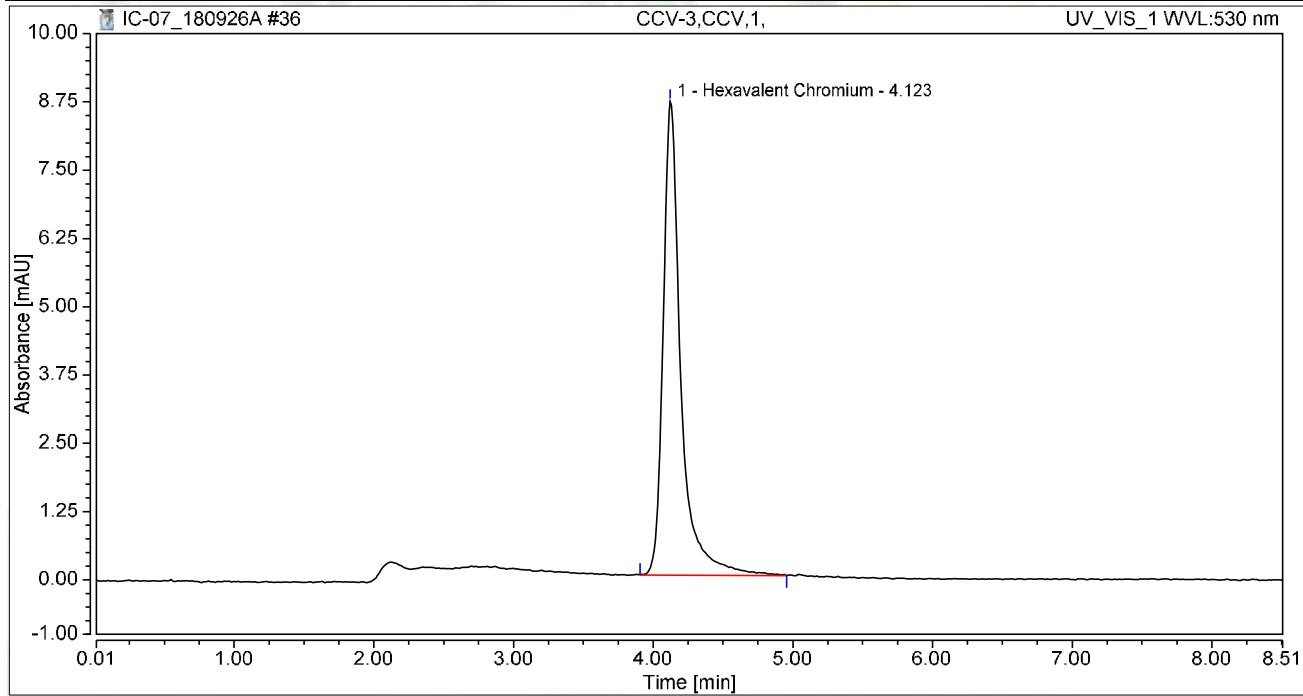
rba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-3,CCV,1,	Run Time (min):	8.49
Vial Number:	28	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 14:55	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

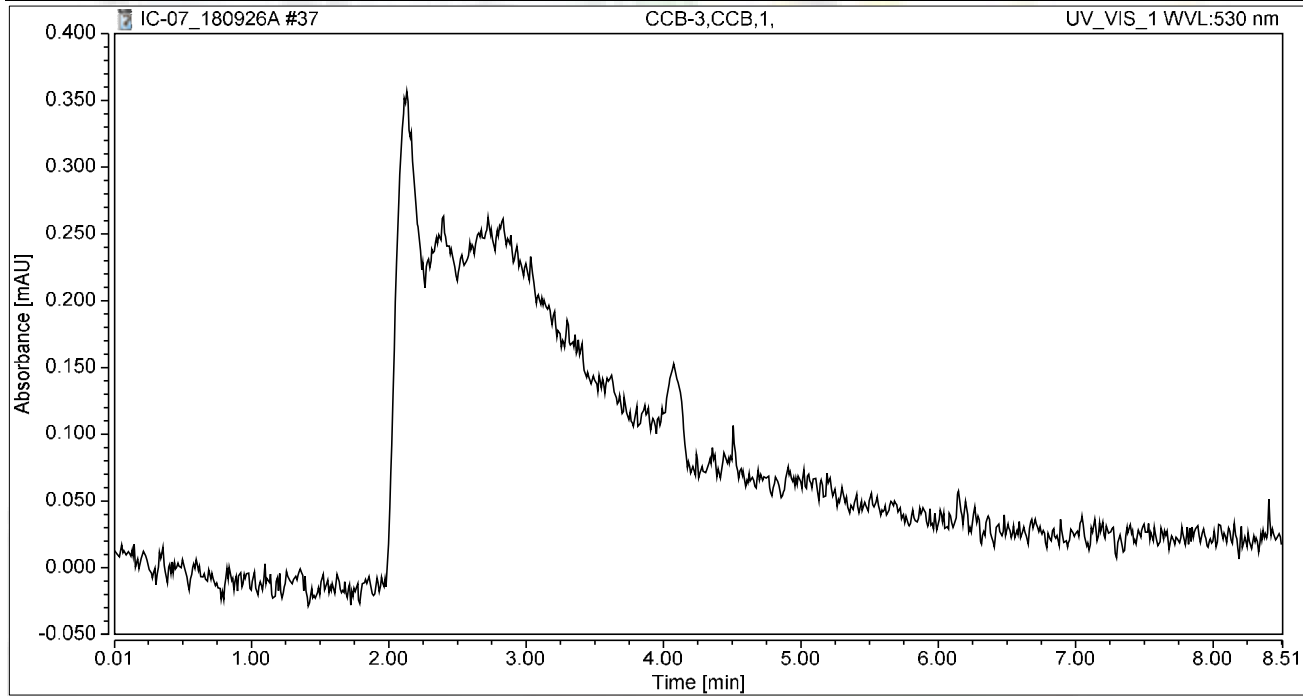
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	1.276	8.673	100.00	100.00	5.0487
<b>Total:</b>			<b>1.276</b>	<b>8.673</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-3,CCB,1,	Run Time (min):	8.50
Vial Number:	29	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 15:05	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

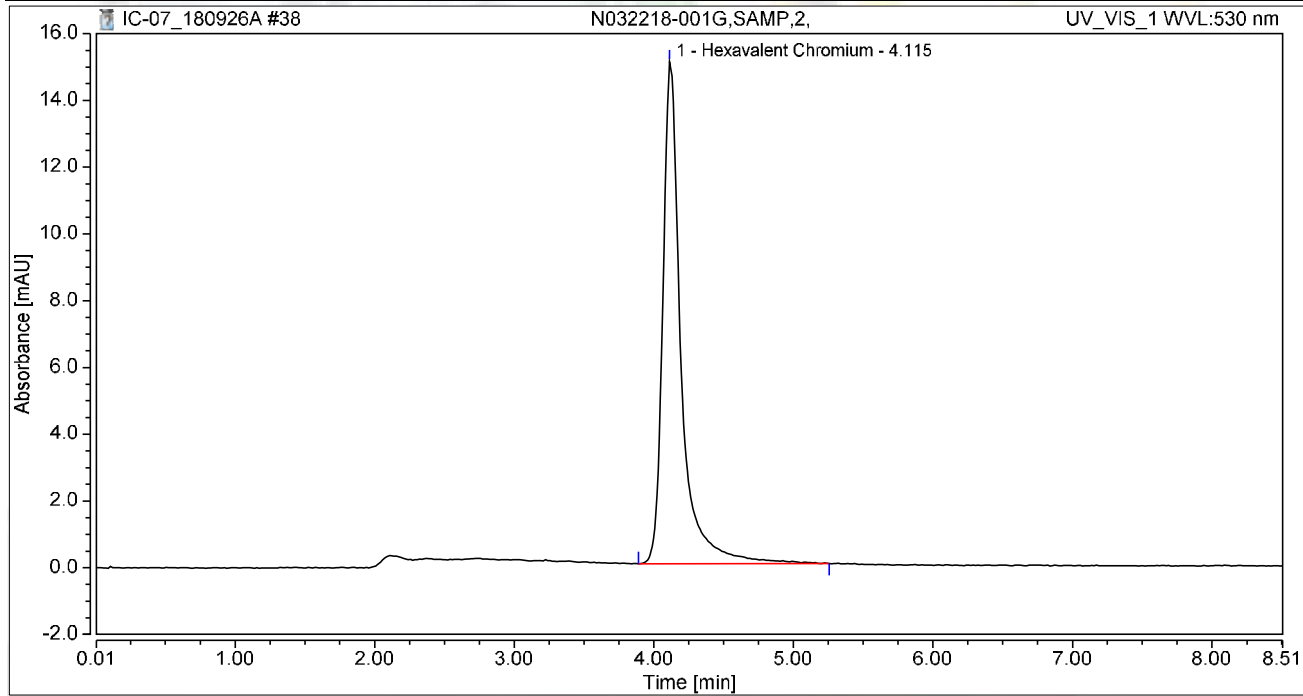


### Chromatogram and Results

**Injection Details**

Injection Name:	N032218-001G,SAMP,2,	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 15:47	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

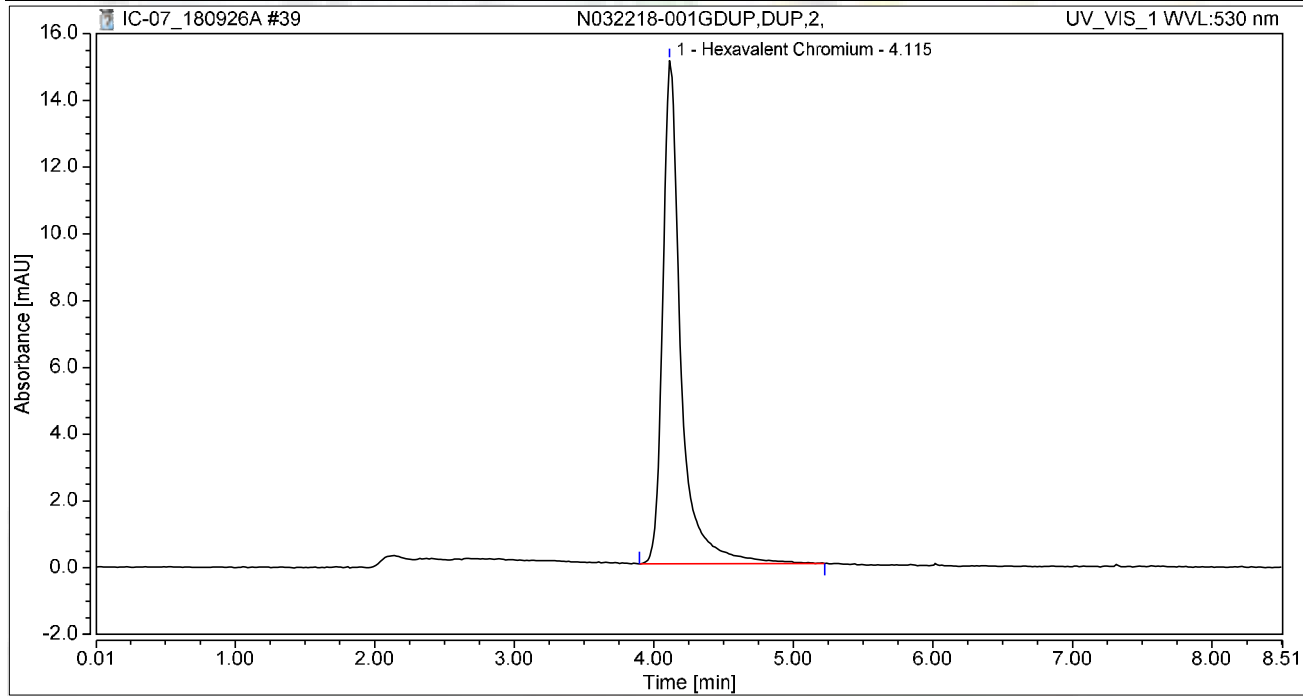
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.280	15.034	100.00	100.00	9.0209
<b>Total:</b>			<b>2.280</b>	<b>15.034</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032218-001GDUP,DUP,2,	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 15:58	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

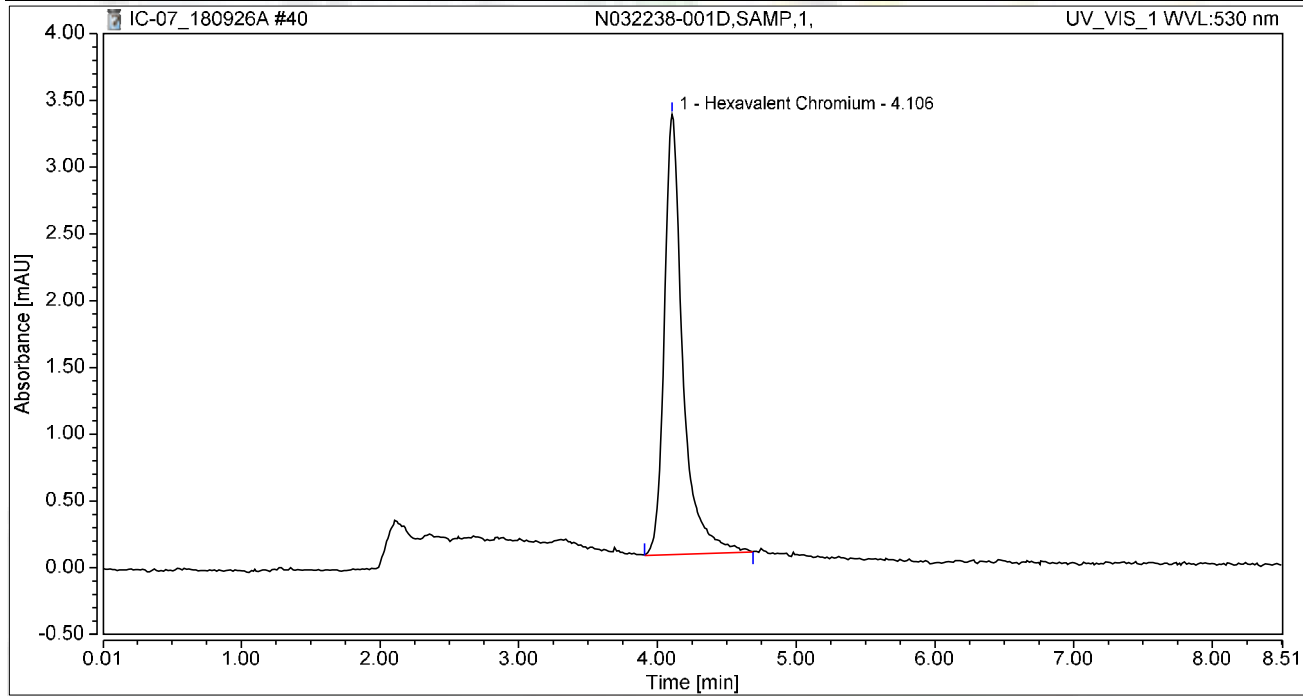
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.277	15.080	100.00	100.00	9.0080
<b>Total:</b>			<b>2.277</b>	<b>15.080</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032238-001D,SAMP,1,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 16:08	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

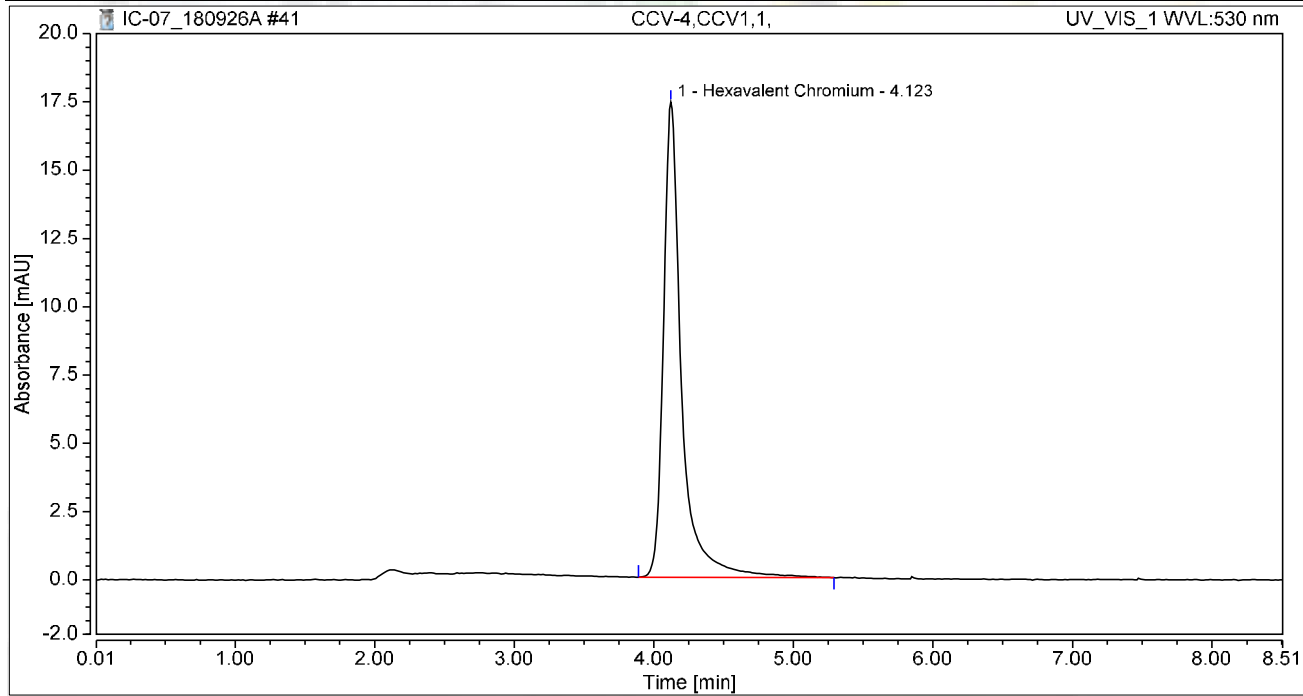
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.509	3.296	100.00	100.00	2.0149
<b>Total:</b>			<b>0.509</b>	<b>3.296</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-4,CCV1,1,	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 16:27	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

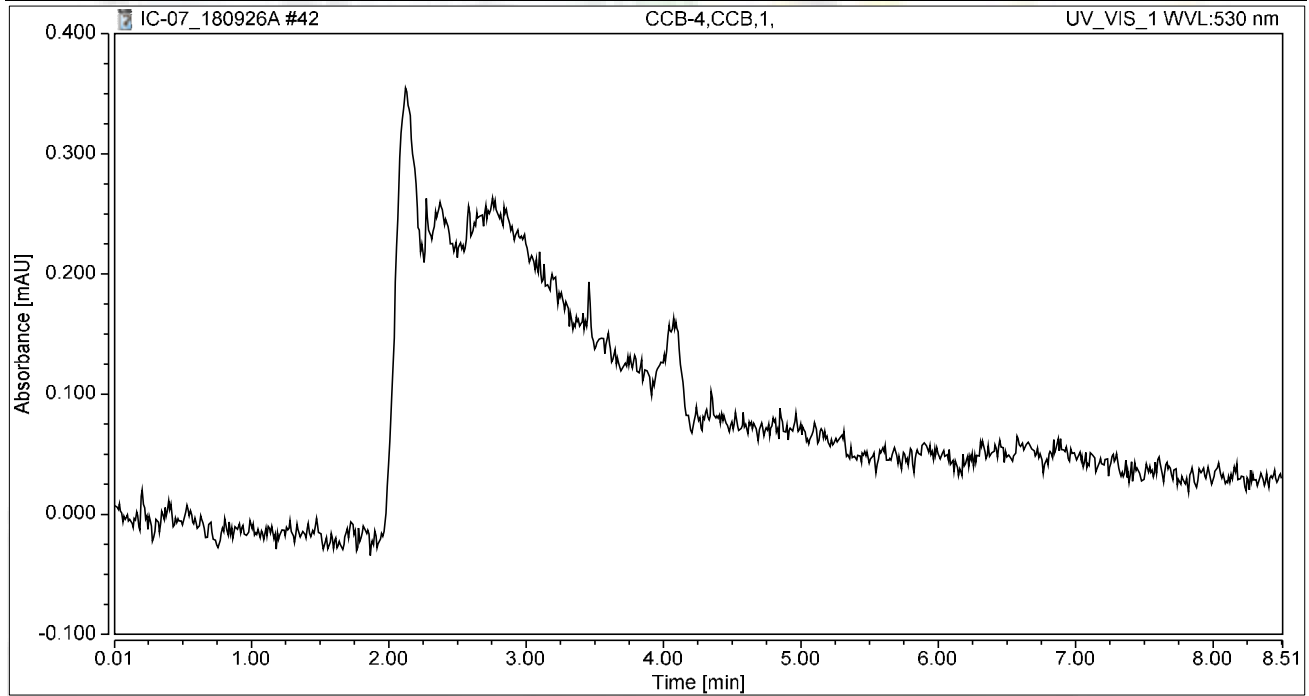
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	2.618	17.397	100.00	100.00	10.3562
<b>Total:</b>			<b>2.618</b>	<b>17.397</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-4,CCB,1,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	26/Sep/18 16:36	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# SM 4500-NO3F



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Wet Chemistry Technical Batch Review Checklist (ARCUS02) ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number:                     R129025                     Analyst:                     QBM                      
 ASSET #:           N032205, N032216, N032246           Date Analyzed:                     10/4/2018                      
 Method:           4500\_N03          

Initial Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis or every 24 hrs.	X					
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)	X					
3. ICV within ± 15% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.	X					
5. CCV within ± 15% of expected value.	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)	X					
<b>Sample Information</b>						
8. All samples are within linear range.	X					
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits		X				
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented		X				
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

%Rec of Nitrate/Nitrite as N in MSD @5x failed, high bias. Possibly due to matrix interference.

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer           QB M           Date:           10/9/18            
 2nd Level Reviewer           *Murray* 10/9/2018           Date:           \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**



## Sample Calculation

**METHOD:** EPA 4500N03F  
**TEST NAME:** Nitrate/Nitrite-N by Automated Cadmium Reduction  
**MATRIX:** Groundwater

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

$$\text{Nitrate/Nitrite-N, mg/L} = A * DF$$

where:

A = mg/L, instrument calculated concentration  
DF = dilution factor

For: **N032216-003C**

The concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{Nitrate/Nitrite-N} &= 0.214 * 1 \\ &= 0.214 \text{ mg/L} \end{aligned}$$

Reporting result in two significant figures,

$$\text{Nitrate/Nitrite-N} = 0.21 \text{ mg/L}$$

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

**EPA 353.2 NO3 as N (NO3CD) - Endpoint**

**General setup**

Measuring unit	ppm
Number of decimals	4
Stabilization time (sec)	26
Measurement time (sec)	3
Sample volume (µl)	450
Filter	546
Reagent prime	No
CD Reduction	Yes

**Limits and dilution**

Low level	-0.2
High level	4
Max linearity	4
Blank min	0
Blank max	0.049
Postdilution factor %	10
Factor Calculations	No

**Washes**

Number of final washes	6
Wash every	R1, R2

**O.D. Corrections**

Carry Over	No
Carry Over value	0.0000
Blank	No
Gain	No

**Reagents**

N.	Volume (µl)	Incubation time (sec)
1	200	102
2	300	663
3	0	0

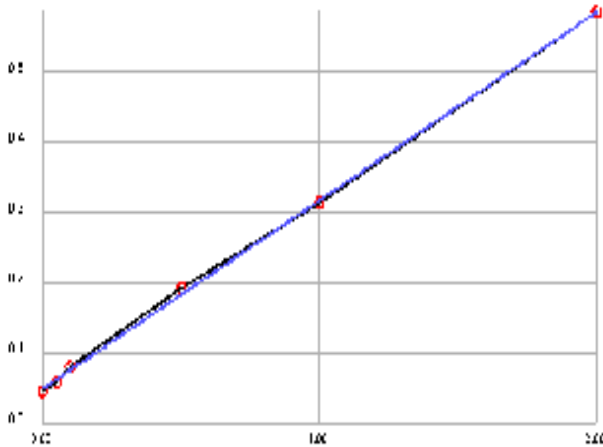
**QC**

N.	Value	Tolerance
1	1	0.1

**Calibration**

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	$y = 0.2678x + 0.0504$
Correlation	.999678



Calibrant	Energy	Set	Conc
1	0.0455	0.0000	-0.0182
2	0.0607	0.0500	0.0385
3	0.0801	0.1000	0.1110
4	0.1935	0.5000	0.5345
5	0.3145	1.0000	0.9863
6	0.5854	2.0000	1.9980

**Notes:**

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161929</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.495	0.050	0.5000	0	99.0	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161947</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.495	0.050	0.5000	0	99.0	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161958</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.473	0.050	0.5000	0	94.6	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# INITIAL CALIBRATION AND CONTINUING CALIBRATION BLANK SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161930</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161948</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161959</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Advanced Technology Laboratories, Inc.**

**3151 W. Post Rd.  
Las Vegas, NV. 89118  
702-307-2659  
702-307-2691  
[www.atl-labs.com](http://www.atl-labs.com)**

**Time start: 10-04-2018 17:48  
Time end: 10-04-2018 20:05**

		<b>EPA 353.2 NO3 as N</b>		
		ppm	Flags	OD
1	<BLANK>	19:34:30	-0.0309	0.0421
2	<BLANK>	19:35:25	-0.0209	0.0448
3	<CAL1>	19:36:24	-0.0182 [0]	0.0455
4	<CAL2>	19:37:20	0.0385 [0.05]	0.0607
5	<CAL3>	19:38:21	0.1110 [0.1]	0.0801
6	<CAL4>	19:39:15	0.5345 [0.5]	0.1935
7	<CAL5>	19:40:11	0.9863 [1]	0.3145
8	<CAL6>	19:41:12	1.9980 [2]	0.5854
9	,BLANK,BLANK,1, <b>NOT REPORTED</b>	19:42:08	0.0804	0.0719
10	,ICV,ICV,1,	19:43:02	0.4949	0.1829
11	,ICB,ICB,1,	19:44:03	0.0094	0.0529
12	,MB-H2O,MBLK,1,	19:44:59	-0.0141	0.0466
13	,LCS-H2O,LCS,1,	19:46:00	0.4811	0.1792
14	,N032205-003C,SAMP,1,	19:46:54	0.0169	0.0549
15	,N032205-004C,SAMP,5,	19:47:49	0.5942	0.2095
16	,N032205-004CMS,MS,5,	19:48:45	1.2074	0.3737
17	,N032205-004CMSD,MSD,5,	19:49:33	1.2324	0.3804
18	,N032205-001C,SAMP,1,	19:50:23	1.0281	0.3257
19	,N032205-002C,SAMP,1,	19:51:05	1.1357	0.3545
20	,N032205-002CDUP,DUP,1,	19:51:48	1.1110	0.3479
21	,BLANK, <b>NOT REPORTED</b>	19:52:38	0.0430	0.0619
22	,CCV-1,CCV,1,	19:53:20	0.4952	0.1830
23	,CCB-1,CCB,1,	19:54:03	-0.0029	0.0496
24	,N032246-007C,SAMP,1,	19:54:51	0.0146	0.0543
25	,N032216-001C,SAMP,1,	19:55:34	0.0240	0.0568
26	,N032216-002C,SAMP,1,	19:56:22	0.0169	0.0549

		<b>EPA 353.2 NO3 as N</b>			
			<b>ppm</b>	<b>Flags</b>	<b>OD</b>
27	,N032216-003C,SAMP,1,	19:57:06	0.2140		0.1077
28	,N032246-002C,SAMP,1,	19:57:55	0.1352		0.0866
29	,N032246-003C,SAMP,1,	19:58:37	0.0811		0.0721
30	,N032246-004C,SAMP,1,	19:59:20	0.4445		0.1694
31	,N032246-001C,SAMP,1,	20:00:02	0.6827		0.2332
32	,N032246-008C,SAMP,5,	20:00:52	1.0061		0.3198
33	,BLANK,			<b>NOT REPORTED</b>	0.0558
34	,CCV-2,CCV,1,	20:02:17	0.4728		0.1770
35	,CCB-2,CCB,1,	20:03:05	-0.0026		0.0497

Nitrate/Nitrite as N by Cadmium Reduction Preparation and Runlog

**Matrix:**

Method: SM 4500-NO3-F/ EPA 353.2  
 Instrument: Easy Chem Analyzer  
 Date Analyzed: 10/4/2018  
 Time Analyzed: 5:48 PM  
 Analyzed By: QBM

Reagent ID #  
 Ammonium Chloride reagent/Buffer: R180904B  
 Color reagent: R180904C  
 2% Copper Sulfate: R180904A  
 Ammonium Hydroxide: CINV-180703A

Sample ID.	Sample Wt./Vol.	Sample pH	Std Code	Spike Amt Added (mL)	Spike Conc.(PPM)	Final Volume (mL)	Dilution (F/I)	Reading & Calculations (mg/L)	Comments
N032205-001C		8.51							
N032205-002C		7.88							
N032205-003C		8.55							
N032205-004C		7.56							
N032216-001C		8.18							
N032216-002C		8.42							
N032216-003C		8.21							
N032246-001C		8.13							
N032246-002C		7.58							
N032246-003C		7.24							
N032246-004C		8.18							
N032246-007C		8.08							
N032246-008C		7.72							

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Nitrate/Nitrite by Cadmium Reduction**  
 Method Number: SM4500NO3F  
 Analysis Date(s): 10/25,2017, 10/26/2017, 10/27/2017  
 Analyst/Technician: Quennie B. Manimtim

Matrix: **Water**  
 Unit: mg/L  
 Spike Conc: 0.05 mg/L

Analyte	#1	#2	#3	#4	#5	#6	#7	Ave	SD	t <sub>(n-1)</sub> value	MDL	PQL
Nitrate/Nitrite as N	0.0573	0.0562	0.0500	0.0730	0.0698	0.0637	0.0564	0.0609	0.0082	3.143	0.0259	0.05

**Method Blank**

Nitrate/Nitrite as N	0.0160	0.0067	0.0064	0.0204	0.0173	0.0036	0.0083	0.0112	0.0065	3.143	0.0317	0.05
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**MDL:**                    **0.0317            mg/L**



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGISTS

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 ELAP Cert 2921

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
 ELAP Cert 2676 | NV Cert NV00922 | ORELAP/NELAP 4046

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# EPA 6020 Dissolved



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70807  
 ASSET #: N032216

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 10/2/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.		X			X	
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X			X		
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?	X			X		
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits		X			X	
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented	X			<del>X</del>		X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

% Rec of Mo in N032205-001D PS, MS/MSD failed, high bias. However, LCS passed criteria.  
 %RSD of Se in sample N032216-001 is 15.16% thus reported. Sample was re-injected with comparable result and RSD at 16.25%.

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer Thermy 10/9/2018

Date: 10/9/18  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## SAMPLE CALCULATION

**METHOD:** EPA 6020  
**TEST NAME:** Heavy Metals by ICP-MS  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Chromium concentration, in ug/L in the original sample as follows:

$$\text{Chromium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration  
DF = Dilution Factor  
PF = Final Volume of Digestate, mL / Amount of Sample, mL

For Sample **N032216-001D**, the concentration in ug/L is calculated as follows:

$$\text{Chromium, ug/L} = 0.39512 * 1 * (25/25)$$

$$\text{Chromium, ug/L} = 0.39512$$

Reporting results in two significant figures,

$$\text{Chromium, ug/L} = \mathbf{0.4}$$

Since PQL of Chromium, in ug/L = 1.0

$$\text{Chromium, ug/L} = \mathbf{ND}$$

# % RSD SUMMARY



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.082	7.86	15	PASS	0.093	16.22	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.5	3.24	15	PASS	0.51	4.65	15	PASS
Std3-5/50 ppb	ICAL	1	5.12	2.0019	15	PASS	5.18	1.11	15	PASS
Std4-10/100 ppb	ICAL	1	10.26	1.58	15	PASS	10.24	1.12	15	PASS
Std5-20/200 ppb	ICAL	1	20.57	1.073	15	PASS	20.32	0.21	15	PASS
Std6-40/400 ppb	ICAL	1	40.83	1.18	15	PASS	40.77	1.23	15	PASS
Std7-100/1000 ppb	ICAL	1	101.24	0.25	15	PASS	101.94	0.39	15	PASS
Std8-200/2000 ppb	ICAL	1	199.14	1.25	15	PASS	198.83	1.11	15	PASS
ICV	ICV	1	10.36	1.019	15	PASS	106.15	1.085	15	PASS
ICB	ICB	1	0.0099	52.98	15	<PQL	<0.000	N/A	15	<PQL
LLICV	CCV1	1	1.014	1.2	20	PASS	0.55	1.65	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	21.23	0.89	15	PASS	16.4	0.69	15	PASS
LLICV	CCV1	1	1.049	3.55	20	PASS	0.53	8.74	20	PASS
MB-70807	MBLK	1	<0.000	N/A	15	<PQL	0.043	7.17	15	PASS
LCS-70807	LCS	1	10.55	0.45	15	PASS	106.68	1.23	15	PASS
N032205-001D	SAMP	1	1.42	1.081	15	PASS	0.21	35.79	15	<PQL
N032205-001D	SAMP	5	0.29	7.23	15	PASS	0.11	24.92	15	<PQL
N032205-001D-PS	PS	1	12.087	0.48	15	PASS	113.2	0.43	15	PASS
N032205-001D-MS	MS	1	12.13	0.78	15	PASS	114.51	0.64	15	PASS
N032205-001D-MSD	MSD	1	12.0053	0.85	15	PASS	113.67	0.72	15	PASS
N032205-002D	SAMP	1	1.55	0.79	15	PASS	0.23	15.21	15	<PQL
CCV1	CCV	1	21.25	1.31	15	PASS	20.81	1.17	15	PASS
CCB1	CCB	1	<0.000	N/A	15	<PQL	0.0064	102.18	15	<PQL
N032205-003D	SAMP	1	<0.000	N/A	15	<PQL	920.3	0.72	15	PASS
N032205-004D	SAMP	1	38.75	1.38	15	PASS	23.53	2.66	15	PASS
N032216-001D	SAMP	1	0.4	5.25	15	PASS	26.061	1.038	15	PASS
N032216-002D	SAMP	1	6.22	1.64	15	PASS	25.97	0.66	15	PASS
N032216-003D	SAMP	1	80.7	1.013	15	PASS	10.57	1.64	15	PASS
N032246-001D	SAMP	1	99.86	1.17	15	PASS	44.81	0.51	15	PASS
N032246-002D	SAMP	1	2.91	1.47	15	PASS	15.038	1.72	15	PASS
N032246-003D	SAMP	1	<0.000	N/A	15	<PQL	244.76	0.25	15	PASS
N032246-004D	SAMP	1	0.24	17.24	15	<PQL	56.18	1.16	15	PASS
N032246-005C	SAMP	1	0.28	10.032	15	PASS	86.082	0.95	15	PASS
CCV2	CCV	1	21.26	0.27	15	PASS	20.73	1.72	15	PASS
CCB2	CCB	1	0.0053	204.59	15	<PQL	<0.000	N/A	15	<PQL
N032246-006C	SAMP	1	0.33	2.91	15	PASS	84.15	0.7	15	PASS
N032246-007D	SAMP	1	<0.000	N/A	15	<PQL	166.4	0.96	15	PASS
N032246-008D	SAMP	1	578.87	1.27	15	PASS	0.3	12.65	15	PASS
N032205-003D	SAMP	10	0.072	19.98	15	<PQL	92.46	0.31	15	PASS

PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N032246-003D	SAMP	5	<0.000	N/A	15	<PQL	51.27	1.17	15	PASS
N032246-008D	SAMP	5	114.6	0.96	15	PASS	0.076	89.024	15	<PQL
N032205-002D	SAMP	1	1.63	4.093	15	PASS	0.32	9.66	15	PASS
N032216-001D	SAMP	1	0.4	4.93	15	PASS	25.95	0.32	15	PASS
N032216-002D	SAMP	5	1.34	1.88	15	PASS	5.47	0.061	15	PASS
N032216-003D	SAMP	5	16.84	0.83	15	PASS	2.16	1.77	15	PASS
CCV3	CCV	1	20.63	0.87	15	PASS	20.31	1.015	15	PASS
CCB3	CCB	1	0.0011	451.87	15	<PQL	<0.000	N/A	15	<PQL
N032205-002D	SAMP	1	1.57	5.75	15	PASS	0.33	9.37	15	PASS
N032205-002D	SAMP	1	1.59	2.38	15	PASS	0.31	7.64	15	PASS
N032216-001D	SAMP	5	0.09	11.52	15	PASS	5.46	2.57	15	PASS
N032246-001D	SAMP	5	20.78	1.31	15	PASS	9.27	1.37	15	PASS
N032246-002D	SAMP	5	0.67	2.83	15	PASS	3.16	1.93	15	PASS
N032246-004D	SAMP	5	0.047	43.14	15	<PQL	11.91	0.44	15	PASS
N032246-005C	SAMP	5	0.05	45.38	15	<PQL	17.84	1.5	15	PASS
N032246-007D	SAMP	5	<0.000	N/A	15	<PQL	35.4	0.66	15	PASS
CCV4	CCV	1	20.66	0.8	15	PASS	20.16	1.23	15	PASS
CCB4	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
ICSA2	ICSA	1	0.018	32.82	15	<PQL	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	21.67	1.5	15	PASS	16.059	2.028	15	PASS

PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	75 As [2]				78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.097	20.78	15	<PQL	0.071	18.82	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.5	7.34	15	PASS	0.67	16.36	15	NR!
Std3-5/50 ppb	ICAL	1	5.16	1.39	15	PASS	5.16	10.12	15	PASS
Std4-10/100 ppb	ICAL	1	10.06	1.34	15	PASS	10.65	1.73	15	PASS
Std5-20/200 ppb	ICAL	1	20.28	1.36	15	PASS	19.46	3.44	15	PASS
Std6-40/400 ppb	ICAL	1	40.38	1.14	15	PASS	40.38	5.55	15	PASS
Std7-100/1000 ppb	ICAL	1	100.58	0.45	15	PASS	98.83	1.024	15	PASS
Std8-200/2000 ppb	ICAL	1	199.6	0.96	15	PASS	200.52	0.83	15	PASS
ICV	ICV	1	10.4	1.14	15	PASS	10.38	11.88	15	PASS
ICB	ICB	1	0.026	76.91	15	<PQL	0.1	43.53	15	<PQL
LLICV	CCV1	1	0.15	16.65	20	PASS	0.67	16.25	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	0.035	35.67	15	<PQL
ICSAB1	ICSAB	1	21.29	1.82	15	PASS	19.033	5.44	15	PASS
LLICV	CCV1	1	0.1	18.34	20	PASS	0.53	16.4	20	PASS
MB-70807	MBLK	1	<0.000	N/A	15	<PQL	0.0071	173.21	15	<PQL
LCS-70807	LCS	1	9.99	0.9	15	PASS	10.086	11.95	15	PASS
N032205-001D	SAMP	1	1.56	3.47	15	PASS	1.017	2.25	15	PASS
N032205-001D	SAMP	5	0.29	7.94	15	PASS	0.25	39.26	15	<PQL
N032205-001D-PS	PS	1	12.97	0.53	15	PASS	11.68	2.17	15	PASS
N032205-001D-MS	MS	1	13.11	2.51	15	PASS	11.11	1.2	15	PASS
N032205-001D-MSD	MSD	1	13.25	0.69	15	PASS	10.66	8.85	15	PASS
N032205-002D	SAMP	1	1.48	2.86	15	PASS	0.93	16.31	15	NR!
CCV1	CCV	1	19.87	0.83	15	PASS	20.9	6.71	15	PASS
CCB1	CCB	1	0.006	240.52	15	<PQL	0.037	91.97	15	<PQL
N032205-003D	SAMP	1	3.99	1.039	15	PASS	0.11	55.19	15	<PQL
N032205-004D	SAMP	1	1.44	4.44	15	PASS	3.86	13.76	15	PASS
N032216-001D	SAMP	1	4.65	2.26	15	PASS	2.17	15.16	15	Failed NR!
N032216-002D	SAMP	1	5.3	2.84	15	PASS	2.075	8.63	15	PASS
N032216-003D	SAMP	1	9.1	1.64	15	PASS	2.79	12.86	15	PASS
N032246-001D	SAMP	1	12.35	0.78	15	PASS	1.44	17.53	15	NR!
N032246-002D	SAMP	1	15.77	2.44	15	PASS	0.51	30.79	15	NR!
N032246-003D	SAMP	1	9.97	0.4	15	PASS	0.063	91.48	15	<PQL
N032246-004D	SAMP	1	15.38	2.53	15	PASS	0.16	13.26	15	PASS
N032246-005C	SAMP	1	1.16	4.56	15	PASS	1.22	18.078	15	NR!
CCV2	CCV	1	19.26	1.86	15	PASS	20.1	1.38	15	PASS
CCB2	CCB	1	0.0082	195.85	15	<PQL	0.051	49.75	15	<PQL
N032246-006C	SAMP	1	1.15	11.47	15	PASS	1.32	7.57	15	PASS
N032246-007D	SAMP	1	3.25	5.26	15	PASS	0.075	99.41	15	<PQL
N032246-008D	SAMP	1	1.69	1.31	15	PASS	4.69	9.34	15	PASS
N032205-003D	SAMP	10	0.33	9.88	15	PASS	0.055	50.63	15	<PQL

PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	75 As [2]				78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N032246-003D	SAMP	5	1.94	2.71	15	PASS	0.03	173.21	15	<PQL
N032246-008D	SAMP	5	0.31	12.88	15	PASS	0.86	12.52	15	PASS
N032205-002D	SAMP	1	1.48	2.6	15	PASS	1.17	43.75	15	NR!
N032216-001D	SAMP	1	4.71	1.23	15	PASS	2.0041	16.25	15	NR!
N032216-002D	SAMP	5	1.056	4.64	15	PASS	0.42	25.49	15	<PQL
N032216-003D	SAMP	5	1.77	4.14	15	PASS	0.72	10.6	15	PASS
CCV3	CCV	1	19.83	1.74	15	PASS	20.3	4.55	15	PASS
CCB3	CCB	1	<0.000	N/A	15	<PQL	0.052	49.89	15	<PQL
N032205-002D	SAMP	1	1.44	5.73	15	PASS	1.11	15.23	15	NR!
N032205-002D	SAMP	1	1.6	2.65	15	PASS	1.18	14.96	15	PASS
N032216-001D	SAMP	5	0.93	4.91	15	PASS	0.45	11.97	15	PASS
N032246-001D	SAMP	5	2.52	2.83	15	PASS	0.14	64.065	15	<PQL
N032246-002D	SAMP	5	3.2	4.76	15	PASS	0.062	50.3	15	<PQL
N032246-004D	SAMP	5	3.15	6.12	15	PASS	0.021	86.6	15	<PQL
N032246-005C	SAMP	5	0.2	16.052	15	NR!	0.24	96.14	15	<PQL
N032246-007D	SAMP	5	0.63	3.96	15	PASS	0	N/A	15	<PQL
CCV4	CCV	1	19.61	0.55	15	PASS	21.31	5.69	15	PASS
CCB4	CCB	1	0.0021	1167.37	15	<PQL	0.055	133.12	15	<PQL
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	0.017	86.61	15	<PQL
ICSAB2	ICSAB	1	20.9	0.42	15	PASS	21.0027	4.75	15	PASS

PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.083	18.13	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.46	10.34	15	PASS
Std3-5/50 ppb	ICAL	1	4.78	1.084	15	PASS
Std4-10/100 ppb	ICAL	1	9.77	1.54	15	PASS
Std5-20/200 ppb	ICAL	1	19.72	0.88	15	PASS
Std6-40/400 ppb	ICAL	1	39.87	0.49	15	PASS
Std7-100/1000 ppb	ICAL	1	99.59	0.49	15	PASS
Std8-200/2000 ppb	ICAL	1	200.27	0.52	15	PASS
ICV	ICV	1	10.34	0.91	15	PASS
ICB	ICB	1	0.17	9.66	15	PASS
LLICV	CCV1	1	0.56	7.59	20	PASS
ICSA1	ICSA	1	0.11	5.92	15	PASS
ICSAB1	ICSAB	1	22.29	0.43	15	PASS
LLICV	CCV1	1	0.59	7.73	20	PASS
MB-70807	MBLK	1	0.0085	85.85	15	<PQL
LCS-70807	LCS	1	9.8	1.67	15	PASS
N032205-001D	SAMP	1	16.37	1.69	15	PASS
N032205-001D	SAMP	5	3.19	0.93	15	PASS
N032205-001D-PS	PS	1	28.52	0.7	15	PASS
N032205-001D-MS	MS	1	28.78	0.87	15	PASS
N032205-001D-MSD	MSD	1	28.93	0.63	15	PASS
N032205-002D	SAMP	1	17.23	0.53	15	PASS
CCV1	CCV	1	19.39	0.24	15	PASS
CCB1	CCB	1	0.11	12.36	15	PASS
N032205-003D	SAMP	1	64.83	0.44	15	PASS
N032205-004D	SAMP	1	26.85	0.97	15	PASS
N032216-001D	SAMP	1	56.72	0.93	15	PASS
N032216-002D	SAMP	1	56.91	1.28	15	PASS
N032216-003D	SAMP	1	60.6	1.27	15	PASS
N032246-001D	SAMP	1	82.039	0.6	15	PASS
N032246-002D	SAMP	1	78.12	0.6	15	PASS
N032246-003D	SAMP	1	69.044	0.83	15	PASS
N032246-004D	SAMP	1	81.76	0.87	15	PASS
N032246-005C	SAMP	1	11.54	1.019	15	PASS
CCV2	CCV	1	19.3	0.8	15	PASS
CCB2	CCB	1	0.11	23.7	15	<PQL
N032246-006C	SAMP	1	11.56	0.074	15	PASS
N032246-007D	SAMP	1	58.58	0.81	15	PASS
N032246-008D	SAMP	1	13.14	1.68	15	PASS
N032205-003D	SAMP	10	6.16	0.82	15	PASS

PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment
N032246-003D	SAMP	5	13.34	1.049	15	PASS
N032246-008D	SAMP	5	2.59	4.12	15	PASS
N032205-002D	SAMP	1	17.025	2.18	15	PASS
N032216-001D	SAMP	1	56.91	0.32	15	PASS
N032216-002D	SAMP	5	11.12	0.78	15	PASS
N032216-003D	SAMP	5	11.66	0.64	15	PASS
CCV3	CCV	1	19.95	0.86	15	PASS
CCB3	CCB	1	0.087	12.61	15	PASS
N032205-002D	SAMP	1	16.93	1.56	15	PASS
N032205-002D	SAMP	1	17.087	1.53	15	PASS
N032216-001D	SAMP	5	11.14	2.68	15	PASS
N032246-001D	SAMP	5	15.74	0.86	15	PASS
N032246-002D	SAMP	5	15.16	2.045	15	PASS
N032246-004D	SAMP	5	16.3	0.99	15	PASS
N032246-005C	SAMP	5	2.25	3.073	15	PASS
N032246-007D	SAMP	5	11.44	1.21	15	PASS
CCV4	CCV	1	19.49	1.53	15	PASS
CCB4	CCB	1	0.11	16.032	15	<PQL
ICSA2	ICSA	1	0.08	23.8	15	<PQL
ICSAB2	ICSAB	1	22.36	0.2	15	PASS



# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"

**INJECTION LOG: 181002A**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A1002001.D	RINSE	RINSE	1	10/02/18 10:20 AM
A1002002.D	Cal Blank	IBLK	1	10/02/18 10:25 AM
A1002003.D	Std1-0.1/1 ppb	ICAL	1	10/02/18 10:31 AM
A1002004.D	Std2-0.5/5 ppb	ICAL	1	10/02/18 10:37 AM
A1002005.D	Std3-5/50 ppb	ICAL	1	10/02/18 10:42 AM
A1002006.D	Std4-10/100 ppb	ICAL	1	10/02/18 10:48 AM
A1002007.D	Std5-20/200 ppb	ICAL	1	10/02/18 10:53 AM
A1002008.D	Std6-40/400 ppb	ICAL	1	10/02/18 10:59 AM
A1002009.D	Std7-100/1000 ppb	ICAL	1	10/02/18 11:05 AM
A1002010.D	Std8-200/2000 ppb	ICAL	1	10/02/18 11:10 AM
A1002011.D	ICV	ICV	1	10/02/18 11:16 AM
A1002012.D	ICB	ICB	1	10/02/18 11:21 AM
A1002013.D	LLICV	CCV1	1	10/02/18 11:27 AM
A1002014.D	ICSA1	ICSA	1	10/02/18 11:32 AM
A1002015.D	ICSAB1	ICSAB	1	10/02/18 11:38 AM
A1002016.D	LLICV	CCV1	1	10/02/18 11:44 AM
A1002017.D	N032299-001A	SAMP	1	10/02/18 11:49 AM
A1002018.D	N032299-001A	SAMP	5	10/02/18 11:55 AM
A1002019.D	MB-70807	MBLK	1	10/02/18 12:00 PM
A1002020.D	LCS-70807	LCS	1	10/02/18 12:06 PM
A1002021.D	N032205-001D	SAMP	1	10/02/18 12:11 PM
A1002022.D	N032205-001D	SAMP	5	10/02/18 12:17 PM
A1002023.D	N032205-001D-PS	PS	1	10/02/18 12:23 PM
A1002024.D	N032205-001D-MS	MS	1	10/02/18 12:28 PM
A1002025.D	N032205-001D-MSD	MSD	1	10/02/18 12:34 PM
A1002026.D	N032205-002D	SAMP	1	10/02/18 12:39 PM
A1002027.D	CCV1	CCV	1	10/02/18 12:45 PM
A1002028.D	CCB1	CCB	1	10/02/18 12:50 PM
A1002029.D	N032205-003D	SAMP	1	10/02/18 12:56 PM
A1002030.D	N032205-004D	SAMP	1	10/02/18 1:02 PM
A1002031.D	N032216-001D	SAMP	1	10/02/18 1:07 PM
A1002032.D	N032216-002D	SAMP	1	10/02/18 1:13 PM
A1002033.D	N032216-003D	SAMP	1	10/02/18 1:18 PM
A1002034.D	N032246-001D	SAMP	1	10/02/18 1:24 PM
A1002035.D	N032246-002D	SAMP	1	10/02/18 1:30 PM
A1002036.D	N032246-003D	SAMP	1	10/02/18 1:35 PM
A1002037.D	N032246-004D	SAMP	1	10/02/18 1:41 PM
A1002038.D	N032246-005C	SAMP	1	10/02/18 1:46 PM
A1002039.D	CCV2	CCV	1	10/02/18 1:52 PM
A1002040.D	CCB2	CCB	1	10/02/18 1:58 PM
A1002041.D	N032246-006C	SAMP	1	10/02/18 2:03 PM
A1002042.D	N032246-007D	SAMP	1	10/02/18 2:09 PM

**INJECTION LOG: 181002A**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A1002043.D	N032246-008D	SAMP	1	10/02/18 2:14 PM
A1002044.D	N032205-003D	SAMP	10	10/02/18 2:20 PM
A1002045.D	N032246-003D	SAMP	5	10/02/18 2:25 PM
A1002046.D	N032246-008D	SAMP	5	10/02/18 2:31 PM
A1002047.D	N032205-002D	SAMP	1	10/02/18 2:37 PM
A1002048.D	N032216-001D	SAMP	1	10/02/18 2:42 PM
A1002049.D	N032216-002D	SAMP	5	10/02/18 2:48 PM
A1002050.D	N032216-003D	SAMP	5	10/02/18 2:53 PM
A1002051.D	CCV3	CCV	1	10/02/18 3:06 PM
A1002052.D	CCB3	CCB	1	10/02/18 3:11 PM
A1002053.D	N032205-002D	SAMP	1	10/02/18 3:17 PM
A1002054.D	N032205-002D	SAMP	1	10/02/18 3:22 PM
A1002055.D	N032216-001D	SAMP	5	10/02/18 3:28 PM
A1002056.D	N032246-001D	SAMP	5	10/02/18 3:34 PM
A1002057.D	N032246-002D	SAMP	5	10/02/18 3:39 PM
A1002058.D	N032246-004D	SAMP	5	10/02/18 3:45 PM
A1002059.D	N032246-005C	SAMP	5	10/02/18 3:50 PM
A1002060.D	N032246-007D	SAMP	5	10/02/18 3:56 PM
A1002061.D	CCV4	CCV	1	10/02/18 4:02 PM
A1002062.D	CCB4	CCB	1	10/02/18 4:07 PM
A1002063.D	ICSA2	ICSA	1	10/02/18 4:13 PM
A1002064.D	ICSAB2	ICSAB	1	10/02/18 4:18 PM
A1002065.D	MB-70830	MBLK	1	10/02/18 5:21 PM
A1002066.D	LCS-70830	LCS	1	10/02/18 5:27 PM
A1002067.D	N032289-001A	SAMP	1	10/02/18 5:32 PM
A1002068.D	N032289-001A	SAMP	5	10/02/18 5:38 PM
A1002069.D	N032289-001A-PS	PS	1	10/02/18 5:43 PM
A1002070.D	N032289-001A-MS	MS	1	10/02/18 5:49 PM
A1002071.D	N032289-001A-MSD	MSD	1	10/02/18 5:55 PM
A1002072.D	N032289-002A	SAMP	1	10/02/18 6:00 PM
A1002073.D	N032289-003A	SAMP	1	10/02/18 6:06 PM
A1002074.D	CCV5	CCV	1	10/02/18 6:11 PM
A1002075.D	CCB5	CCB	1	10/02/18 6:17 PM
A1002076.D	ICSA3	ICSA	1	10/02/18 6:22 PM
A1002077.D	ICSAB3	ICSAB	1	10/02/18 6:28 PM

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE LABORATORY TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 9/27/2018 8:43:28

Reviewed/ Date: *Manny* 10/9/2018

Page: 1 of 2

Prep End Date: 9/27/2018 3:00:00

Initials/ Date: *for*

Prep Factor Units  
mL / mL

Temp. (°C):  
95

Location:  
DB-2-47

Prep Batch 70807 Prep Code: 3010\_W\_MSDI

Technician Mark Gesmundo

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70807	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70807	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N032205-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032205-001D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032205-001D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032205-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032205-003D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032205-004D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032216-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032216-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032216-003D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-003D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **9/27/2018 8:43:28**

Reviewed/ Date: *Marky* 10/9/2018

Page: 2 of 2

Prep End Date: **9/27/2018 3:00:00**

Initials/ Date: for

Prep Factor Units  
mL / mL

Temp. (°C):  
**95**

Location:  
**DB-2-47**

Prep Batch **70807** Prep Code: **3010\_W\_MSDI**

Technician **Mark Gesmundo**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N032246-004D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-005C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-006C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-007D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-008D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

# INSTRUMENT TUNING CHECK



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 2 Oct 2018 09:48:11 am  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	200454.00	0.00	
24 Mg	538509.00	0.00	
25 Mg	69976.20	0.00	
26 Mg	78965.50	0.00	
59 Co	437148.00	0.00	
115 In	602602.00	0.00	
206 Pb	190085.00	0.00	
207 Pb	167626.00	0.00	
208 Pb	408337.00	0.00	

## RSD (%)

Element	Actual	Required	Flag
9 Be	0.90	5.00	
24 Mg	0.36	5.00	
25 Mg	2.29	5.00	
26 Mg	0.56	5.00	
59 Co	0.71	5.00	
115 In	1.21	5.00	
206 Pb	0.95	5.00	
207 Pb	0.86	5.00	
208 Pb	0.79	5.00	

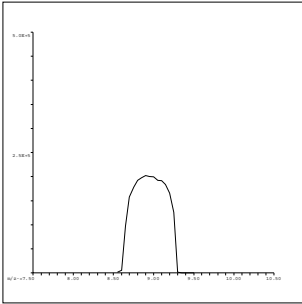
## Ion Ratio

Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

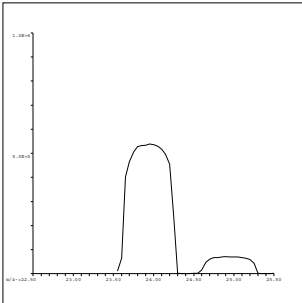
## Maximum Bkg. Count (CPS)

Element	Actual	Required	Flag
---------	--------	----------	------

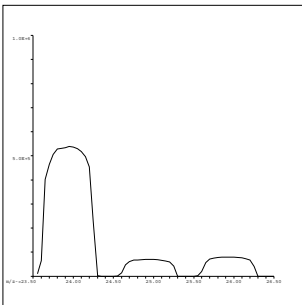




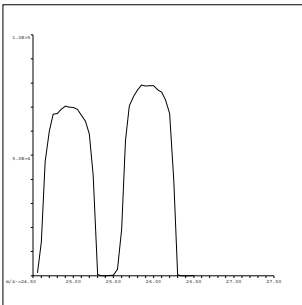
9 Be  
Mass Calib.  
Actual: 8.95  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



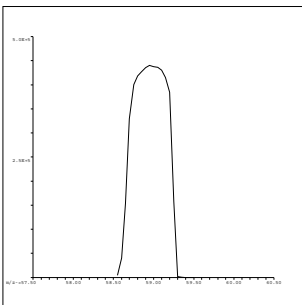
24 Mg  
Mass Calib.  
Actual: 23.95  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



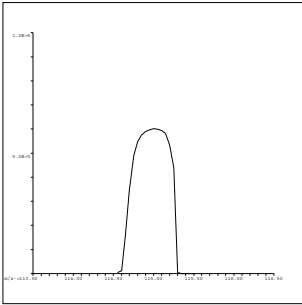
25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



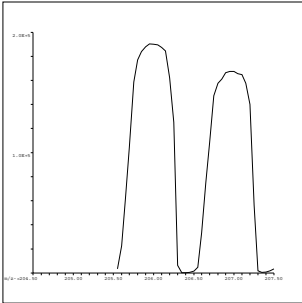
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



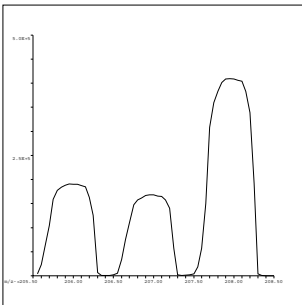
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



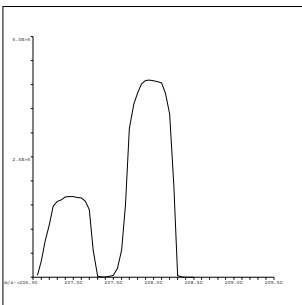
115 In  
Mass Calib.  
Actual: 115.00  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.00  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.00  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 208.00  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

QC Tune Result:Pass

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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INITIAL CALIBRATION SUMMARY: 181002A

Instrument ID: ICPMS-02

Analyte	Data File	A1002002.D	A1002003.D	A1002004.D	A1002005.D	A1002006.D	A1002007.D	A1002008.D	A1002009.D	A1002010.D	R
	Acq. Date-Time	10/02/2018 10:25 AM	10/02/2018 10:31 AM	10/02/2018 10:37 AM	10/02/2018 10:42 AM	10/02/2018 10:48 AM	10/02/2018 10:53 AM	10/02/2018 10:59 AM	10/02/2018 11:05 AM	10/02/2018 11:10 AM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	2	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std1-0.1/1 ppb	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.1/1 ug/L	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L		
45 Sc (ISTD) [ 2 ]	CPS	64982.8		76629.1	77148.2	77172.8	76407.4	76713.1	73269	73568.1	
55 Mn [ 2 ]	CPS	152.1		1493.1	13585.4	26687.5	52250.1	105082.2	250680.4	490730.1	0.9999
52 Cr [ 2 ]	CPS	301.6		3025.7	27867.8	55480.2	109795.8	218404.2	516748.5	1020118.9	1.0000
72 Ge (ISTD) [ 1 ]	CPS	38455.8		45037.1	44846.8	45715.8	44912.4	45150.9	43465.2	42898	
78 Se [ 1 ]	CPS	0		106.7	816.7	1719	3083.7	6433.7	15162	30360.2	1.0000
72 Ge (ISTD) [ 2 ]	CPS	36362.3	42330.2	41729.5	42890.4	42752.2	42129.5	42315.6	40825.1	40764.8	
75 As [ 2 ]	CPS	37.3	96	311.6	2869.2	5537	10953.9	21867.1	52489.8	103962.8	1.0000
103 Rh (ISTD) [ 2 ]	CPS	1014183.3		1188178.8	1196083.9	1195849.2	1177805.2	1191052.6	1130998.4	1121845.4	
95 Mo [ 2 ]	CPS	92.2		1402.3	13561.7	27585.5	54742.8	111810.9	265045.2	528584.6	1.0000

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MSST-180618C

Calibration Acceptance Criteria: > 0.995 Correlation

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>		Prep Date:	RunNo: <b>128979</b>
Client ID: <b>ICV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>			Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159612</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	10.396	0.10	10.00	0	104	90 110
Manganese	106.152	0.50	100.0	0	106	90 110
Molybdenum	10.342	0.50	10.00	0	103	90 110
Selenium	10.377	0.50	10.00	0	104	90 110

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>		Prep Date:	RunNo: <b>128979</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>			Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159617</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	0.102	0.10	0.1000	0	102	80 120
Manganese	0.535	0.50	0.5000	0	107	80 120
Molybdenum	0.586	0.50	0.5000	0	117	80 120
Selenium	0.530	0.50	0.5000	0	106	80 120

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>		Prep Date:	RunNo: <b>128979</b>
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>			Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159628</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	19.873	0.10	20.00	0	99.4	90 110
Manganese	20.811	0.50	20.00	0	104	90 110
Molybdenum	19.389	0.50	20.00	0	96.9	90 110
Selenium	20.898	0.50	20.00	0	104	90 110

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>		Prep Date:	RunNo: <b>128979</b>
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>			Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159640</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	19.255	0.10	20.00	0	96.3	90 110

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159640</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.734	0.50	20.00	0	104	90	110				
Molybdenum	19.295	0.50	20.00	0	96.5	90	110				
Selenium	20.100	0.50	20.00	0	101	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159652</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.826	0.10	20.00	0	99.1	90	110				
Manganese	20.312	0.50	20.00	0	102	90	110				
Molybdenum	19.952	0.50	20.00	0	99.8	90	110				
Selenium	20.297	0.50	20.00	0	101	90	110				

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159662</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.610	0.10	20.00	0	98.0	90	110				
Manganese	20.159	0.50	20.00	0	101	90	110				
Molybdenum	19.485	0.50	20.00	0	97.4	90	110				
Selenium	21.312	0.50	20.00	0	107	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>ICV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159822</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	10.363	1.0	10.00	0	104 90 110

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159827</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	1.049	1.0	1.000	0	105 80 120

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159838</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	21.255	1.0	20.00	0	106 90 110

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159850</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	21.261	1.0	20.00	0	106 90 110

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159862</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	20.634	1.0	20.00	0	103 90 110

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 6020DIS\_CrPGE

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159872</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.661	1.0	20.00	0	103	90	110				

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159613</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159629</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159641</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159653</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159653</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159663</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>ICB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159823</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159839</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159851</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159863</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159873</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159615</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159616</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	21.288	0.10	20.00	0	106	80	120				
Manganese	16.396	0.50	20.00	0	82.0	80	120				
Molybdenum	22.291	0.50	20.00	0	111	80	120				
Selenium	19.033	0.50	20.00	0	95.2	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159664</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159665</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	20.900	0.10	20.00	0	105	80	120				
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	ICSAB2	SampType:	ICSAB	TestCode:	6020_DIS	Units:	µg/L	Prep Date:		RunNo:	128979		
Client ID:	ICSAB	Batch ID:	R128979	TestNo:	EPA 6020			Analysis Date:	10/2/2018	SeqNo:	3159665		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		16.059		0.50	20.00	0	80.3	80	120				
Molybdenum		22.363		0.50	20.00	0	112	80	120				
Selenium		21.003		0.50	20.00	0	105	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159825</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159825</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	21.225	1.0	20.00	0	106	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159874</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159875</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	21.675	1.0	20.00	0	108	80	120				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## INTERNAL STANDARD: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	64982.8	64982.8	100	PASS	70-125	36362.3	36362.3	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	76859.3	64982.8	118.28	PASS	70-125	42330.2	36362.3	116.41	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	76629.1	64982.8	117.92	PASS	70-125	41729.5	36362.3	114.76	PASS	70-125
Std3-5/50 ppb	ICAL	1	77148.2	64982.8	118.72	PASS	70-125	42890.4	36362.3	117.95	PASS	70-125
Std4-10/100 ppb	ICAL	1	77172.8	64982.8	118.76	PASS	70-125	42752.2	36362.3	117.57	PASS	70-125
Std5-20/200 ppb	ICAL	1	76407.4	64982.8	117.58	PASS	70-125	42129.5	36362.3	115.86	PASS	70-125
Std6-40/400 ppb	ICAL	1	76713.1	64982.8	118.05	PASS	70-125	42315.6	36362.3	116.37	PASS	70-125
Std7-100/1000 ppb	ICAL	1	73269	64982.8	112.75	PASS	70-125	40825.1	36362.3	112.27	PASS	70-125
Std8-200/2000 ppb	ICAL	1	73568.1	64982.8	113.21	PASS	70-125	40764.8	36362.3	112.11	PASS	70-125
ICV	ICV	1	74580	64982.8	114.77	PASS	70-125	41570.3	36362.3	114.32	PASS	70-125
ICB	ICB	1	64254.3	64982.8	98.88	PASS	70-125	35264.4	36362.3	96.98	PASS	70-125
LLICV	CCV1	1	76172.9	64982.8	117.22	PASS	70-125	41884.5	36362.3	115.19	PASS	70-125
ICSA1	ICSA	1	75938.4	64982.8	116.86	PASS	70-125	40656.8	36362.3	111.81	PASS	70-125
ICSAB1	ICSAB	1	74601.3	64982.8	114.8	PASS	70-125	41715.1	36362.3	114.72	PASS	70-125
LLICV	CCV1	1	65561.5	64982.8	100.89	PASS	70-125	36796.6	36362.3	101.19	PASS	70-125
MB-70807	MBLK	1	62217.6	64982.8	95.74	PASS	70-125	35644.1	36362.3	98.025	PASS	70-125
LCS-70807	LCS	1	62241	64982.8	95.78	PASS	70-125	37284.2	36362.3	102.54	PASS	70-125
N032205-001D	SAMP	1	53577.9	64982.8	82.45	PASS	70-125	29662.1	36362.3	81.57	PASS	70-125
N032205-001D	SAMP	5	60923.1	64982.8	93.75	PASS	70-125	34678.7	36362.3	95.37	PASS	70-125
N032205-001D-PS	PS	1	61369.1	64982.8	94.44	PASS	70-125	34175.3	36362.3	93.99	PASS	70-125
N032205-001D-MS	MS	1	64228.4	64982.8	98.84	PASS	70-125	36082.8	36362.3	99.23	PASS	70-125
N032205-001D-MSD	MSD	1	64738.2	64982.8	99.62	PASS	70-125	35791.2	36362.3	98.43	PASS	70-125
N032205-002D	SAMP	1	61469.4	64982.8	94.59	PASS	70-125	34009.5	36362.3	93.53	PASS	70-125
CCV1	CCV	1	59869.1	64982.8	92.13	PASS	70-125	35997.1	36362.3	99	PASS	70-125
CCB1	CCB	1	65108.5	64982.8	100.19	PASS	70-125	37365.6	36362.3	102.76	PASS	70-125
N032205-003D	SAMP	1	54561.1	64982.8	83.96	PASS	70-125	29140.1	36362.3	80.14	PASS	70-125
N032205-004D	SAMP	1	58685.8	64982.8	90.31	PASS	70-125	31553.3	36362.3	86.77	PASS	70-125
N032216-001D	SAMP	1	55227.7	64982.8	84.99	PASS	70-125	29721.1	36362.3	81.74	PASS	70-125
N032216-002D	SAMP	1	53787.5	64982.8	82.77	PASS	70-125	28966.3	36362.3	79.66	PASS	70-125
N032216-003D	SAMP	1	52384.1	64982.8	80.61	PASS	70-125	28611.2	36362.3	78.68	PASS	70-125
N032246-001D	SAMP	1	51442.3	64982.8	79.16	PASS	70-125	27941.2	36362.3	76.84	PASS	70-125
N032246-002D	SAMP	1	52333.9	64982.8	80.54	PASS	70-125	28310.7	36362.3	77.86	PASS	70-125
N032246-003D	SAMP	1	51863.5	64982.8	79.81	PASS	70-125	28232.9	36362.3	77.64	PASS	70-125
N032246-004D	SAMP	1	51826.9	64982.8	79.75	PASS	70-125	28350.8	36362.3	77.97	PASS	70-125
N032246-005C	SAMP	1	59482.2	64982.8	91.54	PASS	70-125	33330.3	36362.3	91.66	PASS	70-125
CCV2	CCV	1	58943.7	64982.8	90.71	PASS	70-125	35763.3	36362.3	98.35	PASS	70-125
CCB2	CCB	1	62673.8	64982.8	96.45	PASS	70-125	37675.4	36362.3	103.61	PASS	70-125
N032246-006C	SAMP	1	59091.1	64982.8	90.93	PASS	70-125	32949.4	36362.3	90.61	PASS	70-125
N032246-007D	SAMP	1	51628.4	64982.8	79.45	PASS	70-125	28673.6	36362.3	78.86	PASS	70-125
N032246-008D	SAMP	1	57665.9	64982.8	88.74	PASS	70-125	32699	36362.3	89.93	PASS	70-125
N032205-003D	SAMP	10	61512.9	64982.8	94.66	PASS	70-125	36062.7	36362.3	99.18	PASS	70-125

INTERNAL STANDARD: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
N032246-003D	SAMP	5	57243.3	64982.8	88.09	PASS	70-125	32896	36362.3	90.47	PASS	70-125
N032246-008D	SAMP	5	59840.3	64982.8	92.086	PASS	70-125	34923.6	36362.3	96.043	PASS	70-125
N032205-002D	SAMP	1	55074.8	64982.8	84.75	PASS	70-125	31291.8	36362.3	86.056	PASS	70-125
N032216-001D	SAMP	1	50684.1	64982.8	78	PASS	70-125	27797.6	36362.3	76.45	PASS	70-125
N032216-002D	SAMP	5	57903.5	64982.8	89.11	PASS	70-125	32972.9	36362.3	90.68	PASS	70-125
N032216-003D	SAMP	5	57292.4	64982.8	88.17	PASS	70-125	32781.3	36362.3	90.15	PASS	70-125
CCV3	CCV	1	74880.4	64982.8	115.23	PASS	70-125	44654	36362.3	122.8	PASS	70-125
CCB3	CCB	1	60589.5	64982.8	93.24	PASS	70-125	36238.6	36362.3	99.66	PASS	70-125
N032205-002D	SAMP	1	52382.8	64982.8	80.61	PASS	70-125	30690.6	36362.3	84.4	PASS	70-125
N032205-002D	SAMP	1	54863	64982.8	84.43	PASS	70-125	31462.2	36362.3	86.52	PASS	70-125
N032216-001D	SAMP	5	58036	64982.8	89.31	PASS	70-125	33088.7	36362.3	91	PASS	70-125
N032246-001D	SAMP	5	57041.5	64982.8	87.78	PASS	70-125	33152	36362.3	91.17	PASS	70-125
N032246-002D	SAMP	5	56949	64982.8	87.64	PASS	70-125	32353.8	36362.3	88.98	PASS	70-125
N032246-004D	SAMP	5	55981.2	64982.8	86.15	PASS	70-125	32237	36362.3	88.66	PASS	70-125
N032246-005C	SAMP	5	59244.8	64982.8	91.17	PASS	70-125	34968.2	36362.3	96.17	PASS	70-125
N032246-007D	SAMP	5	55709.2	64982.8	85.73	PASS	70-125	32887.1	36362.3	90.44	PASS	70-125
CCV4	CCV	1	70561.7	64982.8	108.59	PASS	70-125	41985.8	36362.3	115.47	PASS	70-125
CCB4	CCB	1	57764.1	64982.8	88.89	PASS	70-125	34942.6	36362.3	96.096	PASS	70-125
ICSA2	ICSA	1	67704.6	64982.8	104.19	PASS	70-125	39205.5	36362.3	107.82	PASS	70-125
ICSAB2	ICSAB	1	65574.8	64982.8	100.91	PASS	70-125	38303.4	36362.3	105.34	PASS	70-125
CCV5	CCV	1	54117.3	64982.8	83.28	PASS	70-125	33190	36362.3	91.28	PASS	70-125
CCB5	CCB	1	44777.5	64982.8	68.91	NR!	70-125	27592.8	36362.3	75.88	PASS	70-125
ICSA3	ICSA	1	54124.1	64982.8	83.29	PASS	70-125	31867.4	36362.3	87.64	PASS	70-125
ICSAB3	ICSAB	1	52860	64982.8	81.34	PASS	70-125	31179.4	36362.3	85.75	PASS	70-125

## INTERNAL STANDARD: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]					103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	38455.8	38455.8	100	PASS	70-125	1014183.3	1014183.3	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	44202.7	38455.8	114.94	PASS	70-125	1180325.2	1014183.3	116.38	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	45037.1	38455.8	117.11	PASS	70-125	1188178.8	1014183.3	117.16	PASS	70-125
Std3-5/50 ppb	ICAL	1	44846.8	38455.8	116.62	PASS	70-125	1196083.9	1014183.3	117.94	PASS	70-125
Std4-10/100 ppb	ICAL	1	45715.8	38455.8	118.88	PASS	70-125	1195849.2	1014183.3	117.91	PASS	70-125
Std5-20/200 ppb	ICAL	1	44912.4	38455.8	116.79	PASS	70-125	1177805.2	1014183.3	116.13	PASS	70-125
Std6-40/400 ppb	ICAL	1	45150.9	38455.8	117.41	PASS	70-125	1191052.6	1014183.3	117.44	PASS	70-125
Std7-100/1000 ppb	ICAL	1	43465.2	38455.8	113.03	PASS	70-125	1130998.4	1014183.3	111.52	PASS	70-125
Std8-200/2000 ppb	ICAL	1	42898	38455.8	111.55	PASS	70-125	1121845.4	1014183.3	110.62	PASS	70-125
ICV	ICV	1	43850.7	38455.8	114.03	PASS	70-125	1173966.2	1014183.3	115.75	PASS	70-125
ICB	ICB	1	37628.6	38455.8	97.85	PASS	70-125	1000566.2	1014183.3	98.66	PASS	70-125
LLICV	CCV1	1	45051.8	38455.8	117.15	PASS	70-125	1197941	1014183.3	118.12	PASS	70-125
ICSA1	ICSA	1	45585.4	38455.8	118.54	PASS	70-125	1079306.9	1014183.3	106.42	PASS	70-125
ICSAB1	ICSAB	1	45573.2	38455.8	118.51	PASS	70-125	1080534.3	1014183.3	106.54	PASS	70-125
LLICV	CCV1	1	42834.7	38455.8	111.39	PASS	70-125	1031625.5	1014183.3	101.72	PASS	70-125
MB-70807	MBLK	1	43765.9	38455.8	113.81	PASS	70-125	971871.2	1014183.3	95.83	PASS	70-125
LCS-70807	LCS	1	33600.9	38455.8	87.38	PASS	70-125	1054786.6	1014183.3	104	PASS	70-125
N032205-001D	SAMP	1	33428.2	38455.8	86.93	PASS	70-125	733626.8	1014183.3	72.34	PASS	70-125
N032205-001D	SAMP	5	40086.6	38455.8	104.24	PASS	70-125	886055.9	1014183.3	87.37	PASS	70-125
N032205-001D-PS	PS	1	39503.9	38455.8	102.73	PASS	70-125	840299.8	1014183.3	82.85	PASS	70-125
N032205-001D-MS	MS	1	41291.8	38455.8	107.37	PASS	70-125	881687.5	1014183.3	86.94	PASS	70-125
N032205-001D-MSD	MSD	1	41453.2	38455.8	107.79	PASS	70-125	893906.8	1014183.3	88.14	PASS	70-125
N032205-002D	SAMP	1	38434.8	38455.8	99.95	PASS	70-125	845396.9	1014183.3	83.36	PASS	70-125
CCV1	CCV	1	32283.7	38455.8	83.95	PASS	70-125	1032604.2	1014183.3	101.82	PASS	70-125
CCB1	CCB	1	42532.8	38455.8	110.6	PASS	70-125	1035781.7	1014183.3	102.13	PASS	70-125
N032205-003D	SAMP	1	30268.7	38455.8	78.71	PASS	70-125	732441.6	1014183.3	72.22	PASS	70-125
N032205-004D	SAMP	1	32073.4	38455.8	83.4	PASS	70-125	796732.3	1014183.3	78.56	PASS	70-125
N032216-001D	SAMP	1	27812.1	38455.8	72.32	PASS	70-125	733508.1	1014183.3	72.33	PASS	70-125
N032216-002D	SAMP	1	25786.6	38455.8	67.055	NR!	70-125	712745.8	1014183.3	70.28	PASS	70-125
N032216-003D	SAMP	1	25311.3	38455.8	65.82	NR!	70-125	697477.8	1014183.3	68.77	NR!	70-125
N032246-001D	SAMP	1	24450	38455.8	63.58	NR!	70-125	683489.5	1014183.3	67.39	NR!	70-125
N032246-002D	SAMP	1	25146.7	38455.8	65.39	NR!	70-125	703118.1	1014183.3	69.33	NR!	70-125
N032246-003D	SAMP	1	24912.9	38455.8	64.78	NR!	70-125	699781.4	1014183.3	69	NR!	70-125
N032246-004D	SAMP	1	24810.6	38455.8	64.52	NR!	70-125	703603	1014183.3	69.38	NR!	70-125
N032246-005C	SAMP	1	31147	38455.8	80.99	PASS	70-125	856296.9	1014183.3	84.43	PASS	70-125
CCV2	CCV	1	31861.7	38455.8	82.85	PASS	70-125	1014174	1014183.3	100	PASS	70-125
CCB2	CCB	1	36949.2	38455.8	96.082	PASS	70-125	1041222.3	1014183.3	102.67	PASS	70-125
N032246-006C	SAMP	1	30285.4	38455.8	78.75	PASS	70-125	848791.2	1014183.3	83.69	PASS	70-125
N032246-007D	SAMP	1	25038.6	38455.8	65.11	NR!	70-125	716881.8	1014183.3	70.69	PASS	70-125
N032246-008D	SAMP	1	29881.4	38455.8	77.7	PASS	70-125	830021.1	1014183.3	81.84	PASS	70-125
N032205-003D	SAMP	10	34396.9	38455.8	89.45	PASS	70-125	937131.8	1014183.3	92.4	PASS	70-125

INTERNAL STANDARD: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]					103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
N032246-003D	SAMP	5	31222.7	38455.8	81.19	PASS	70-125	855892.4	1014183.3	84.39	PASS	70-125
N032246-008D	SAMP	5	33340.2	38455.8	86.7	PASS	70-125	912912.7	1014183.3	90.015	PASS	70-125
N032205-002D	SAMP	1	27738.7	38455.8	72.13	PASS	70-125	786922.4	1014183.3	77.59	PASS	70-125
N032216-001D	SAMP	1	23752.3	38455.8	61.77	NR!	70-125	685175.8	1014183.3	67.56	NR!	70-125
N032216-002D	SAMP	5	30731.8	38455.8	79.91	PASS	70-125	849598.5	1014183.3	83.77	PASS	70-125
N032216-003D	SAMP	5	30400.1	38455.8	79.052	PASS	70-125	839462.1	1014183.3	82.77	PASS	70-125
CCV3	CCV	1	46230.7	38455.8	120.22	PASS	70-125	1216387.9	1014183.3	119.94	PASS	70-125
CCB3	CCB	1	36258.7	38455.8	94.29	PASS	70-125	1002866.5	1014183.3	98.88	PASS	70-125
N032205-002D	SAMP	1	27472.7	38455.8	71.44	PASS	70-125	765030	1014183.3	75.43	PASS	70-125
N032205-002D	SAMP	1	28418.7	38455.8	73.9	PASS	70-125	794842.7	1014183.3	78.37	PASS	70-125
N032216-001D	SAMP	5	31136.9	38455.8	80.97	PASS	70-125	855157.4	1014183.3	84.32	PASS	70-125
N032246-001D	SAMP	5	30848.7	38455.8	80.22	PASS	70-125	851183.1	1014183.3	83.93	PASS	70-125
N032246-002D	SAMP	5	30626.1	38455.8	79.64	PASS	70-125	841173.1	1014183.3	82.94	PASS	70-125
N032246-004D	SAMP	5	30043.8	38455.8	78.13	PASS	70-125	829293.1	1014183.3	81.77	PASS	70-125
N032246-005C	SAMP	5	33766.7	38455.8	87.81	PASS	70-125	911993.1	1014183.3	89.92	PASS	70-125
N032246-007D	SAMP	5	30957.8	38455.8	80.5	PASS	70-125	845716.3	1014183.3	83.39	PASS	70-125
CCV4	CCV	1	42265.3	38455.8	109.91	PASS	70-125	1161785.7	1014183.3	114.55	PASS	70-125
CCB4	CCB	1	34845.8	38455.8	90.61	PASS	70-125	978458.2	1014183.3	96.48	PASS	70-125
ICSA2	ICSA	1	37710.9	38455.8	98.063	PASS	70-125	1037011	1014183.3	102.25	PASS	70-125
ICSAB2	ICSAB	1	35804.3	38455.8	93.11	PASS	70-125	1001581	1014183.3	98.76	PASS	70-125
CCV5	CCV	1	31077.9	38455.8	80.81	PASS	70-125	951198.6	1014183.3	93.79	PASS	70-125
CCB5	CCB	1	26301.8	38455.8	68.39	NR!	70-125	796336.3	1014183.3	78.52	PASS	70-125
ICSA3	ICSA	1	29565.3	38455.8	76.88	PASS	70-125	858400.8	1014183.3	84.64	PASS	70-125
ICSAB3	ICSAB	1	29652.1	38455.8	77.11	PASS	70-125	839361.4	1014183.3	82.76	PASS	70-125

# SERIAL DILUTION/ POST DIGESTION SPIKE



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N032216  
Test Method: EPA 6020  
Analysis Date: 10/2/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70807

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to several analytes. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032205-001D DT 5X	Arsenic	ug/L	1.447113	NA	1.557951	7.11%	10
N032205-001D DT 5X	Chromium	ug/L	1.437753	NA	1.418583	1.35%	10
N032205-001D DT 5X	Manganese	ug/L	0		0		10
N032205-001D DT 5X	Molybdenum	ug/L	15.96123	PASS	16.37062	2.50%	10
N032205-001D DT 5X	Selenium	ug/L	0	NA	1.017056	100.00%	10

Note: NA - Not applicable



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>N032205-001D-PS</b>	SampType: <b>PS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159624</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	12.972	0.10	10.00	1.558	114	80	120				
Manganese	113.196	0.50	100.0	0	113	80	120				
Molybdenum	28.524	0.50	10.00	16.37	122	80	120				S
Selenium	11.676	0.50	10.00	1.017	107	80	120				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032216  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 6020DIS\_CrPGE

Sample ID	<b>N032205-001D-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>6020DIS_CrP</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>128979</b>		
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70807</b>	TestNo:	<b>EPA 6020</b>	<b>EPA 3010A</b>		Analysis Date:	<b>10/2/2018</b>	SeqNo:	<b>3159834</b>		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		12.087		1.0	10.00	1.419	107	80	120				

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Amount of Sample:** 25 mL  
**Units:** ug/L

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	LOD	PQL
ANTIMONY	0.50	0.525	0.514	0.473	0.500	0.492	0.486	0.530	0.0210	0.0660	0.100	0.50
ARSENIC	0.10	0.099	0.104	0.087	0.048	0.060	0.069	0.120	0.0259	0.0813	0.080	0.10
BARIUM	1.00	1.041	1.059	1.052	1.011	0.967	0.957	1.023	0.0403	0.1264	0.250	1.00
BERYLLIUM	0.50	0.469	0.476	0.473	0.495	0.480	0.488	0.507	0.0135	0.0424	0.100	0.50
CADMIUM	0.50	0.515	0.513	0.492	0.534	0.499	0.483	0.508	0.0168	0.0527	0.100	0.50
CHROMIUM	1.00	0.979	0.986	0.940	0.990	0.946	0.978	0.977	0.0197	0.0618	0.250	1.00
COBALT	0.50	0.499	0.489	0.486	0.488	0.465	0.502	0.505	0.0135	0.0424	0.100	0.50
COPPER	1.00	1.110	0.667	1.039	1.060	1.006	1.099	1.075	0.1544	0.4850	0.500	1.00
IRON	10.00	10.873	10.802	10.142	9.991	9.846	9.852	10.596	0.4463	1.4014	2.500	10.00
LEAD	1.00	0.928	0.931	0.899	0.996	0.990	0.987	0.997	0.0406	0.1274	0.250	1.00
MANGANESE	0.50	0.577	0.588	0.561	0.566	0.517	0.541	0.520	0.0276	0.0866	0.100	0.50
MOLYBDENUM	0.50	0.514	0.504	0.467	0.478	0.456	0.433	0.527	0.0338	0.1061	0.250	0.50
NICKEL	1.00	0.961	0.965	0.977	0.907	0.914	0.962	1.075	0.0551	0.1731	0.250	1.00
SELENIUM	0.50	0.450	0.478	0.419	0.693	0.707	0.495	0.555	0.1155	0.3628	0.400	0.50
SILVER	0.50	0.558	0.511	0.490	0.542	0.458	0.490	0.684	0.0745	0.2340	0.250	0.50
THALLIUM	0.50	0.437	0.428	0.408	0.538	0.446	0.438	0.525	0.0504	0.1583	0.250	0.50
URANIUM	0.50	0.478	0.467	0.461	0.517	0.510	0.521	0.521	0.0267	0.0838	0.100	0.50
VANADIUM	1.00	0.950	0.969	0.900	0.844	0.829	0.848	1.053	0.0820	0.2574	0.500	1.00
ZINC	10.00	11.259	11.279	10.915	9.620	9.849	9.745	10.241	0.7235	2.2717	2.500	10.00



**ASSET LABORATORIES**

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Units:** ug/L

Analyte	MDLs	MDLb	MDL	LOD	PQL
ANTIMONY	0.0660	0.1564	0.1564	0.300	0.50
ARSENIC	0.0813	0.0387	0.0813	0.080	0.10
BARIUM	0.1264	0.1497	0.1497	0.300	1.00
BERYLLIUM	0.0424	0.0153	0.0424	0.100	0.50
CADMIUM	0.0527	0.0060	0.0527	0.100	0.50
CHROMIUM	0.0618	0.1298	0.1298	0.300	1.00
COBALT	0.0424	0.0339	0.0424	0.100	0.50
COPPER	0.4850	0.5459	0.5459	0.600	1.00
IRON	1.4014	4.3484	4.3484	5.000	10.00
LEAD	0.1274	0.1008	0.1274	0.300	1.00
MANGANESE	0.0866	0.2552	0.2552	0.300	0.50
MOLYBDENUM	0.1061	0.2149	0.2149	0.300	0.50
NICKEL	0.1731	0.2606	0.2606	0.300	1.00
SELENIUM	0.3628	0.0953	0.3628	0.400	0.50
SILVER	0.2340	0.2023	0.2340	0.250	0.50
THALLIUM	0.1583	0.1924	0.1924	0.300	0.50
URANIUM	0.0838	0.0020	0.0838	0.100	0.50
VANADIUM	0.2574	0.2768	0.2768	0.600	1.00
ZINC	2.2717	0.4511	2.2717	3.000	10.00



October 11, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032246

RE: PG&E Topock - GMP, RC000753.801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 26, 2018 by ASSET Laboratories .  
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in  
accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Nancy Lubiano for*

Quennie Manimtim  
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in  
its entirety without written permission from the client and Advanced Technology Laboratories - Las Vegas.



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032246

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**CASE NARRATIVE****SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

**Analytical Comments for EPA 218.6:**

Dilution was necessary for samples N032246-002, -003, -004 and -007 due to matrix interference. Samples were analyzed at lower dilution however matrix spike recovery and retention time criteria were not met indicating possible matrix interference. Samples were reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.

**Analytical Comments for EPA 300.0:**

Dilution was necessary for samples N032246-005 and -006 due to precipitation upon the addition of eluent.

**Analytical Comments for EPA 6020\_Dissolved:**

Dilution was necessary on some analytes for samples N032246-001, -002, -003, -004 and -007 due to associated internal standard not meeting method criteria possibly due to matrix interference. Samples were analyzed with dilution and internal standard met method criteria. Affected analytes for this failed internal standard were reported at dilution that meet internal standard recovery limit.

Matrix Spike Duplicate (MSD) is outside recovery criteria for Molybdenum in QC sample N032205-001D-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

**Analytical Comments for SM 4500-NO3F:**

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032246

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**CASE NARRATIVE**

Matrix Spike Duplicate (MSD) is outside recovery criteria in QC sample N032205-004CMSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



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**ASSET Laboratories**

Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032246  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032246-001A	MW-72-080-Q318	Groundwater	9/26/2018 9:30:00 AM	9/26/2018	10/11/2018
N032246-001B	MW-72-080-Q318	Groundwater	9/26/2018 9:30:00 AM	9/26/2018	10/11/2018
N032246-001C	MW-72-080-Q318	Groundwater	9/26/2018 9:30:00 AM	9/26/2018	10/11/2018
N032246-001D	MW-72-080-Q318	Groundwater	9/26/2018 9:30:00 AM	9/26/2018	10/11/2018
N032246-002A	MW-72BR-200-3V-Q318	Groundwater	9/26/2018 2:51:00 PM	9/26/2018	10/11/2018
N032246-002B	MW-72BR-200-3V-Q318	Groundwater	9/26/2018 2:51:00 PM	9/26/2018	10/11/2018
N032246-002C	MW-72BR-200-3V-Q318	Groundwater	9/26/2018 2:51:00 PM	9/26/2018	10/11/2018
N032246-002D	MW-72BR-200-3V-Q318	Groundwater	9/26/2018 2:51:00 PM	9/26/2018	10/11/2018
N032246-003A	MW-72BR-200-LF_D-Q318	Groundwater	9/26/2018 11:24:00 AM	9/26/2018	10/11/2018
N032246-003B	MW-72BR-200-LF_D-Q318	Groundwater	9/26/2018 11:24:00 AM	9/26/2018	10/11/2018
N032246-003C	MW-72BR-200-LF_D-Q318	Groundwater	9/26/2018 11:24:00 AM	9/26/2018	10/11/2018
N032246-003D	MW-72BR-200-LF_D-Q318	Groundwater	9/26/2018 11:24:00 AM	9/26/2018	10/11/2018
N032246-004A	MW-72BR-200-LF_S-Q318	Groundwater	9/26/2018 10:35:00 AM	9/26/2018	10/11/2018
N032246-004B	MW-72BR-200-LF_S-Q318	Groundwater	9/26/2018 10:35:00 AM	9/26/2018	10/11/2018
N032246-004C	MW-72BR-200-LF_S-Q318	Groundwater	9/26/2018 10:35:00 AM	9/26/2018	10/11/2018
N032246-004D	MW-72BR-200-LF_S-Q318	Groundwater	9/26/2018 10:35:00 AM	9/26/2018	10/11/2018
N032246-005A	MW-902-Q318	Groundwater	9/26/2018 8:10:00 AM	9/26/2018	10/11/2018
N032246-005B	MW-902-Q318	Groundwater	9/26/2018 8:10:00 AM	9/26/2018	10/11/2018
N032246-005C	MW-902-Q318	Groundwater	9/26/2018 8:10:00 AM	9/26/2018	10/11/2018
N032246-006A	TW-02D-Q318	Groundwater	9/26/2018 8:00:00 AM	9/26/2018	10/11/2018
N032246-006B	TW-02D-Q318	Groundwater	9/26/2018 8:00:00 AM	9/26/2018	10/11/2018
N032246-006C	TW-02D-Q318	Groundwater	9/26/2018 8:00:00 AM	9/26/2018	10/11/2018
N032246-007A	MW-62-110-Q318	Groundwater	9/26/2018 3:25:00 PM	9/26/2018	10/11/2018
N032246-007B	MW-62-110-Q318	Groundwater	9/26/2018 3:25:00 PM	9/26/2018	10/11/2018
N032246-007C	MW-62-110-Q318	Groundwater	9/26/2018 3:25:00 PM	9/26/2018	10/11/2018
N032246-007D	MW-62-110-Q318	Groundwater	9/26/2018 3:25:00 PM	9/26/2018	10/11/2018
N032246-008A	MW-62-065-Q318	Groundwater	9/26/2018 4:09:00 PM	9/26/2018	10/11/2018
N032246-008B	MW-62-065-Q318	Groundwater	9/26/2018 4:09:00 PM	9/26/2018	10/11/2018
N032246-008C	MW-62-065-Q318	Groundwater	9/26/2018 4:09:00 PM	9/26/2018	10/11/2018



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032246  
**Contract No:**

## Work Order Sample Summary

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Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032246-008D	MW-62-065-Q318	Groundwater	9/26/2018 4:09:00 PM	9/26/2018	10/11/2018
N032246-009A	MW-702-0918	Groundwater	9/26/2018 4:25:00 PM	9/26/2018	10/11/2018



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-001

**Client Sample ID:** MW-72-080-Q318  
**Collection Date:** 9/26/2018 9:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180927G</b>	QC Batch: <b>R128885</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/27/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-002

**Client Sample ID:** MW-72BR-200-3V-Q318  
**Collection Date:** 9/26/2018 2:51:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180927G</b>	QC Batch: <b>R128885</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/27/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-003

**Client Sample ID:** MW-72BR-200-LF\_D-Q318  
**Collection Date:** 9/26/2018 11:24:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180927G</b>	QC Batch: <b>R128885</b>						Analyst: <b>LR</b>
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/27/2018 10:00 AM

<b>Qualifiers:</b>	<b>B</b> Analyte detected in the associated Method Blank	<b>E</b> Value above quantitation range
	<b>H</b> Holding times for preparation or analysis exceeded	<b>ND</b> Not Detected at the Reporting Limit
	<b>S</b> Spike/Surrogate outside of limits due to matrix interference	Results are wet unless otherwise specified
	<b>DO</b> Surrogate Diluted Out	



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-004

**Client Sample ID:** MW-72BR-200-LF\_S-Q318  
**Collection Date:** 9/26/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180927G</b>	QC Batch: <b>R128885</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/27/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-005

**Client Sample ID:** MW-902-Q318  
**Collection Date:** 9/26/2018 8:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180927G</b>	QC Batch: <b>R128885</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	4000	0.10	0.10		umhos/cm	1	9/27/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-006

**Client Sample ID:** TW-02D-Q318  
**Collection Date:** 9/26/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180927G</b>	QC Batch: <b>R128885</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	3800	0.10	0.10		umhos/cm	1	9/27/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-007

**Client Sample ID:** MW-62-110-Q318  
**Collection Date:** 9/26/2018 3:25:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180927G</b>	QC Batch: <b>R128885</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	12000	0.10	0.10		umhos/cm	1	9/27/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-008

**Client Sample ID:** MW-62-065-Q318  
**Collection Date:** 9/26/2018 4:09:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180927G</b>	QC Batch: <b>R128885</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	5700	0.10	0.10		umhos/cm	1	9/27/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID	<b>N032246-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>120.1_WPGE</b>	Units:	<b>umhos/cm</b>	Prep Date:		RunNo:	<b>128885</b>											
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R128885</b>	TestNo:	<b>EPA 120.1</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154163</b>											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual
Specific Conductance		15090.000		0.10										15060				0.199			2	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-005

**Client Sample ID:** MW-902-Q318  
**Collection Date:** 9/26/2018 8:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_180927J</b>	QC Batch: <b>70808</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	2500	33	33		mg/L	1	9/27/2018 01:09 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-006

**Client Sample ID:** TW-02D-Q318  
**Collection Date:** 9/26/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_180927J</b>	QC Batch: <b>70808</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	2400	25	25		mg/L	1	9/27/2018 01:09 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 160.1\_2540C\_W**

Sample ID	<b>LCS-70808</b>	SampType:	<b>LCS</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128894</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>70808</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154366</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		967.000		10	1000	0		96.7	80	120				

Sample ID	<b>MB-70808</b>	SampType:	<b>MBLK</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128894</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>70808</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154367</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		ND		10										

Sample ID	<b>N032246-005BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128894</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>70808</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154372</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		2463.333		33						2477		0.540	5	

Sample ID	<b>N032254-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128894</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>70808</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154375</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		192600.000		1000						185000		4.03	5	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-001

**Client Sample ID:** MW-72-080-Q318  
**Collection Date:** 9/26/2018 9:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_180927A	QC Batch: R128899			PrepDate	Analyst: RAB		
Hexavalent Chromium	91	0.33	2.0	µg/L	10	9/27/2018 10:42 AM	
<b>DISSOLVED METALS BY ICP-MS</b>							
				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI	
Chromium	100	0.13	1.0	µg/L	1	10/2/2018 01:24 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-002

**Client Sample ID:** MW-72BR-200-3V-Q318  
**Collection Date:** 9/26/2018 2:51:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_180927A	QC Batch: R128899				PrepDate		Analyst: RAB
Hexavalent Chromium	3.0	0.17	1.0		µg/L	5	9/27/2018 02:23 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
				<b>EPA 3010A</b>			
				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181002C	QC Batch: 70807				PrepDate	9/27/2018	Analyst: CEI
Chromium	2.9	0.13	1.0		µg/L	1	10/2/2018 01:30 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-003

**Client Sample ID:** MW-72BR-200-LF\_D-Q318  
**Collection Date:** 9/26/2018 11:24:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180927A</b>	QC Batch: <b>R128899</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.17	1.0		µg/L	5	9/27/2018 02:44 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	10/2/2018 01:35 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-004

**Client Sample ID:** MW-72BR-200-LF\_S-Q318  
**Collection Date:** 9/26/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180927A</b>	QC Batch: <b>R128899</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.17	1.0		µg/L	5	9/27/2018 03:03 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	10/2/2018 01:41 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-005

**Client Sample ID:** MW-902-Q318  
**Collection Date:** 9/26/2018 8:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180927A</b>	QC Batch: <b>R128899</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/27/2018 02:01 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	10/2/2018 01:46 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-006

**Client Sample ID:** TW-02D-Q318  
**Collection Date:** 9/26/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180927A</b>	QC Batch: <b>R128899</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/27/2018 04:56 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	10/2/2018 02:03 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-007

**Client Sample ID:** MW-62-110-Q318  
**Collection Date:** 9/26/2018 3:25:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: NV00922-IC7_180927A	QC Batch: R128899				PrepDate		Analyst: RAB
Hexavalent Chromium	ND	0.17	1.0		µg/L	5	9/27/2018 03:22 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807				PrepDate	9/27/2018	Analyst: CEI
Chromium	ND	0.13	1.0		µg/L	1	10/2/2018 02:09 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-008

**Client Sample ID:** MW-62-065-Q318  
**Collection Date:** 9/26/2018 4:09:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_180927A	QC Batch: R128899			PrepDate	Analyst: RAB		
Hexavalent Chromium	540	3.3	20	µg/L	100	9/27/2018 01:13 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI	
Chromium	570	0.65	5.0	µg/L	5	10/2/2018 02:31 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-009

**Client Sample ID:** MW-702-0918  
**Collection Date:** 9/26/2018 4:25:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180927A</b>	QC Batch: <b>R128899</b>			PrepDate			Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20	µg/L	1		9/27/2018 12:36 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID	<b>LCS-R128899</b>	SampType:	<b>LCS</b>	TestCode:	<b>218.6_WPGE</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>128899</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R128899</b>	TestNo:	<b>EPA 218.6</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154483</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		5.138		0.20	5.000	0		103	90	110				

Sample ID	<b>MB-R128899</b>	SampType:	<b>MBLK</b>	TestCode:	<b>218.6_WPGE</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>128899</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R128899</b>	TestNo:	<b>EPA 218.6</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154484</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		ND		0.20										

Sample ID	<b>N032246-001AMS</b>	SampType:	<b>MS</b>	TestCode:	<b>218.6_WPGE</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>128899</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128899</b>	TestNo:	<b>EPA 218.6</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154486</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		140.625		2.0	50.00	91.03		99.2	90	110				

Sample ID	<b>N032246-001ADUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>218.6_WPGE</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>128899</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128899</b>	TestNo:	<b>EPA 218.6</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154489</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		89.850		2.0							91.03	1.31	20	

Sample ID	<b>N032246-009AMS</b>	SampType:	<b>MS</b>	TestCode:	<b>218.6_WPGE</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>128899</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128899</b>	TestNo:	<b>EPA 218.6</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154491</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		1.019		0.20	1.000	0		102	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032246-008AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154493</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	1044.050	20	500.0	543.2	100	90	110				
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Sample ID <b>N032246-008AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154494</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	1057.250	20	500.0	543.2	103	90	110	1044	1.26	20	
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Sample ID <b>N032246-005AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154498</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	1.183	0.20	1.000	0.1289	105	90	110				
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Sample ID <b>N032246-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154500</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	8.042	1.0	5.000	2.973	101	90	110				
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Sample ID <b>N032246-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154502</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	5.913	1.0	5.000	0.8490	101	90	110				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032246-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154504</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.332	1.0	5.000	0.6240	94.2	90	110				

Sample ID <b>N032246-007AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154506</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.849	1.0	5.000	0.5075	107	90	110				

Sample ID <b>N032246-006AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154510</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.142	0.20	1.000	0.1402	100	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>MB-70807</b>	SampType: <b>MBLK</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159830</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>LCS-70807</b>	SampType: <b>LCS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159831</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	10.546	1.0	10.00	0	105	85	115				
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Sample ID <b>N032205-001D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159835</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	12.134	1.0	10.00	1.419	107	75	125				
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Sample ID <b>N032205-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159836</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	12.005	1.0	10.00	1.419	106	75	125	12.13	1.07	20	
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-005

**Client Sample ID:** MW-902-Q318  
**Collection Date:** 9/26/2018 8:10:00 AM  
**Matrix:** GROUNDWATER

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Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_180928F</b>	QC Batch: <b>R128943</b>			PrepDate			Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	160	1.2	5.0	mg/L	1		9/28/2018 09:50 AM

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**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-006

**Client Sample ID:** TW-02D-Q318  
**Collection Date:** 9/26/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_180928F</b>	QC Batch: <b>R128943</b>						Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	170	1.2	5.0		mg/L	1	9/28/2018 09:50 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 2320\_W\_SP**

Sample ID	<b>LCS-R128943</b>	SampType:	<b>LCS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128943</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R128943</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/28/2018</b>	SeqNo:	<b>3156816</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		97.713		5.0	100.0	0		97.7	85	115				

Sample ID	<b>MB-R128943</b>	SampType:	<b>MBLK</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128943</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R128943</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/28/2018</b>	SeqNo:	<b>3156817</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		ND		5.0										

Sample ID	<b>N032246-005BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128943</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128943</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/28/2018</b>	SeqNo:	<b>3156820</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		161.123		5.0						164.2		1.92	30	

Sample ID	<b>N032246-005BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128943</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128943</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/28/2018</b>	SeqNo:	<b>3156821</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		259.875		5.0	100.0	164.2		95.6	75	125				

Sample ID	<b>N032246-005BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128943</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128943</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/28/2018</b>	SeqNo:	<b>3156822</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		259.875		5.0	100.0	164.2		95.6	75	125	259.9	0	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-005

**Client Sample ID:** MW-902-Q318  
**Collection Date:** 9/26/2018 8:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180927A	QC Batch: R128879				PrepDate		Analyst: RAB
Bromide	ND	0.098	2.5		mg/L	5	9/27/2018 02:44 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180927A	QC Batch: R128879				PrepDate		Analyst: RAB
Chloride	1100	4.6	250		mg/L	500	9/27/2018 05:15 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180927A	QC Batch: R128879				PrepDate		Analyst: RAB
Sulfate	310	1.1	25		mg/L	50	9/27/2018 06:56 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-006

**Client Sample ID:** TW-02D-Q318  
**Collection Date:** 9/26/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180927A	QC Batch: R128879				PrepDate		Analyst: RAB
Bromide	ND	0.098	2.5		mg/L	5	9/27/2018 03:01 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180927A	QC Batch: R128879				PrepDate		Analyst: RAB
Chloride	1100	4.6	250		mg/L	500	9/27/2018 05:32 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180927A	QC Batch: R128879				PrepDate		Analyst: RAB
Sulfate	300	1.1	25		mg/L	50	9/27/2018 07:13 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_BRPGE**

Sample ID	<b>MB-R128879_BR</b>	SampType:	<b>MBLK</b>	TestCode:	<b>300_W_BRP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128879</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R128879</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3153755</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide		ND		0.50										

Sample ID	<b>LCS-R128879_BR</b>	SampType:	<b>LCS</b>	TestCode:	<b>300_W_BRP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128879</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R128879</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3153756</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide		1.250		0.50	1.250	0		100	90	110				

Sample ID	<b>N032246-006BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_BRP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128879</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128879</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3153761</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide		0.382		2.5							0.3985	0	20	

Sample ID	<b>N032246-006BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>300_W_BRP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128879</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128879</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3153764</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide		6.532		2.5	6.250	0.3985		98.1	80	120				

Sample ID	<b>N032246-006BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>300_W_BRP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128879</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128879</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3153765</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide		6.474		2.5	6.250	0.3985		97.2	80	120	6.532	0.892	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_CLPGE**

Sample ID <b>MB-R128879_CL</b>	SampType: <b>MBLK</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153774</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride ND 0.50

Sample ID <b>LCS-R128879_CL</b>	SampType: <b>LCS</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153775</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride 1.972 0.50 2.000 0 98.6 90 110

Sample ID <b>N032246-005BMS</b>	SampType: <b>MS</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153784</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride 2099.750 250 1000 1128 97.2 80 120

Sample ID <b>N032246-005BMSD</b>	SampType: <b>MSD</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153785</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride 2090.700 250 1000 1128 96.3 80 120 2100 0.432 20

Sample ID <b>N032246-006BDUP</b>	SampType: <b>DUP</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153786</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride 1093.350 250 1101 0.729 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID	<b>MB-R128879_SO4</b>	SampType: <b>MBLK</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID:	<b>PBW</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153796</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	ND	0.50				
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Sample ID	<b>LCS-R128879_SO4</b>	SampType: <b>LCS</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID:	<b>LCSW</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153797</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	3.966	0.50	4.000	0	99.2	90 110
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Sample ID	<b>N032246-005BMS</b>	SampType: <b>MS</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID:	<b>ZZZZZ</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153808</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	509.780	25	200.0	311.8	99.0	80 120
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Sample ID	<b>N032246-005BMSD</b>	SampType: <b>MSD</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID:	<b>ZZZZZ</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153809</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	511.550	25	200.0	311.8	99.9	80 120 509.8 0.347 20
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Sample ID	<b>N032246-006BDUP</b>	SampType: <b>DUP</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID:	<b>ZZZZZ</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153810</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	292.260	25				296.6 1.49 20
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-001

**Client Sample ID:** MW-72-080-Q318  
**Collection Date:** 9/26/2018 9:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.68	0.032	0.050	mg/L	1		10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-002

**Client Sample ID:** MW-72BR-200-3V-Q318  
**Collection Date:** 9/26/2018 2:51:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.14	0.032	0.050		mg/L	1	10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-003

**Client Sample ID:** MW-72BR-200-LF\_D-Q318  
**Collection Date:** 9/26/2018 11:24:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.081	0.032	0.050	mg/L	1		10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-004

**Client Sample ID:** MW-72BR-200-LF\_S-Q318  
**Collection Date:** 9/26/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.44	0.032	0.050		mg/L	1	10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-007

**Client Sample ID:** MW-62-110-Q318  
**Collection Date:** 9/26/2018 3:25:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	ND	0.032	0.050	mg/L	1		10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-008

**Client Sample ID:** MW-62-065-Q318  
**Collection Date:** 9/26/2018 4:09:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	5.0	0.16	0.25		mg/L	5	10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R129025</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161938</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R129025</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161939</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.481	0.050	0.5000	0	96.2 85 115

Sample ID <b>N032205-004CMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161942</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	6.037	0.25	2.500	2.971	123 75 125

Sample ID <b>N032205-004CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161943</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	6.162	0.25	2.500	2.971	128 75 125 6.037 2.05 20 S

Sample ID <b>N032205-002CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161946</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	1.111	0.050			1.136 2.20 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-001

**Client Sample ID:** MW-72-080-Q318  
**Collection Date:** 9/26/2018 9:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	12	0.081	0.10	µg/L	1	10/2/2018 01:24 PM
Manganese	45	0.26	0.50	µg/L	1	10/2/2018 01:24 PM
Molybdenum	79	1.1	2.5	µg/L	5	10/2/2018 03:34 PM
Selenium	ND	1.8	2.5	µg/L	5	10/2/2018 03:34 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-002

**Client Sample ID:** MW-72BR-200-3V-Q318  
**Collection Date:** 9/26/2018 2:51:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	16	0.081	0.10	µg/L	1	10/2/2018 01:30 PM
Manganese	15	0.26	0.50	µg/L	1	10/2/2018 01:30 PM
Molybdenum	76	1.1	2.5	µg/L	5	10/2/2018 03:39 PM
Selenium	ND	1.8	2.5	µg/L	5	10/2/2018 03:39 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-003

**Client Sample ID:** MW-72BR-200-LF\_D-Q318  
**Collection Date:** 9/26/2018 11:24:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	10	0.081	0.10		µg/L	1 10/2/2018 01:35 PM
Manganese	260	1.3	2.5		µg/L	5 10/2/2018 02:25 PM
Molybdenum	67	1.1	2.5		µg/L	5 10/2/2018 02:25 PM
Selenium	ND	1.8	2.5		µg/L	5 10/2/2018 02:25 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-004

**Client Sample ID:** MW-72BR-200-LF\_S-Q318  
**Collection Date:** 9/26/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

RunID: NV00922-ICP7_181002C	EPA 3010A		EPA 6020		PrepDate	9/27/2018	Analyst: CEI
	QC Batch: 70807						
Arsenic	15	0.081	0.10		µg/L	1	10/2/2018 01:41 PM
Manganese	56	0.26	0.50		µg/L	1	10/2/2018 01:41 PM
Molybdenum	82	1.1	2.5		µg/L	5	10/2/2018 03:45 PM
Selenium	ND	1.8	2.5		µg/L	5	10/2/2018 03:45 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-005

**Client Sample ID:** MW-902-Q318  
**Collection Date:** 9/26/2018 8:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Manganese	86	0.26	0.50	µg/L	1	10/2/2018 01:46 PM
Molybdenum	12	0.21	0.50	µg/L	1	10/2/2018 01:46 PM
Selenium	1.5	0.36	0.50	µg/L	1	10/8/2018 08:02 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-006

**Client Sample ID:** TW-02D-Q318  
**Collection Date:** 9/26/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Manganese	84	0.26	0.50	µg/L	1	10/2/2018 02:03 PM
Molybdenum	12	0.21	0.50	µg/L	1	10/2/2018 02:03 PM
Selenium	1.3	0.36	0.50	µg/L	1	10/2/2018 02:03 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-007

**Client Sample ID:** MW-62-110-Q318  
**Collection Date:** 9/26/2018 3:25:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	3.2	0.081	0.10	µg/L	1	10/2/2018 02:09 PM
Manganese	170	0.26	0.50	µg/L	1	10/2/2018 02:09 PM
Molybdenum	59	0.21	0.50	µg/L	1	10/2/2018 02:09 PM
Selenium	ND	1.8	2.5	µg/L	5	10/2/2018 03:56 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-008

**Client Sample ID:** MW-62-065-Q318  
**Collection Date:** 9/26/2018 4:09:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	1.7	0.081	0.10	µg/L	1	10/2/2018 02:14 PM
Manganese	ND	0.26	0.50	µg/L	1	10/2/2018 02:14 PM
Molybdenum	13	0.21	0.50	µg/L	1	10/2/2018 02:14 PM
Selenium	4.7	0.36	0.50	µg/L	1	10/2/2018 02:14 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>MB-70807</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>
Client ID: <b>PBW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159620</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>LCS-70807</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159621</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	9.987	0.10	10.00	0	99.9 85 115
Manganese	106.685	0.50	100.0	0	107 85 115
Molybdenum	9.797	0.50	10.00	0	98.0 85 115
Selenium	10.086	0.50	10.00	0	101 85 115

Sample ID <b>N032205-001D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159625</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	13.112	0.10	10.00	1.558	116 75 125
Manganese	114.507	0.50	100.0	0	115 75 125
Molybdenum	28.778	0.50	10.00	16.37	124 75 125
Selenium	11.109	0.50	10.00	1.017	101 75 125

Sample ID <b>N032205-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159626</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	13.254	0.10	10.00	1.558	117 75 125 13.11 1.08 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

**CALIFORNIA** | P:562.219.7435 F:562.219.7436  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
ELAP Cert 2921  
EPA ID CA01638

**NEVADA** | P:702.307.2659 F:702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118  
ELAP Cert 2676 | NV Cert NVO0922  
ORELAP/NELAP Cert 4046

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	<b>N032205-001D-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128979</b>		
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70807</b>	TestNo:	<b>EPA 6020</b>	<b>EPA 3010A</b>		Analysis Date:	<b>10/2/2018</b>	SeqNo:	<b>3159626</b>		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		113.674		0.50	100.0	0	114	75	125	114.5	0.730	20	
Molybdenum		28.930		0.50	10.00	16.37	126	75	125	28.78	0.528	20	S
Selenium		10.661		0.50	10.00	1.017	96.4	75	125	11.11	4.12	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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 Nevada: 3151 W. Post Road, Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
 California: 11060 Artesia Blvd., Ste C, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 www.assetlaboratories.com

Page 1 of 1

Client: Arcadis		Report to: Dan Bush		Bill to: Marty Bloes		EDD Requirement		QA/QC		Sample Receipt Condition	
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis		Address:		Excel EDD		RTNE		1. Chilled <input checked="" type="checkbox"/>	
Address: Roseville, CA 95661		Email: dan.bush@arcadis.com daniel.moore@critigen.com		Address:		GeoTracker		RWQCB		2. Headspace <input type="checkbox"/>	
Phone: 916-786-3302		Address: 1410 Rocky Ridge Dr # 330		Email to: mbloes@pivox.com		Labspec		CalTrans		3. Container Intact <input type="checkbox"/>	
Fax:		Roseville, CA 95661		P.O.#		Others <input checked="" type="checkbox"/>		LEVEL III		4. Seal Present <input type="checkbox"/>	
Submitted By: Gantt Jeffers		Phone: 918-786-3302		Phone: 949-727-1400, ext 200		Specify:		RWQCB		5. IR number <input checked="" type="checkbox"/>	
Title: Geologist II		Fax:		Fax:		Global ID:		Regulatory		6. Method of Cooling: <i>lcc</i>	
Signature:		Date: 9/26/2018		Sampled By: Jordon Ieramae				Specify State:		Sample Temp: <i>3-18</i>	
Project Name: PG&E Topock - GMP		Signature:		Date: 9/26/2018						Courier:	
Project Number: RC000753.801D										Tracking No.:	
										Remarks:	

Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	Matrix											Turn-Around Time	No. of Container	Container Type	PRESERVATION		
						Ground	x	Sediment	250 mL poly	1 liter poly	1 liter poly	1 liter poly	1 liter poly	1 liter poly	125 mL poly	500 mL poly						500 mL poly
							Cr(VI) FF (E218.6) (NH4)2 SO4, NH4, OH															
							Alkalinity, Total as CaCO3 (SM2320B)															
							Bromide, Sulfate, Chloride (EPA 300.0)															
							Specific Conductance (EPA 120.1)															
							Total Dissolved Solids (SM2540C)															
							Nitrate/Nitrite (SM4500NO3 F) Nitrate: H2SO4															
							Metals Dissolved (SM6020A FF) (As, Cr, Mn, Mo, Se); HNO3															
							Dissolved metals (SM6010B FF) (Cr, Mo, Se); HNO3															
							Dissolved metals (SM6010B FF) (Cr, Mn, Mo, Se); HNO3															
1	N032246-01	MW-72-080-Q318	9/26/2018	9:30		X	X	X	X	X												
2	-02	MW-72BR-200-3V-Q318	9/26/2018	14:51		X	X	X	X	X												
3	-03	MW-72BR-200-LF_D-Q318	9/26/2018	11:24		X	X	X	X	X												
4	-04	MW-72BR-200-LF_S-Q318	9/26/2018	10:35		X	X	X	X	X												
5	-05	MW-902-Q318	9/26/2018	8:10		X	X	X	X	X					X							
6	-06	TW-02D-Q318	9/26/2018	8:00		X	X	X	X	X					X							
7	-07	MW-62-110-Q318	9/26/2018	15:25		X	X	X	X	X												
8	-08	MW-62-065-Q318	9/26/2018	16:09		X	X	X	X	X												
9	-09	MW-702-Q318	9/26/2018	18:25		X	X	X	X	X												
10																						

Relinquished by (Signature and Printed Name): <i>[Signature]</i>	Date/Time: 9/26/18 1700	Relinquished by (Signature and Printed Name): <i>[Signature]</i>	Date/Time: 9/26/18 1700	Turn Around Time (TAT):	Special Instruction:
Relinquished by (Signature and Printed Name): <i>[Signature]</i>	Date/Time: 9/26/18 1436	Relinquished by (Signature and Printed Name): <i>[Signature]</i>	Date/Time: 9/26/18 1430	<input type="checkbox"/> A < 24 Hrs or Same Day TAT <input type="checkbox"/> B = Next Workday <input type="checkbox"/> C = 2 Workdays <input type="checkbox"/> D = 3 Workdays <input checked="" type="checkbox"/> E = Routine 5-7 Workdays	Title 22 Metals - Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Ti, V, Zn, K, Na
Relinquished by (Signature and Printed Name): <i>[Signature]</i>	Date/Time:	Relinquished by (Signature and Printed Name): <i>[Signature]</i>	Date/Time:	TAT Starts at 8 AM the following day if samples received after 3:00PM.	

Terms: 1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report. 2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis. Less than 24 Hrs.--200% Next Day--100% 2 Workdays--50% 3 Workdays--35% 4 Workdays--20% 3. Custom EDD formats will be an additional 3% of the total project price. 4. Add 10% surcharge for Level II Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price. 5. Trip Blank and Equipment Blank are billable sample. 6. Asset Laboratories is not responsible for samples collected using incorrect methodology. 7. Terms are net 30 days. 8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed. 9. For subcontract analysis, TAT and surcharges will vary. White=Laboratory Copy	Container Type: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>H=HCL</td> <td>N=HNO3</td> <td>S=H2SO4</td> <td>C=4°C</td> <td>T=Tube</td> <td>V=VOA</td> <td>P=Pin</td> </tr> <tr> <td>Z=Zn(AC)2</td> <td>O=NaOH</td> <td>T=Na2S2O3</td> <td></td> <td>J=Jar</td> <td>B=Tedlar</td> <td>G=Glass</td> </tr> <tr> <td>Others/Specify:</td> <td>B</td> <td>(NH4)2SO4/NH4OH</td> <td></td> <td>M=Metal</td> <td>M=Metal</td> <td>C=Can</td> </tr> </table> Yellow=Customer's Copy	H=HCL	N=HNO3	S=H2SO4	C=4°C	T=Tube	V=VOA	P=Pin	Z=Zn(AC)2	O=NaOH	T=Na2S2O3		J=Jar	B=Tedlar	G=Glass	Others/Specify:	B	(NH4)2SO4/NH4OH		M=Metal	M=Metal	C=Can
H=HCL	N=HNO3	S=H2SO4	C=4°C	T=Tube	V=VOA	P=Pin																
Z=Zn(AC)2	O=NaOH	T=Na2S2O3		J=Jar	B=Tedlar	G=Glass																
Others/Specify:	B	(NH4)2SO4/NH4OH		M=Metal	M=Metal	C=Can																

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 9/26/2018 Workorder: N032246  
 Rep sample Temp (Deg C): 3.1 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |  |  |  |
|---|--|--|--|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>   |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                                  |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                                  |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 11. All samples received within holding time?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>   |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input type="checkbox"/><br>Yes <input type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input checked="" type="checkbox"/><br>NA <input checked="" type="checkbox"/> |

Comments:

Checklist Completed By: YR



9/28/2018

Reviewed By: LG 100318



Lucille Golosinda

---

From: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
Sent: Thursday, October 04, 2018 8:45 AM  
To: 'Andreafe. Gallardo'; [maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com); Lucille Golosinda  
Subject: Fwd: RE: Sample ID Update - N032246

Forwarding,

Thanks

----- Forwarded Message -----

Subject: RE: Sample ID Update - N032246  
Date: Thu, 4 Oct 2018 00:33:04 +0000  
From: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
To: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
CC: [nancy@assetlaboratories.com](mailto:nancy@assetlaboratories.com) <[nancy@assetlaboratories.com](mailto:nancy@assetlaboratories.com)>, 'Sonny. Lorenzo' <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>, 'Marlon B. Cartin' <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>

6020 is acceptable.

Thanks!  
Laura

---

From: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
Sent: Wednesday, October 3, 2018 7:12 PM  
To: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
Cc: [nancy@assetlaboratories.com](mailto:nancy@assetlaboratories.com); 'Sonny. Lorenzo' <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>; 'Marlon B. Cartin' <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>  
Subject: Re: Sample ID Update - N032246

Noted Laura,

Please just confirm if 6020 is acceptable too for Dissolved Metals on sample 5 and 6.

Thanks,

On 10/3/2018 4:41 PM, Madsen, Laura wrote:

Hi Yoandra,  
We would like the sample ID to end in "0918" because we already inadvertently used the same sample ID with "Q318" at the end earlier in the event. In order to have a unique sample ID that will load in the database, we need to change the end part. Thank you for checking!

And you are correct, she has a typo of Q4 in the table it should be Q3.

ClientSampID	NewClientSampID	DateCollected	WorkOrder
MW-702-Q318	MW-702-0918	9/26/2018 16:25	N032246

Thanks,  
Laura

---

From: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
Sent: Wednesday, October 3, 2018 6:37 PM  
To: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
Cc: [nancy@assetlaboratories.com](mailto:nancy@assetlaboratories.com); 'Sonny. Lorenzo' <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>; 'Marlon B. Cartin' <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>  
Subject: Fwd: RE: Sample ID Update - N032246

Hi Laura,

Please kindly check Sample Control concern below regarding IDs.

Also please be informed that Dissolved Metals for samples 5 and 6 were logged as 6020 per history.

Please confirm,

Thanks,

----- Forwarded Message -----

Subject:RE: Sample ID Update - N032246  
Date:Tue, 2 Oct 2018 10:54:39 -0700  
From:Sonny Lorenzo <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>  
To:'Nancy Sibucan' <[nancy@assetlaboratories.com](mailto:nancy@assetlaboratories.com)>, 'Andrea Fe Gallardo' <[andrea.gallardo@assetlaboratories.com](mailto:andrea.gallardo@assetlaboratories.com)>, [maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com), 'Yoandra Rodriguez' <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
CC:'Marlon B. Cartin' <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>, 'Lucille Golosinda' <[lucille.golosinda@assetlaboratories.com](mailto:lucille.golosinda@assetlaboratories.com)>

Done po.

Ms. Nancy,  
hoping that the client ID for other samples is ends like -Q318 (per COC),  
Would like to verify because -Q418 on below email.  
Attached is the COC for reference.

Thanks,  
Sonny

---

From: Nancy Sibucan [<mailto:nancy@assetlaboratories.com>]  
Sent: Tuesday, October 02, 2018 10:42 AM  
To: Sonny Lorenzo; Andrea Fe Gallardo; [maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com); Yoandra Rodriguez  
Cc: Marlon B. Cartin; Lucille Golosinda  
Subject: Fwd: Sample ID Update - N032246  
Importance: High



Please update sample ID.

Thanks,  
Nancy

----- Forwarded Message -----

Subject: Sample ID Update - N032246  
Date: Tue, 2 Oct 2018 17:00:27 +0000  
From: Tina Rice <[Tina.Rice@critigen.com](mailto:Tina.Rice@critigen.com)>  
To: Nancy Sibucão <[nancy@assetlaboratories.com](mailto:nancy@assetlaboratories.com)>  
CC: [Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com) <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>

Hi Nancy,

A duplicate sample ID was used so please update the ClientSampleID in SDG N032246 to the NewClientSampID highlighted, below:

ClientSampID	NewClientSampID	DateCollected	WorkOrder	SampID
MW-702-Q418	MW-702-0918	9/26/2018 16:25	N032246	N032246-009A

Thank you,  
Tina

**Tina Rice**  
**Database Analyst**

**CRITIGEN**

[Tina.Rice@critigen.com](mailto:Tina.Rice@critigen.com)  
1 360 600 3562 Direct  
1 360 600 3562 Mobile

[critigen.com](http://critigen.com)  
[critigen.co.uk](http://critigen.co.uk)

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--  
Yoandra Rodriguez  
Sample Control Officer  
Asset Laboratories

# ASSET Laboratories

## WORK ORDER Summary

02-Oct-18

WorkOrder: N032246

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801D

QC Level: Level IV

Date Received: 9/26/2018

Comments: Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032246-001A	MW-72-080-Q318	9/26/2018 9:30:00 AM	10/10/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-001B			10/10/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-001C			10/10/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-001D			10/10/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-002A	MW-72BR-200-3V-Q318	9/26/2018 2:51:00 PM	10/10/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-002B			10/10/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-002C			10/10/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-002D			10/10/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-003A	MW-72BR-200-LF_D-Q318	9/26/2018 11:24:00 AM	10/10/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-003B			10/10/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-003C			10/10/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-003D			10/10/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-004A	MW-72BR-200-LF_S-Q318	9/26/2018 10:35:00 AM	10/10/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-004B			10/10/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-004C			10/10/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

02-Oct-18

**WorkOrder:** N032246

**Client ID:** ARCUS02

**Project:** PG&E Topock - GMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 9/26/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032246-004D	MW-72BR-200-LF_S-Q318	9/26/2018 10:35:00 AM	10/10/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-005A	MW-902-Q318	9/26/2018 8:10:00 AM	10/10/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-005B			10/10/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-005C			10/10/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-006A	TW-02D-Q318	9/26/2018 8:00:00 AM	10/10/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-006B			10/10/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

02-Oct-18

**WorkOrder:** N032246

**Client ID:** ARCUS02

**Project:** PG&E Topock - GMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 9/26/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032246-006C	TW-02D-Q318	9/26/2018 8:00:00 AM	10/10/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-007A	MW-62-110-Q318	9/26/2018 3:25:00 PM	10/10/2018	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-007B			10/10/2018	EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-007C			10/10/2018	SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-007D			10/10/2018	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
			10/10/2018	EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
			10/10/2018	EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-008A	MW-62-065-Q318	9/26/2018 4:09:00 PM	10/10/2018	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-008B			10/10/2018	EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-008C			10/10/2018	SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-008D			10/10/2018	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
			10/10/2018	EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
			10/10/2018	EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-009A	MW-702-0918	9/26/2018 4:25:00 PM	10/10/2018	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-010A	FOLDER	10/10/2018	10/10/2018	EDD	RWQCB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB	
			10/10/2018	Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB	
			10/10/2018	Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB	

# ***ARCADIS***

Project: PG&E Topock - GMP

Project No.: RC000753.801D

ASSET Laboratories Work Order:  
N032246

## ***ANALYTICAL and QC RESULTS SAMPLE RECEIVING ITEMS***

***PRIVILEGED AND CONFIDENTIAL***



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October 11, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032246

RE: PG&E Topock - GMP, RC000753.801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 26, 2018 by ASSET Laboratories .  
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in  
accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Nancy Lubiano for*

Quennie Manimtim  
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in  
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---

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032246

---

**CASE NARRATIVE****SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

**Analytical Comments for EPA 218.6:**

Dilution was necessary for samples N032246-002, -003, -004 and -007 due to matrix interference. Samples were analyzed at lower dilution however matrix spike recovery and retention time criteria were not met indicating possible matrix interference. Samples were reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.

**Analytical Comments for EPA 300.0:**

Dilution was necessary for samples N032246-005 and -006 due to precipitation upon the addition of eluent.

**Analytical Comments for EPA 6020\_Dissolved:**

Dilution was necessary on some analytes for samples N032246-001, -002, -003, -004 and -007 due to associated internal standard not meeting method criteria possibly due to matrix interference. Samples were analyzed with dilution and internal standard met method criteria. Affected analytes for this failed internal standard were reported at dilution that meet internal standard recovery limit.

Matrix Spike Duplicate (MSD) is outside recovery criteria for Molybdenum in QC sample N032205-001D-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

**Analytical Comments for SM 4500-NO3F:**



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032246

**CASE NARRATIVE**

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Matrix Spike Duplicate (MSD) is outside recovery criteria in QC sample N032205-004CMSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



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**ASSET Laboratories**

Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032246  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032246-001A	MW-72-080-Q318	Groundwater	9/26/2018 9:30:00 AM	9/26/2018	10/11/2018
N032246-001B	MW-72-080-Q318	Groundwater	9/26/2018 9:30:00 AM	9/26/2018	10/11/2018
N032246-001C	MW-72-080-Q318	Groundwater	9/26/2018 9:30:00 AM	9/26/2018	10/11/2018
N032246-001D	MW-72-080-Q318	Groundwater	9/26/2018 9:30:00 AM	9/26/2018	10/11/2018
N032246-002A	MW-72BR-200-3V-Q318	Groundwater	9/26/2018 2:51:00 PM	9/26/2018	10/11/2018
N032246-002B	MW-72BR-200-3V-Q318	Groundwater	9/26/2018 2:51:00 PM	9/26/2018	10/11/2018
N032246-002C	MW-72BR-200-3V-Q318	Groundwater	9/26/2018 2:51:00 PM	9/26/2018	10/11/2018
N032246-002D	MW-72BR-200-3V-Q318	Groundwater	9/26/2018 2:51:00 PM	9/26/2018	10/11/2018
N032246-003A	MW-72BR-200-LF_D-Q318	Groundwater	9/26/2018 11:24:00 AM	9/26/2018	10/11/2018
N032246-003B	MW-72BR-200-LF_D-Q318	Groundwater	9/26/2018 11:24:00 AM	9/26/2018	10/11/2018
N032246-003C	MW-72BR-200-LF_D-Q318	Groundwater	9/26/2018 11:24:00 AM	9/26/2018	10/11/2018
N032246-003D	MW-72BR-200-LF_D-Q318	Groundwater	9/26/2018 11:24:00 AM	9/26/2018	10/11/2018
N032246-004A	MW-72BR-200-LF_S-Q318	Groundwater	9/26/2018 10:35:00 AM	9/26/2018	10/11/2018
N032246-004B	MW-72BR-200-LF_S-Q318	Groundwater	9/26/2018 10:35:00 AM	9/26/2018	10/11/2018
N032246-004C	MW-72BR-200-LF_S-Q318	Groundwater	9/26/2018 10:35:00 AM	9/26/2018	10/11/2018
N032246-004D	MW-72BR-200-LF_S-Q318	Groundwater	9/26/2018 10:35:00 AM	9/26/2018	10/11/2018
N032246-005A	MW-902-Q318	Groundwater	9/26/2018 8:10:00 AM	9/26/2018	10/11/2018
N032246-005B	MW-902-Q318	Groundwater	9/26/2018 8:10:00 AM	9/26/2018	10/11/2018
N032246-005C	MW-902-Q318	Groundwater	9/26/2018 8:10:00 AM	9/26/2018	10/11/2018
N032246-006A	TW-02D-Q318	Groundwater	9/26/2018 8:00:00 AM	9/26/2018	10/11/2018
N032246-006B	TW-02D-Q318	Groundwater	9/26/2018 8:00:00 AM	9/26/2018	10/11/2018
N032246-006C	TW-02D-Q318	Groundwater	9/26/2018 8:00:00 AM	9/26/2018	10/11/2018
N032246-007A	MW-62-110-Q318	Groundwater	9/26/2018 3:25:00 PM	9/26/2018	10/11/2018
N032246-007B	MW-62-110-Q318	Groundwater	9/26/2018 3:25:00 PM	9/26/2018	10/11/2018
N032246-007C	MW-62-110-Q318	Groundwater	9/26/2018 3:25:00 PM	9/26/2018	10/11/2018
N032246-007D	MW-62-110-Q318	Groundwater	9/26/2018 3:25:00 PM	9/26/2018	10/11/2018
N032246-008A	MW-62-065-Q318	Groundwater	9/26/2018 4:09:00 PM	9/26/2018	10/11/2018
N032246-008B	MW-62-065-Q318	Groundwater	9/26/2018 4:09:00 PM	9/26/2018	10/11/2018
N032246-008C	MW-62-065-Q318	Groundwater	9/26/2018 4:09:00 PM	9/26/2018	10/11/2018



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---

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032246  
**Contract No:**

## Work Order Sample Summary

---

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032246-008D	MW-62-065-Q318	Groundwater	9/26/2018 4:09:00 PM	9/26/2018	10/11/2018
N032246-009A	MW-702-0918	Groundwater	9/26/2018 4:25:00 PM	9/26/2018	10/11/2018



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-001

**Client Sample ID:** MW-72-080-Q318  
**Collection Date:** 9/26/2018 9:30:00 AM  
**Matrix:** GROUNDWATER

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Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180927G</b>	QC Batch: <b>R128885</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	15000	0.10	0.10	umhos/cm	1		9/27/2018 10:00 AM

---

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-002

**Client Sample ID:** MW-72BR-200-3V-Q318  
**Collection Date:** 9/26/2018 2:51:00 PM  
**Matrix:** GROUNDWATER

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Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180927G</b>	QC Batch: <b>R128885</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	15000	0.10	0.10	umhos/cm	1		9/27/2018 10:00 AM

---

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-003

**Client Sample ID:** MW-72BR-200-LF\_D-Q318  
**Collection Date:** 9/26/2018 11:24:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180927G</b>	QC Batch: <b>R128885</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/27/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-004

**Client Sample ID:** MW-72BR-200-LF\_S-Q318  
**Collection Date:** 9/26/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180927G</b>	QC Batch: <b>R128885</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/27/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-005

**Client Sample ID:** MW-902-Q318  
**Collection Date:** 9/26/2018 8:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180927G</b>	QC Batch: <b>R128885</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	4000	0.10	0.10		umhos/cm	1	9/27/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-006

**Client Sample ID:** TW-02D-Q318  
**Collection Date:** 9/26/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180927G</b>	QC Batch: <b>R128885</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	3800	0.10	0.10		umhos/cm	1	9/27/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-007

**Client Sample ID:** MW-62-110-Q318  
**Collection Date:** 9/26/2018 3:25:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180927G</b>	QC Batch: <b>R128885</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	12000	0.10	0.10		umhos/cm	1	9/27/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-008

**Client Sample ID:** MW-62-065-Q318  
**Collection Date:** 9/26/2018 4:09:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180927G</b>	QC Batch: <b>R128885</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	5700	0.10	0.10		umhos/cm	1	9/27/2018 10:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID <b>N032246-002BDUP</b>	SampType: <b>DUP</b>	TestCode: <b>120.1_WPGE</b>	Units: <b>umhos/cm</b>	Prep Date:	RunNo: <b>128885</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128885</b>	TestNo: <b>EPA 120.1</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154163</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	15090.000	0.10						15060	0.199	2	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-005

**Client Sample ID:** MW-902-Q318  
**Collection Date:** 9/26/2018 8:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_180927J</b>	QC Batch: <b>70808</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	2500	33	33		mg/L	1	9/27/2018 01:09 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-006

**Client Sample ID:** TW-02D-Q318  
**Collection Date:** 9/26/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_180927J</b>	QC Batch: <b>70808</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	2400	25	25		mg/L	1	9/27/2018 01:09 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 160.1\_2540C\_W**

Sample ID	<b>LCS-70808</b>	SampType:	<b>LCS</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128894</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>70808</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154366</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		967.000		10	1000	0		96.7	80	120				

Sample ID	<b>MB-70808</b>	SampType:	<b>MBLK</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128894</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>70808</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154367</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		ND		10										

Sample ID	<b>N032246-005BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128894</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>70808</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154372</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		2463.333		33						2477		0.540	5	

Sample ID	<b>N032254-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128894</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>70808</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154375</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		192600.000		1000						185000		4.03	5	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-001

**Client Sample ID:** MW-72-080-Q318  
**Collection Date:** 9/26/2018 9:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_180927A	QC Batch: R128899			PrepDate	Analyst: RAB		
Hexavalent Chromium	91	0.33	2.0	µg/L	10	9/27/2018 10:42 AM	
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI	
Chromium	100	0.13	1.0	µg/L	1	10/2/2018 01:24 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-002

**Client Sample ID:** MW-72BR-200-3V-Q318  
**Collection Date:** 9/26/2018 2:51:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180927A</b>	QC Batch: <b>R128899</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	3.0	0.17	1.0		µg/L	5	9/27/2018 02:23 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>
Chromium	2.9	0.13	1.0		µg/L	1	10/2/2018 01:30 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-003

**Client Sample ID:** MW-72BR-200-LF\_D-Q318  
**Collection Date:** 9/26/2018 11:24:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180927A</b>	QC Batch: <b>R128899</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.17	1.0		µg/L	5	9/27/2018 02:44 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	10/2/2018 01:35 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-004

**Client Sample ID:** MW-72BR-200-LF\_S-Q318  
**Collection Date:** 9/26/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_180927A	QC Batch: R128899			PrepDate	Analyst: RAB		
Hexavalent Chromium	ND	0.17	1.0	µg/L	5	9/27/2018 03:03 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI	
Chromium	ND	0.13	1.0	µg/L	1	10/2/2018 01:41 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-005

**Client Sample ID:** MW-902-Q318  
**Collection Date:** 9/26/2018 8:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180927A</b>	QC Batch: <b>R128899</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/27/2018 02:01 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	10/2/2018 01:46 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-006

**Client Sample ID:** TW-02D-Q318  
**Collection Date:** 9/26/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180927A</b>	QC Batch: <b>R128899</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/27/2018 04:56 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	10/2/2018 02:03 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-007

**Client Sample ID:** MW-62-110-Q318  
**Collection Date:** 9/26/2018 3:25:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180927A</b>	QC Batch: <b>R128899</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.17	1.0		µg/L	5	9/27/2018 03:22 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>
Chromium	ND	0.13	1.0		µg/L	1	10/2/2018 02:09 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-008

**Client Sample ID:** MW-62-065-Q318  
**Collection Date:** 9/26/2018 4:09:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180927A</b>	QC Batch: <b>R128899</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	540	3.3	20		µg/L	100	9/27/2018 01:13 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181002C</b>	QC Batch: <b>70807</b>				PrepDate	<b>9/27/2018</b>	Analyst: <b>CEI</b>
Chromium	570	0.65	5.0		µg/L	5	10/2/2018 02:31 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 ELAP Cert 2921  
 EPA ID CA01638

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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-009

**Client Sample ID:** MW-702-0918  
**Collection Date:** 9/26/2018 4:25:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_180927A</b>	QC Batch: <b>R128899</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	9/27/2018 12:36 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID	<b>LCS-R128899</b>	SampType:	<b>LCS</b>	TestCode:	<b>218.6_WPGE</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>128899</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R128899</b>	TestNo:	<b>EPA 218.6</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154483</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		5.138		0.20	5.000	0		103	90	110				

Sample ID	<b>MB-R128899</b>	SampType:	<b>MBLK</b>	TestCode:	<b>218.6_WPGE</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>128899</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R128899</b>	TestNo:	<b>EPA 218.6</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154484</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		ND		0.20										

Sample ID	<b>N032246-001AMS</b>	SampType:	<b>MS</b>	TestCode:	<b>218.6_WPGE</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>128899</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128899</b>	TestNo:	<b>EPA 218.6</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154486</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		140.625		2.0	50.00	91.03		99.2	90	110				

Sample ID	<b>N032246-001ADUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>218.6_WPGE</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>128899</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128899</b>	TestNo:	<b>EPA 218.6</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154489</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		89.850		2.0							91.03	1.31	20	

Sample ID	<b>N032246-009AMS</b>	SampType:	<b>MS</b>	TestCode:	<b>218.6_WPGE</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>128899</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128899</b>	TestNo:	<b>EPA 218.6</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3154491</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium		1.019		0.20	1.000	0		102	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032246-008AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154493</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1044.050	20	500.0	543.2	100	90	110				

Sample ID <b>N032246-008AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154494</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1057.250	20	500.0	543.2	103	90	110	1044	1.26	20	

Sample ID <b>N032246-005AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154498</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.183	0.20	1.000	0.1289	105	90	110				

Sample ID <b>N032246-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154500</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	8.042	1.0	5.000	2.973	101	90	110				

Sample ID <b>N032246-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154502</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.913	1.0	5.000	0.8490	101	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032246-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154504</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.332	1.0	5.000	0.6240	94.2	90	110				

Sample ID <b>N032246-007AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154506</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.849	1.0	5.000	0.5075	107	90	110				

Sample ID <b>N032246-006AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154510</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.142	0.20	1.000	0.1402	100	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>MB-70807</b>	SampType: <b>MBLK</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159830</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>LCS-70807</b>	SampType: <b>LCS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159831</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium 10.546 1.0 10.00 0 105 85 115

Sample ID <b>N032205-001D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159835</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium 12.134 1.0 10.00 1.419 107 75 125

Sample ID <b>N032205-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159836</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium 12.005 1.0 10.00 1.419 106 75 125 12.13 1.07 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-005

**Client Sample ID:** MW-902-Q318  
**Collection Date:** 9/26/2018 8:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_180928F</b>	QC Batch: <b>R128943</b>				PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	160	1.2	5.0		mg/L	1	9/28/2018 09:50 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-006

**Client Sample ID:** TW-02D-Q318  
**Collection Date:** 9/26/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_180928F</b>	QC Batch: <b>R128943</b>				PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	170	1.2	5.0		mg/L	1	9/28/2018 09:50 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 2320\_W\_SP**

Sample ID	<b>LCS-R128943</b>	SampType:	<b>LCS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128943</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R128943</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/28/2018</b>	SeqNo:	<b>3156816</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		97.713		5.0	100.0	0		97.7	85	115				

Sample ID	<b>MB-R128943</b>	SampType:	<b>MBLK</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128943</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R128943</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/28/2018</b>	SeqNo:	<b>3156817</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		ND		5.0										

Sample ID	<b>N032246-005BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128943</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128943</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/28/2018</b>	SeqNo:	<b>3156820</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		161.123		5.0						164.2		1.92	30	

Sample ID	<b>N032246-005BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128943</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128943</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/28/2018</b>	SeqNo:	<b>3156821</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		259.875		5.0	100.0	164.2		95.6	75	125				

Sample ID	<b>N032246-005BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128943</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128943</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>9/28/2018</b>	SeqNo:	<b>3156822</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		259.875		5.0	100.0	164.2		95.6	75	125	259.9	0	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
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Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-005

**Client Sample ID:** MW-902-Q318  
**Collection Date:** 9/26/2018 8:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180927A	QC Batch: R128879				PrepDate		Analyst: RAB
Bromide	ND	0.098	2.5		mg/L	5	9/27/2018 02:44 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180927A	QC Batch: R128879				PrepDate		Analyst: RAB
Chloride	1100	4.6	250		mg/L	500	9/27/2018 05:15 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180927A	QC Batch: R128879				PrepDate		Analyst: RAB
Sulfate	310	1.1	25		mg/L	50	9/27/2018 06:56 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-006

**Client Sample ID:** TW-02D-Q318  
**Collection Date:** 9/26/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180927A	QC Batch: R128879				PrepDate		Analyst: RAB
Bromide	ND	0.098	2.5		mg/L	5	9/27/2018 03:01 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180927A	QC Batch: R128879				PrepDate		Analyst: RAB
Chloride	1100	4.6	250		mg/L	500	9/27/2018 05:32 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: NV00922-IC8_180927A	QC Batch: R128879				PrepDate		Analyst: RAB
Sulfate	300	1.1	25		mg/L	50	9/27/2018 07:13 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_BRPGE**

Sample ID	<b>MB-R128879_BR</b>	SampType:	<b>MBLK</b>	TestCode:	<b>300_W_BRP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128879</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R128879</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3153755</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide		ND		0.50										

Sample ID	<b>LCS-R128879_BR</b>	SampType:	<b>LCS</b>	TestCode:	<b>300_W_BRP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128879</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R128879</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3153756</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide		1.250		0.50	1.250	0		100	90	110				

Sample ID	<b>N032246-006BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_BRP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128879</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128879</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3153761</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide		0.382		2.5							0.3985	0	20	

Sample ID	<b>N032246-006BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>300_W_BRP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128879</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128879</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3153764</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide		6.532		2.5	6.250	0.3985		98.1	80	120				

Sample ID	<b>N032246-006BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>300_W_BRP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128879</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128879</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3153765</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide		6.474		2.5	6.250	0.3985		97.2	80	120	6.532	0.892	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_CLPGE**

Sample ID	<b>MB-R128879_CL</b>	SampType:	<b>MBLK</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128879</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R128879</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3153774</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride ND 0.50

Sample ID	<b>LCS-R128879_CL</b>	SampType:	<b>LCS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128879</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R128879</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3153775</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride 1.972 0.50 2.000 0 98.6 90 110

Sample ID	<b>N032246-005BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128879</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128879</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3153784</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride 2099.750 250 1000 1128 97.2 80 120

Sample ID	<b>N032246-005BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128879</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128879</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3153785</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride 2090.700 250 1000 1128 96.3 80 120 2100 0.432 20

Sample ID	<b>N032246-006BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>128879</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R128879</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>9/27/2018</b>	SeqNo:	<b>3153786</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chloride 1093.350 250 1101 0.729 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
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Calculations are based on raw values



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ORELAP/NELAP Cert 4046

"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID	<b>MB-R128879_SO4</b>	SampType: <b>MBLK</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID:	<b>PBW</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153796</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	ND	0.50				
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Sample ID	<b>LCS-R128879_SO4</b>	SampType: <b>LCS</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID:	<b>LCSW</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153797</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	3.966	0.50	4.000	0	99.2	90 110
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Sample ID	<b>N032246-005BMS</b>	SampType: <b>MS</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID:	<b>ZZZZZ</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153808</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	509.780	25	200.0	311.8	99.0	80 120
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Sample ID	<b>N032246-005BMSD</b>	SampType: <b>MSD</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID:	<b>ZZZZZ</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153809</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	511.550	25	200.0	311.8	99.9	80 120 509.8 0.347 20
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Sample ID	<b>N032246-006BDUP</b>	SampType: <b>DUP</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID:	<b>ZZZZZ</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153810</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	292.260	25				296.6 1.49 20
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-001

**Client Sample ID:** MW-72-080-Q318  
**Collection Date:** 9/26/2018 9:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.68	0.032	0.050		mg/L	1	10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-002

**Client Sample ID:** MW-72BR-200-3V-Q318  
**Collection Date:** 9/26/2018 2:51:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.14	0.032	0.050		mg/L	1	10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-003

**Client Sample ID:** MW-72BR-200-LF\_D-Q318  
**Collection Date:** 9/26/2018 11:24:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.081	0.032	0.050	mg/L	1		10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-004

**Client Sample ID:** MW-72BR-200-LF\_S-Q318  
**Collection Date:** 9/26/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.44	0.032	0.050	mg/L	1		10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-007

**Client Sample ID:** MW-62-110-Q318  
**Collection Date:** 9/26/2018 3:25:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>			PrepDate			Analyst: <b>QBM</b>
Nitrate/Nitrite as N	ND	0.032	0.050	mg/L	1		10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-008

**Client Sample ID:** MW-62-065-Q318  
**Collection Date:** 9/26/2018 4:09:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181004D</b>	QC Batch: <b>R129025</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	5.0	0.16	0.25		mg/L	5	10/4/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R129025</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161938</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R129025</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161939</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.481	0.050	0.5000	0	96.2 85 115

Sample ID <b>N032205-004CMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161942</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	6.037	0.25	2.500	2.971	123 75 125

Sample ID <b>N032205-004CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161943</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	6.162	0.25	2.500	2.971	128 75 125 6.037 2.05 20 S

Sample ID <b>N032205-002CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161946</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	1.111	0.050			1.136 2.20 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-001

**Client Sample ID:** MW-72-080-Q318  
**Collection Date:** 9/26/2018 9:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	12	0.081	0.10	µg/L	1	10/2/2018 01:24 PM
Manganese	45	0.26	0.50	µg/L	1	10/2/2018 01:24 PM
Molybdenum	79	1.1	2.5	µg/L	5	10/2/2018 03:34 PM
Selenium	ND	1.8	2.5	µg/L	5	10/2/2018 03:34 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-002

**Client Sample ID:** MW-72BR-200-3V-Q318  
**Collection Date:** 9/26/2018 2:51:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	16	0.081	0.10	µg/L	1	10/2/2018 01:30 PM
Manganese	15	0.26	0.50	µg/L	1	10/2/2018 01:30 PM
Molybdenum	76	1.1	2.5	µg/L	5	10/2/2018 03:39 PM
Selenium	ND	1.8	2.5	µg/L	5	10/2/2018 03:39 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-003

**Client Sample ID:** MW-72BR-200-LF\_D-Q318  
**Collection Date:** 9/26/2018 11:24:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	10	0.081	0.10	µg/L	1	10/2/2018 01:35 PM
Manganese	260	1.3	2.5	µg/L	5	10/2/2018 02:25 PM
Molybdenum	67	1.1	2.5	µg/L	5	10/2/2018 02:25 PM
Selenium	ND	1.8	2.5	µg/L	5	10/2/2018 02:25 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-004

**Client Sample ID:** MW-72BR-200-LF\_S-Q318  
**Collection Date:** 9/26/2018 10:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	15	0.081	0.10	µg/L	1	10/2/2018 01:41 PM
Manganese	56	0.26	0.50	µg/L	1	10/2/2018 01:41 PM
Molybdenum	82	1.1	2.5	µg/L	5	10/2/2018 03:45 PM
Selenium	ND	1.8	2.5	µg/L	5	10/2/2018 03:45 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-005

**Client Sample ID:** MW-902-Q318  
**Collection Date:** 9/26/2018 8:10:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Manganese	86	0.26	0.50	µg/L	1	10/2/2018 01:46 PM
Molybdenum	12	0.21	0.50	µg/L	1	10/2/2018 01:46 PM
Selenium	1.5	0.36	0.50	µg/L	1	10/8/2018 08:02 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 EPA ID CA01638

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 3151 W. Post Rd., Las Vegas, NV 89118  
 ELAP Cert 2676 | NV Cert NV00922  
 ORELAP/NELAP Cert 4046

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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-006

**Client Sample ID:** TW-02D-Q318  
**Collection Date:** 9/26/2018 8:00:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Manganese	84	0.26	0.50	µg/L	1	10/2/2018 02:03 PM
Molybdenum	12	0.21	0.50	µg/L	1	10/2/2018 02:03 PM
Selenium	1.3	0.36	0.50	µg/L	1	10/2/2018 02:03 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-007

**Client Sample ID:** MW-62-110-Q318  
**Collection Date:** 9/26/2018 3:25:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	3.2	0.081	0.10	µg/L	1	10/2/2018 02:09 PM
Manganese	170	0.26	0.50	µg/L	1	10/2/2018 02:09 PM
Molybdenum	59	0.21	0.50	µg/L	1	10/2/2018 02:09 PM
Selenium	ND	1.8	2.5	µg/L	5	10/2/2018 03:56 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032246-008

**Client Sample ID:** MW-62-065-Q318  
**Collection Date:** 9/26/2018 4:09:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181002C	QC Batch: 70807			PrepDate	9/27/2018	Analyst: CEI
Arsenic	1.7	0.081	0.10	µg/L	1	10/2/2018 02:14 PM
Manganese	ND	0.26	0.50	µg/L	1	10/2/2018 02:14 PM
Molybdenum	13	0.21	0.50	µg/L	1	10/2/2018 02:14 PM
Selenium	4.7	0.36	0.50	µg/L	1	10/2/2018 02:14 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>MB-70807</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>
Client ID: <b>PBW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159620</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>LCS-70807</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159621</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	9.987	0.10	10.00	0	99.9 85 115
Manganese	106.685	0.50	100.0	0	107 85 115
Molybdenum	9.797	0.50	10.00	0	98.0 85 115
Selenium	10.086	0.50	10.00	0	101 85 115

Sample ID <b>N032205-001D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159625</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	13.112	0.10	10.00	1.558	116 75 125
Manganese	114.507	0.50	100.0	0	115 75 125
Molybdenum	28.778	0.50	10.00	16.37	124 75 125
Selenium	11.109	0.50	10.00	1.017	101 75 125

Sample ID <b>N032205-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>9/27/2018</b>	RunNo: <b>128979</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70807</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159626</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	13.254	0.10	10.00	1.558	117 75 125 13.11 1.08 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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ORELAP/NELAP Cert 4046

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	<b>N032205-001D-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>9/27/2018</b>	RunNo:	<b>128979</b>		
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70807</b>	TestNo:	<b>EPA 6020</b>	<b>EPA 3010A</b>		Analysis Date:	<b>10/2/2018</b>	SeqNo:	<b>3159626</b>		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		113.674		0.50	100.0	0	114	75	125	114.5	0.730	20	
Molybdenum		28.930		0.50	10.00	16.37	126	75	125	28.78	0.528	20	S
Selenium		10.661		0.50	10.00	1.017	96.4	75	125	11.11	4.12	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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# SAMPLE RECEIVING ITEMS



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**CHAIN OF CUSTODY RECORD**

Page 1 of 1

Contact us:  
Nevada: 3151 W. Post Road, Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691  
California: 11060 Artesia Blvd., Ste C, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436  
[www.assetlaboratories.com](http://www.assetlaboratories.com)

Client: Arcadis		Report to: Dan Bush		Bill to: Marty Bloes		EDD Requirement		QA/QC		Sample Receipt Condition										
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis		Address:		Excel EDD		RTNE		1. Chilled										
Address: Roseville, CA 95661		Email: dan.bush@arcadis.com daniel.moore@critigen.com		Address:		Geotracker		RWQCB		2. Headspace										
Phone: 916-786-3302		Address: 1410 Rocky Ridge Dr # 330		Email to: mbloes@pivox.com		Labspec		CalTrans		3. Container Intact										
Fax:		Roseville, CA 95661		P.O.#		Others		LEVEL III		4. Seal Present										
Submitted By: Gantt Jeffers		Phone: 916-786-3302		Fax:		Specify:		RWQCB		5. IR number										
Title: Geologist II		Phone: 916-786-3302		Fax:		Global ID:		Regulatory		6. Method of Cooling:										
Signature:		Date: 9/26/2018		Sampled By: Jordan Teramae		Matrix		Specify State:		Sample Temp: 3-10										
Project Name: PG&E Topock - GMP		Signature:		Date: 9/26/2018		Ground		Turn Around Time		Courier:										
Project Number: RC000753.801D		I attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action.		NPDES		Potable		No. of Container		Tracking No.:										
				Surface		Soil		Container Type		Remarks										
						Other Solid		PRESERVATION												
						Others														
						Cr(VI) FF (E218.6) (NH4)2 SO4, NH4, OH														
						Alkalinity, Total as CaCO3 (SM2320B)														
						Bromide, Sulfate, Chloride (EPA 300.0)														
						Specific Conductance (EPA 120.1)														
						Total Dissolved Solids (SM2540C)														
						Nitrate/Nitrite (SM4500NO3 F) Nitrate: H2SO4														
						Metals Dissolved (SW6320A FF) (As, Cr, Mn, Mo, Se); HNO3														
						Dissolved metals (SW6010B FF) (Cr, Mo, Se); HNO3														
						Dissolved metals (SW6010B FF) (Cr); HNO3														
						Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3														
Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	Cr(VI) FF (E218.6) (NH4)2 SO4, NH4, OH	Alkalinity, Total as CaCO3 (SM2320B)	Bromide, Sulfate, Chloride (EPA 300.0)	Specific Conductance (EPA 120.1)	Total Dissolved Solids (SM2540C)	Nitrate/Nitrite (SM4500NO3 F) Nitrate: H2SO4	Metals Dissolved (SW6320A FF) (As, Cr, Mn, Mo, Se); HNO3	Dissolved metals (SW6010B FF) (Cr, Mo, Se); HNO3	Dissolved metals (SW6010B FF) (Cr); HNO3	Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1	N032246-01	MW-72-080-Q318	9/26/2018	9:30		X			X		X	X				E 4 P	BNS			
2	-02	MW-72BR-200-3V-Q318	9/26/2018	14:51		X			X		X	X				E 4 P	BNS			
3	-03	MW-72BR-200-LF_D-Q318	9/26/2018	11:24		X			X		X	X				E 4 P	BNS			
4	-04	MW-72BR-200-LF_S-Q318	9/26/2018	10:35		X			X		X	X				E 4 P	BNS			
5	-05	MW-902-Q318	9/26/2018	8:10		X	X	X	X	X				X		E 3 P	BN			
6	-06	TW-02D-Q318	9/26/2018	8:00		X	X	X	X	X				X		E 3 P	BN			
7	-07	MW-62-110-Q318	9/26/2018	15:25		X			X		X	X				E 4 P	BNS			
8	-08	MW-62-065-Q318	9/26/2018	16:09		X			X		X	X				E 4 P	BNS			
9	-09	MW-702-Q318	9/26/2018	18:25		X										E 1 P	B			
10																				
Relinquished by (Signature and Printed Name):		Date/Time: 9/26/2018 / 1700		Relinquished by (Signature and Printed Name):		Date/Time: 9/26/2018 / 1700		Turn Around Time (TAT)				Special Instruction:								
Relinquished by (Signature and Printed Name):		Date/Time: 9/26/2018 / 1430		Relinquished by (Signature and Printed Name):		Date/Time: 9/26/2018 / 1430		<input type="checkbox"/> A < 24 Hrs or Same Day TAT <input type="checkbox"/> B = Next Workday <input type="checkbox"/> C = 2 Workdays <input type="checkbox"/> D = 3 Workdays <input checked="" type="checkbox"/> E = Routine 5-7 Workdays				Title 22 Metals - Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Ti, V, Zn, K, Na								
Relinquished by (Signature and Printed Name):		Date/Time: 9/26/2018 / 1430		Relinquished by (Signature and Printed Name):		Date/Time: 9/26/2018 / 1430		TAT Starts at 8 AM the following day if samples received after 3:00PM.				Container Type:								
Terms: 1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report. 2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis. Less than 24 Hrs. -200% Next Day-100% 2 Workdays-50% 3 Workdays-35% 4 Workdays-20% 3. Custom EDD formats will be an additional 3% of the total project price. 4. Add 10% surcharge for Level II Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.		5. Trip Blank and Equipment Blank are billable sample. 6. Asset Laboratories is not responsible for samples collected using incorrect methodology. 7. Terms are net 30 days. 8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed. 9. For subcontract analysis, TAT and Surcharges will vary.		H=HCL N=HNO3 S=H2SO4 C=4°C T=Tube V=VOA P=Pin Z=Zn(Ac)2 O=NaOH T=Na2S2O5 J=Jar B=Testlar G=Glass Others/Specify: B (NH4)2SO4/NH4OH M=Metal C=Can																

White=Laboratory Copy

Yellow=Customer's Copy

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 9/26/2018 Workorder: N032246  
 Rep sample Temp (Deg C): 3.1 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |   |                             |   |
|---|---|-----------------------------|---|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/>            |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 11. All samples received within holding time?   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/>                     |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/>          |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/>                     |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/>                     |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/>          |
|   | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/>          |

Comments:

Checklist Completed By: YR



9/28/2018

Reviewed By: LG 100318





Lucille Golosinda

---

From: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
Sent: Thursday, October 04, 2018 8:45 AM  
To: 'Andreafe. Gallardo'; [maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com); Lucille Golosinda  
Subject: Fwd: RE: Sample ID Update - N032246

Forwarding,

Thanks

----- Forwarded Message -----

Subject: RE: Sample ID Update - N032246  
Date: Thu, 4 Oct 2018 00:33:04 +0000  
From: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
To: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
CC: [nancy@assetlaboratories.com](mailto:nancy@assetlaboratories.com) <[nancy@assetlaboratories.com](mailto:nancy@assetlaboratories.com)>, 'Sonny. Lorenzo' <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>, 'Marlon B. Cartin' <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>

6020 is acceptable.

Thanks!  
Laura

---

From: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
Sent: Wednesday, October 3, 2018 7:12 PM  
To: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
Cc: [nancy@assetlaboratories.com](mailto:nancy@assetlaboratories.com); 'Sonny. Lorenzo' <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>; 'Marlon B. Cartin' <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>  
Subject: Re: Sample ID Update - N032246

Noted Laura,

Please just confirm if 6020 is acceptable too for Dissolved Metals on sample 5 and 6.

Thanks,

On 10/3/2018 4:41 PM, Madsen, Laura wrote:

Hi Yoandra,  
We would like the sample ID to end in "0918" because we already inadvertently used the same sample ID with "Q318" at the end earlier in the event. In order to have a unique sample ID that will load in the database, we need to change the end part. Thank you for checking!

And you are correct, she has a typo of Q4 in the table it should be Q3.

ClientSampID	NewClientSampID	DateCollected	WorkOrder
MW-702-Q318	MW-702-0918	9/26/2018 16:25	N032246

Thanks,  
Laura

---

From: Yoandra Rodriguez <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
Sent: Wednesday, October 3, 2018 6:37 PM  
To: Madsen, Laura <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
Cc: [nancy@assetlaboratories.com](mailto:nancy@assetlaboratories.com); 'Sonny. Lorenzo' <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>; 'Marlon B. Cartin' <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>  
Subject: Fwd: RE: Sample ID Update - N032246

Hi Laura,

Please kindly check Sample Control concern below regarding IDs.

Also please be informed that Dissolved Metals for samples 5 and 6 were logged as 6020 per history.

Please confirm,

Thanks,

----- Forwarded Message -----

Subject:RE: Sample ID Update - N032246  
Date:Tue, 2 Oct 2018 10:54:39 -0700  
From:Sonny Lorenzo <[sonny.lorenzo@assetlaboratories.com](mailto:sonny.lorenzo@assetlaboratories.com)>  
To:'Nancy Sibucan' <[nancy@assetlaboratories.com](mailto:nancy@assetlaboratories.com)>, 'Andrea Fe Gallardo' <[andrea.gallardo@assetlaboratories.com](mailto:andrea.gallardo@assetlaboratories.com)>, [maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com), 'Yoandra Rodriguez' <[yoandra@assetlaboratories.com](mailto:yoandra@assetlaboratories.com)>  
CC:'Marlon B. Cartin' <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>, 'Lucille Golosinda' <[lucille.golosinda@assetlaboratories.com](mailto:lucille.golosinda@assetlaboratories.com)>

Done po.

Ms. Nancy,  
hoping that the client ID for other samples is ends like -Q318 (per COC),  
Would like to verify because -Q418 on below email.  
Attached is the COC for reference.

Thanks,  
Sonny

---

From: Nancy Sibucan [<mailto:nancy@assetlaboratories.com>]  
Sent: Tuesday, October 02, 2018 10:42 AM  
To: Sonny Lorenzo; Andrea Fe Gallardo; [maryann.balilu@assetlaboratoriesph.com](mailto:maryann.balilu@assetlaboratoriesph.com); Yoandra Rodriguez  
Cc: Marlon B. Cartin; Lucille Golosinda  
Subject: Fwd: Sample ID Update - N032246  
Importance: High

Please update sample ID.

Thanks,  
Nancy

----- Forwarded Message -----

Subject: Sample ID Update - N032246  
Date: Tue, 2 Oct 2018 17:00:27 +0000  
From: Tina Rice <[Tina.Rice@critigen.com](mailto:Tina.Rice@critigen.com)>  
To: Nancy Sibucão <[nancy@assetlaboratories.com](mailto:nancy@assetlaboratories.com)>  
CC: [Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com) <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>

Hi Nancy,

A duplicate sample ID was used so please update the ClientSampleID in SDG N032246 to the NewClientSampID highlighted, below:

ClientSampID	NewClientSampID	DateCollected	WorkOrder	SampID
MW-702-Q418	MW-702-0918	9/26/2018 16:25	N032246	N032246-009A

Thank you,  
Tina

**Tina Rice**  
**Database Analyst**

**CRITIGEN**

[Tina.Rice@critigen.com](mailto:Tina.Rice@critigen.com)  
1 360 600 3562 Direct  
1 360 600 3562 Mobile

[critigen.com](http://critigen.com)  
[critigen.co.uk](http://critigen.co.uk)

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--  
Yoandra Rodriguez  
Sample Control Officer  
Asset Laboratories

# ASSET Laboratories

## WORK ORDER Summary

02-Oct-18

WorkOrder: N032246

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801D

QC Level: Level IV

Date Received: 9/26/2018

Comments: Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032246-001A	MW-72-080-Q318	9/26/2018 9:30:00 AM	10/10/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-001B			10/10/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-001C			10/10/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-001D			10/10/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-002A	MW-72BR-200-3V-Q318	9/26/2018 2:51:00 PM	10/10/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-002B			10/10/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-002C			10/10/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-002D			10/10/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-003A	MW-72BR-200-LF_D-Q318	9/26/2018 11:24:00 AM	10/10/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-003B			10/10/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-003C			10/10/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-003D			10/10/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-004A	MW-72BR-200-LF_S-Q318	9/26/2018 10:35:00 AM	10/10/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-004B			10/10/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-004C			10/10/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

02-Oct-18

WorkOrder: N032246

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801D

QC Level: Level IV

Date Received: 9/26/2018

Comments: Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032246-004D	MW-72BR-200-LF_S-Q318	9/26/2018 10:35:00 AM	10/10/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-005A	MW-902-Q318	9/26/2018 8:10:00 AM	10/10/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-005B			10/10/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-005C			10/10/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-006A	TW-02D-Q318	9/26/2018 8:00:00 AM	10/10/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-006B			10/10/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

02-Oct-18

**WorkOrder:** N032246

**Client ID:** ARCUS02

**Project:** PG&E Topock - GMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 9/26/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032246-006C	TW-02D-Q318	9/26/2018 8:00:00 AM	10/10/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/10/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032246-007A	MW-62-110-Q318	9/26/2018 3:25:00 PM	10/10/2018	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-007B			10/10/2018	EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-007C			10/10/2018	SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-007D			10/10/2018	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
			10/10/2018	EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
			10/10/2018	EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-008A	MW-62-065-Q318	9/26/2018 4:09:00 PM	10/10/2018	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-008B			10/10/2018	EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-008C			10/10/2018	SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-008D			10/10/2018	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
			10/10/2018	EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
			10/10/2018	EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-009A	MW-702-0918	9/26/2018 4:25:00 PM	10/10/2018	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032246-010A	FOLDER	10/10/2018	10/10/2018	EDD	RWQCB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB	
			10/10/2018	Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB	
			10/10/2018	Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB	

## List of Analysts

### ASSET Laboratories Work Order: N032246

NAME	TEST METHOD
Quennie Manimtim	SM 4500-NO3F
Claire Ignacio	EPA 6020_Dissolved
Ria Abes	EPA 218.6, EPA 300.0
Lilia Ramit	EPA 120.1, SM 2540C, SM 2320 B



# EPA 120.1



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R128885

Analyst: LSR

ASSET #: N032246

Date Analyzed: 27-Sep

Method: EPA 120.1

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
<b>Sample Information</b>						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.			X			
11. LCS compounds within control limits.			X			
12. MS/MSD; RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Julia Ramit

Date: 10/4/2018

2nd Level Reviewer Nancy 10/11/2018

Date:

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

3151 W. Post Road, Las Vegas, NV 89118 P: 702.307.2659 F: 702.307.2659  
[www.assetlaboratories.com](http://www.assetlaboratories.com)

# Conductivity Logbook

Date: 9/26/18 1100

Analyst: LR

Standard	Std ID	Reading	Comments
9.91 $\mu S/cm$	CIMV-180731G	10.23 @ 25.0°C	% Rec: (90-110%)
1413	180515C	1426 @ 25.1°C	
9988	180731H	10060 @ 25.1°C	
9993	180515D	99500 @ 25.1°C	

Sample ID	Matrix	Reading	Comments
1 N032216-001B	H <sub>2</sub> O	15390 @ 21.1°C	
2 2B		15110 @ 21.0°C	
3 3B		15640 @ 21.5°C	
4 3B DUP		15620 @ 21.8°C	
5			
6			
7			
8 1413 $\mu S/cm$	CIMV-180417B	1412 @ 24.7°C	
9 10000	180516A	10180 @ 25.0°C	
10 99601	180521B	98200 @ 24.5°C	2% nitrate used
Dup			Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Date: 9/27/18 1000

Analyst: LR

Standard	Std ID	Reading	Comments
9.91 $\mu S/cm$	CIMV-180731G	9.99 @ 22.4°C	% Rec: (90-110%)
1413	180515C	1444 @ 22.5°C	
9988	180731H	10140 @ 22.5°C	
9993	180515D	101800 @ 22.6°C	

Sample ID	Matrix	Reading	Comments
1 N032216-001B	H <sub>2</sub> O	14950 @ 21.6°C	
2 2B		15060 @ 21.8°C	
3 2B DUP		10090 @ 22.0°C	
4 3B		15030 @ 22.0°C	
5 4B		14690 @ 22.5°C	
6 5B		4010 @ 21.6°C	
7 6B		3850 @ 21.5°C	Julia Ramit
8 7B/8B		11900 @ 21.5°C	10/4/2018
9 1413 $\mu S/cm$	CIMV-180417B	1425 @ 22.8°C	
10 10000	180516A	10130 @ 22.7°C	2% NaCl
Dup 99601	180521B	98400 @ 23.3°C	Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Logbook # 6



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3151 W. Post Rd., Las Vegas, NV 89118  
ELAP Cert 2676 | NV Cert NV00022

# SM 2540C



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: 70808 Analyst: LSR  
 ASSET #: N032246 Date Analyzed: 27-Sep  
 Method: EPA 160.1 / SM 2540C

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
<b>Sample Information</b>						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Julia Ramit  
 2nd Level Reviewer Nancy 10/11/2018

Date: 10/2/2018  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



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## SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B)*1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For N032246-005B, TDS concentration in mg/L is calculated as follows:

$$\begin{aligned}\text{TDS, mg/L} &= \frac{(49.4224-49.3481)*1000000}{30} \\ &= 2476.6667 \text{ mg/L}\end{aligned}$$

Reporting result in two significant figures,

$$\text{TDS} = 2500 \text{ mg/L}$$

*Silia Ramit*

10/2/2018

# SAMPLE PREPARATION LOG



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PREP BATCH REPORT

Prep Start Date: **9/27/2018 1:09:36 P**  
 Prep End Date: **9/28/2019 10:30:00**

Reviewed/ Date: *10/11/2018*

Page: 1 of 1

Initials/ Date: *Lilia Ramit 10/2/2018*

Prep Factor Units      Temp. (°C):  
 mL / mL                      180

Prep Batch **70808**      Prep Code: **160.1\_W\_PRE**

Technician: **Lilia Ramit**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70808	Water		100	<input type="checkbox"/>	0	0	100	1.000		
MB-70808	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N032210-003D	NPDES Water		50	<input type="checkbox"/>	0	0	100	2.000		
N032235-002B	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N032238-001A	NPDES Water		60	<input type="checkbox"/>	0	0	100	1.667		
N032246-005B	Groundwater		30	<input type="checkbox"/>	0	0	100	3.333		
N032246-005B-DU	Groundwater		30	<input type="checkbox"/>	0	0	100	3.333		
N032246-006B	Groundwater		40	<input type="checkbox"/>	0	0	100	2.500		
N032254-001B	Leachate		1	<input type="checkbox"/>	0	0	100	100.000		
N032254-001BDUP	Leachate		1	<input type="checkbox"/>	0	0	100	100.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name	Spk ID	Spike Name	SampType	AmtAdd
10187	Glass Fiber Filter, 47mm	IWST180904A	1000 ppm NaCl	LCS	100

ASSET Laboratories

PREP BATCH REPORT

Page: 1 of 1

Prep Start Date: 9/27/2018 1:09:36 P

Reviewed/ Date: \_\_\_\_\_

Prep End Date: \_\_\_\_\_

Initials/ Date: Lilia Ramit 10/2/2018

Prep Batch 70808 Prep Code: 160.1\_W\_PRE

Technician: Lilia Ramit

Prep Factor Units  
mL / mL

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70808	Water	103180904A	100	<input type="checkbox"/>	0	0	100	1.000		
MB-70808	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N032210-003D	NPDES Water	2010	100	150 <input type="checkbox"/>	0	0	100	1.000		
N032235-002B	Water	1404	100	<input type="checkbox"/>	0	0	100	1.000		
N032238-001A	NPDES Water	2040	100	160 <input type="checkbox"/>	0	0	100	1.000		
N032246-005B	Groundwater	4010	100	30 <input type="checkbox"/>	0	0	100	1.000		
N032246-005B-DU	Groundwater	↓	100	30 <input type="checkbox"/>	0	0	100	1.000		
N032246-006B	Groundwater	3850	100	40 <input type="checkbox"/>	0	0	100	1.000		
N032254-001B	Leachate	115500	100	1 <input type="checkbox"/>	0	0	100	1.000		

↓ 18000

↓

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

10/87

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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SOLIDS RAW DATA

TEST : TSS/TDS/TS

Date	Sample ID	Sample Vol. (ml)	Crucible + Filter (TSS) Crucible (TDS, TS) Tare Wt.(g)	Crucible + Filter+Sample (TSS) Crucible + Sample (TDS, TS) Tare Wt.(g)	Comments
9/27/18 1309 HH	MA 70808	100	69.8842 69.8839	69.8841 69.8842	
HK	LS 70808	100	70.6854 70.6852	70.7821 70.7819	
XT	N032210-003D	50	49.3373 49.3371	49.4617 49.4616	
LL	N032235-002B	100	68.9452 68.9449	69.0537 69.0539	
IT	N032238-001A	60	61.5011 61.5009	61.6060 61.6059	
KE	N032246-005B	30	49.3483 49.3481	49.4221 49.4224	
T	5B DUP	30	46.0415 46.0412	46.1150 46.1151	
IF	6B	40	60.7088 60.7086	60.8060 60.8064	
LC	N032254-001B	1	60.5713 60.5710	60.4556 60.4560	
CC	1B DUP	1	70.0542 70.0538	70.2462 70.2464	

Closing wt: 49.9996 g

1030 9/28/18

ASSET Laboratories

Julia Ramit

10/2/2018 Logbook#12



# TOTAL DISSOLVED SOLIDS, TDS

TDS, mg/L =

$$(A-B) \times 10000 \times PF$$

where:

- A = weight in grams of dish + residue after drying
- B = weight of dish in grams
- PF = 100/volume of sample used in mL

	vol of sample (mL)	weight of dish in grams (B)	weight in grams of dish + residue after drying (A)	(A-B)*10000	prep fact (PF)	TDS, mg/L	CONDUCTIVITY	RATIO	Sample Type
Date Finished:									
9/28/2018									
MB-70808	100	69.8839	69.8842	3	1	3			MBLK
LCS-70808	100	70.6852	70.7819	967	1	967			LCS
N032210-003D	50	49.3371	49.4616	1245	2	2490	2610	0.954	SAMP
N032235-002B	100	68.9449	69.0539	1090	1	1090	1404	0.776	SAMP
N032238-001A	60	61.5009	61.6059	1050	1.66666667	1750	2040	0.858	SAMP
N032246-005B	30	49.3481	49.4224	743	3.33333333	2476.66667	4010	0.618	SAMP
N032246-005BDUP	30	46.0412	46.1151	739	3.33333333	2463.33333	4010	0.614	DUP
N032246-006B	40	60.7086	60.8064	978	2.5	2445	3850	0.635	SAMP
N032254-001B	1	60.271	60.456	1850	100	185000	115500	1.602	SAMP
N032254-001BDUP	1	70.0538	70.2464	1926	100	192600	115500	1.668	DUP

*Julia Ramit*

10/2/2018

# EPA 218.6



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

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IC Technical Batch Review Checklist (ARCUS02)  
ASSET LABORATORIES - LAS VEGAS

IC ARCUS  
REV 2.0  
011416

QC Batch Number: R128899  
ASSET #: N032246

Instrument ID: IC-07  
Analyst: RBA  
Date Analyzed: 9/27/2018

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)	X					
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?	X					
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?	X					
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)	X					
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X					
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?	X					
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)	X					
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X					
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments: Dilutions were necessary for N032246-002A, -003A, -004A and -007A due to matrix interference.

N032246-007AMS/002A/002AMS/003A/003AMS/004A/004AMS RT failed. However, rerun passed.

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer RBA

Date: 10/7/2018

2nd Level Reviewer Jimmy 10/11/2018

Date: —

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

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## Sample Calculation

**METHOD:** EPA 218.6  
**TEST NAME:** HEXAVALENT CHROMIUM BY IC  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Hexavalent Chromium concentration, in  $\mu\text{g/L}$ , in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

A =  $\mu\text{g/L}$ , IC Cr+6 calculated concentration

DF = dilution factor

For Sample **N032246-001A**, the concentration in  $\mu\text{g/L}$  is calculated as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = 9.1031 * 10$$

$$\text{Cr}^{+6}, \mu\text{g/L} = 91.0310$$

Reporting results in two significant figures,

$$\text{Cr}^{+6}, \mu\text{g/L} = 91$$

*rba* 10/7/2018

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
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**INJECTION LOG: 180921A**

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	ICV	ICV	1	Hexavalent Chromium	09/21/18 4:09 PM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/21/18 4:18 PM	Reported
11	ICB	ICB	1	Hexavalent Chromium	09/21/18 4:28 PM	Reported

## Injection Log Summary

### Sequence Details

Name:	IC-07_180921A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	25/Sep/18 09:28:56
No. of Injections:	14	Updated By:	ics 5000

### Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	ICV.ICV,1,	10	1000	Unknown		09/21/2018 16:09	Finished	ICV @5ppb, IWST-180622B
10	PQL@0.2ppb.CCV2,	11	1000	Unknown		09/21/2018 16:18	Finished	PQL @ 0.2ppb
11	ICB.ICB,1,	12	1000	Unknown		09/21/2018 16:28	Finished	ICB R180919A
12	SHUTDOWN	14	1000	Unknown		09/21/2018 16:45	Finished	
13	Eluent: R180917A	14	1000	Unknown		n.a.	Finished	Eluent
14	PCR: R180921A	15	1000	Unknown		n.a.	Finished	Post-Column Reagent

**INJECTION LOG: 180927A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	09/27/18 9:19 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	09/27/18 9:30 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	09/27/18 9:40 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/27/18 9:49 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	09/27/18 9:59 AM	Reported
14	MB-R128899	MBLK	1	Hexavalent Chromium	09/27/18 10:08 AM	Not Reported
15	LCS-R128899	LCS	1	Hexavalent Chromium	09/27/18 10:18 AM	Reported
16	MB-R128899	MBLK	1	Hexavalent Chromium	09/27/18 10:31 AM	Reported
17	N032246-001A	SAMP	10	Hexavalent Chromium	09/27/18 10:42 AM	Reported
18	N032246-001AMS	MS	10	Hexavalent Chromium	09/27/18 10:52 AM	Reported
19	N032246-007A	SAMP	20	Hexavalent Chromium	09/27/18 11:01 AM	Not Reported
20	N032246-007AMS	MS	20	Hexavalent Chromium	09/27/18 11:10 AM	Not Reported
21	N032246-007AMSD	MSD	20	Hexavalent Chromium	09/27/18 11:20 AM	Not Reported
22	N032246-009A	SAMP	100	Hexavalent Chromium	09/27/18 11:29 AM	Not Reported
23	N032246-009AMS	MS	100	Hexavalent Chromium	09/27/18 11:39 AM	Not Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	09/27/18 11:48 AM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	09/27/18 11:58 AM	Reported
26	N032246-001ADUP	DUP	10	Hexavalent Chromium	09/27/18 12:07 PM	Reported
27	N032246-007A	SAMP	1	Hexavalent Chromium	09/27/18 12:17 PM	Not Reported
28	N032246-007AMS	MS	1	Hexavalent Chromium	09/27/18 12:26 PM	Not Reported
29	N032246-009A	SAMP	1	Hexavalent Chromium	09/27/18 12:36 PM	Reported
30	N032246-009AMS	MS	1	Hexavalent Chromium	09/27/18 12:45 PM	Reported
31	N032246-005A	SAMP	20	Hexavalent Chromium	09/27/18 12:55 PM	Not Reported
32	N032246-005AMS	MS	20	Hexavalent Chromium	09/27/18 1:04 PM	Not Reported
33	N032246-008A	SAMP	100	Hexavalent Chromium	09/27/18 1:13 PM	Reported
34	N032246-008AMS	MS	100	Hexavalent Chromium	09/27/18 1:23 PM	Reported
35	N032246-008AMSD	MSD	100	Hexavalent Chromium	09/27/18 1:32 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	09/27/18 1:42 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	09/27/18 1:51 PM	Reported
38	N032246-005A	SAMP	1	Hexavalent Chromium	09/27/18 2:01 PM	Reported
39	N032246-005AMS	MS	1	Hexavalent Chromium	09/27/18 2:10 PM	Reported
40	N032246-002A	SAMP	5	Hexavalent Chromium	09/27/18 2:23 PM	Reported
41	N032246-002AMS	MS	5	Hexavalent Chromium	09/27/18 2:34 PM	Reported
42	N032246-003A	SAMP	5	Hexavalent Chromium	09/27/18 2:44 PM	Reported

**INJECTION LOG: 180927A**

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N032246-003AMS	MS	5	Hexavalent Chromium	09/27/18 2:53 PM	Reported
44	N032246-004A	SAMP	5	Hexavalent Chromium	09/27/18 3:03 PM	Reported
45	N032246-004AMS	MS	5	Hexavalent Chromium	09/27/18 3:12 PM	Reported
46	N032246-007A	SAMP	5	Hexavalent Chromium	09/27/18 3:22 PM	Reported
47	N032246-007AMS	MS	5	Hexavalent Chromium	09/27/18 3:31 PM	Reported
48	CCV-4	CCV1	1	Hexavalent Chromium	09/27/18 3:41 PM	Reported
49	CCB-4	CCB	1	Hexavalent Chromium	09/27/18 3:50 PM	Reported
50	N032246-002A	SAMP	1	Hexavalent Chromium	09/27/18 3:59 PM	Not Reported
51	N032246-002AMS	MS	1	Hexavalent Chromium	09/27/18 4:09 PM	Not Reported
52	N032246-003A	SAMP	1	Hexavalent Chromium	09/27/18 4:18 PM	Not Reported
53	N032246-003AMS	MS	1	Hexavalent Chromium	09/27/18 4:28 PM	Not Reported
54	N032246-004A	SAMP	1	Hexavalent Chromium	09/27/18 4:37 PM	Not Reported
55	N032246-004AMS	MS	1	Hexavalent Chromium	09/27/18 4:47 PM	Not Reported
56	N032246-006A	SAMP	1	Hexavalent Chromium	09/27/18 4:56 PM	Reported
57	N032246-006AMS	MS	1	Hexavalent Chromium	09/27/18 5:06 PM	Reported
58	CCV-5	CCV	1	Hexavalent Chromium	09/27/18 5:15 PM	Reported
59	CCB-5	CCB	1	Hexavalent Chromium	09/27/18 5:25 PM	Reported

### Injection Log Summary

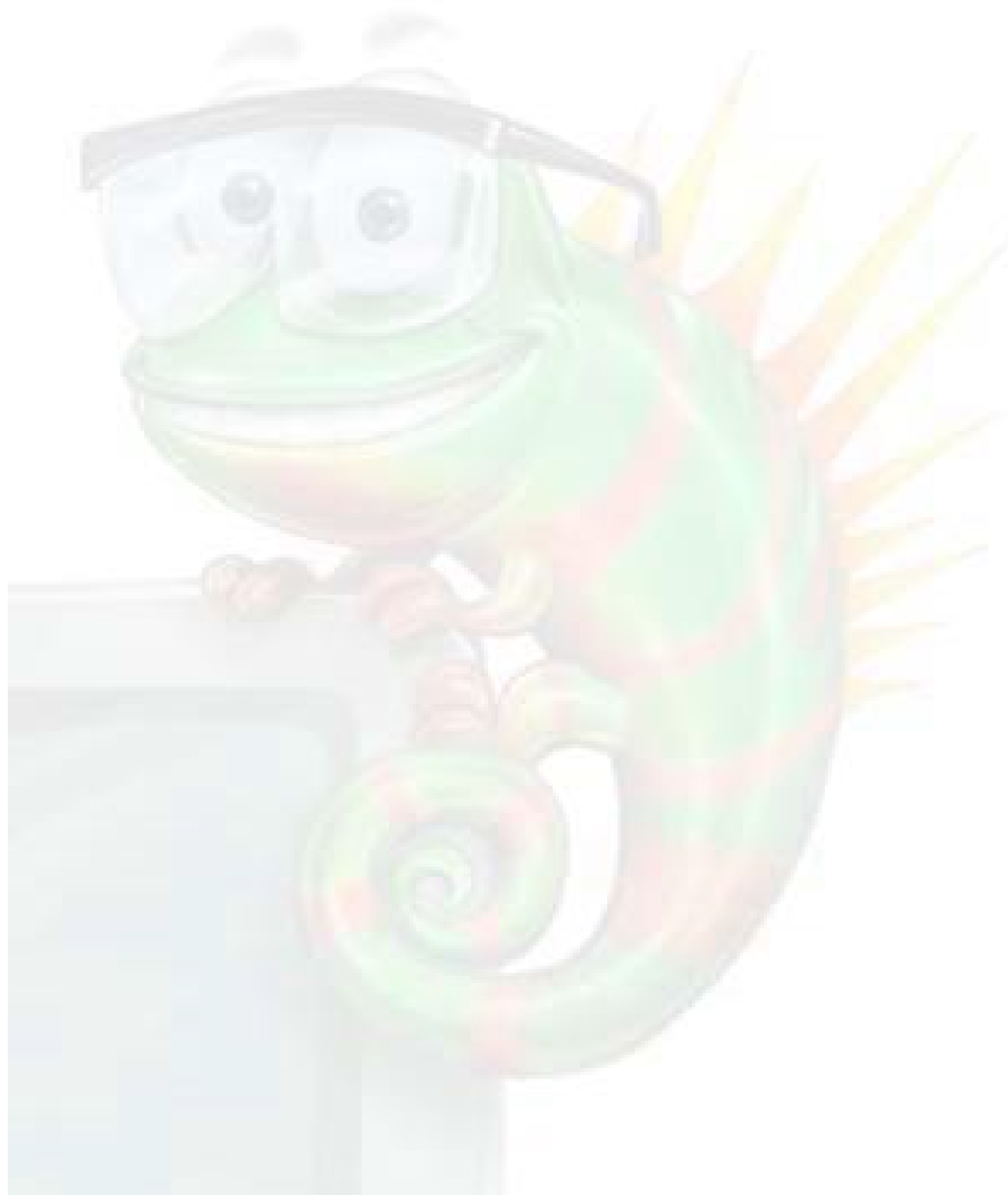
**Sequence Details**

Name:	IC-07_180927A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	27/Sep/18 17:55:26
No. of Injections:	62	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	BLANK	1	1000	Unknown		09/27/2018 09:19	Finished	BLANK
10	BLANK	2	1000	Unknown		09/27/2018 09:30	Finished	BLANK
11	CCV-1,CCV,1,	3	1000	Unknown		09/27/2018 09:40	Finished	CCV @5ppb, IWST-180622A
12	PQL@0.2ppb,CCV2,	4	1000	Unknown		09/27/2018 09:49	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		09/27/2018 09:59	Finished	CCB R180919A
14	MB-H2O,MBLK,1,	6	1000	Unknown		09/27/2018 10:08	Finished	MB R180919A
15	LCS-H2O,LCS,1,	7	1000	Unknown		09/27/2018 10:18	Finished	LCS @5ppb, IWST-180622B
16	MB-H2O,MBLK,1,	9	1000	Unknown		09/27/2018 10:31	Finished	MB R180919A
17	N032246-001A,SAMF	10	1000	Unknown		09/27/2018 10:42	Finished	SAMP,1>10mL
18	N032246-001AMS,MS	11	1000	Unknown		09/27/2018 10:52	Finished	MS (5ppb), IWST-180622B,1>
19	N032246-007A,SAMF	12	1000	Unknown		09/27/2018 11:01	Finished	SAMP,0.5>10mL
20	N032246-007AMS,MS	13	1000	Unknown		09/27/2018 11:10	Finished	MS (5ppb), IWST-180622B,0.5
21	N032246-007AMSD,N	14	1000	Unknown		09/27/2018 11:20	Finished	MSD (5ppb), IWST-180622B,0.
22	N032246-009A,SAMF	15	1000	Unknown		09/27/2018 11:29	Finished	SAMP,0.1>10mL
23	N032246-009AMS,MS	16	1000	Unknown		09/27/2018 11:39	Finished	MS (5ppb), IWST-180622B,0.1
24	CCV-2,CCV1,1,	17	1000	Unknown		09/27/2018 11:48	Finished	CCV @10ppb, IWST-180622A
25	CCB-2,CCB,1,	18	1000	Unknown		09/27/2018 11:58	Finished	CCB R180919A
26	N032246-001ADUP,D	19	1000	Unknown		09/27/2018 12:07	Finished	DUP,1>10mL
27	N032246-007A,SAMF	20	1000	Unknown		09/27/2018 12:17	Finished	SAMP,10mL
28	N032246-007AMS,MS	21	1000	Unknown		09/27/2018 12:26	Finished	MS (1ppb), IWST-180622B,10
29	N032246-009A,SAMF	22	1000	Unknown		09/27/2018 12:36	Finished	SAMP,10mL
30	N032246-009AMS,MS	23	1000	Unknown		09/27/2018 12:45	Finished	MS (1ppb), IWST-180622B,10
31	N032246-005A,SAMF	24	1000	Unknown		09/27/2018 12:55	Finished	SAMP,0.5>10mL
32	N032246-005AMS,MS	25	1000	Unknown		09/27/2018 13:04	Finished	MS (5ppb), IWST-180622B,0.5
33	N032246-008A,SAMF	26	1000	Unknown		09/27/2018 13:13	Finished	SAMP,0.1>10mL
34	N032246-008AMS,MS	27	1000	Unknown		09/27/2018 13:23	Finished	MS (5ppb), IWST-180622B,0.1
35	N032246-008AMSD,N	28	1000	Unknown		09/27/2018 13:32	Finished	MSD (5ppb), IWST-180622B,0.
36	CCV-3,CCV,1,	29	1000	Unknown		09/27/2018 13:42	Finished	CCV @5ppb, IWST-180622A
37	CCB-3,CCB,1,	30	1000	Unknown		09/27/2018 13:51	Finished	CCB R180919A
38	N032246-005A,SAMF	31	1000	Unknown		09/27/2018 14:01	Finished	SAMP,10mL
39	N032246-005AMS,MS	32	1000	Unknown		09/27/2018 14:10	Finished	MS (1ppb), IWST-180622B,10
40	N032246-002A,SAMF	1	1000	Unknown		09/27/2018 14:23	Finished	SAMP,2>10mL
41	N032246-002AMS,MS	2	1000	Unknown		09/27/2018 14:34	Finished	MS (1ppb), IWST-180622B,2>
42	N032246-003A,SAMF	3	1000	Unknown		09/27/2018 14:44	Finished	SAMP,2>10mL
43	N032246-003AMS,MS	4	1000	Unknown		09/27/2018 14:53	Finished	MS (1ppb), IWST-180622B,2>
44	N032246-004A,SAMF	5	1000	Unknown		09/27/2018 15:03	Finished	SAMP,2>10mL
45	N032246-004AMS,MS	6	1000	Unknown		09/27/2018 15:12	Finished	MS (1ppb), IWST-180622B,2>
46	N032246-007A,SAMF	7	1000	Unknown		09/27/2018 15:22	Finished	SAMP,2>10mL
47	N032246-007AMS,MS	8	1000	Unknown		09/27/2018 15:31	Finished	MS (1ppb), IWST-180622B,2>
48	CCV-4,CCV1,1,	9	1000	Unknown		09/27/2018 15:41	Finished	CCV @10ppb, IWST-180622A
49	CCB-4,CCB,1,	10	1000	Unknown		09/27/2018 15:50	Finished	CCB R180919A
50	N032246-002A,SAMF	11	1000	Unknown		09/27/2018 15:59	Finished	SAMP,10mL
51	N032246-002AMS,MS	12	1000	Unknown		09/27/2018 16:09	Finished	MS (1ppb), IWST-180622B,10
52	N032246-003A,SAMF	13	1000	Unknown		09/27/2018 16:18	Finished	SAMP,10mL
53	N032246-003AMS,MS	14	1000	Unknown		09/27/2018 16:28	Finished	MS (1ppb), IWST-180622B,10
54	N032246-004A,SAMF	15	1000	Unknown		09/27/2018 16:37	Finished	SAMP,10mL
55	N032246-004AMS,MS	16	1000	Unknown		09/27/2018 16:47	Finished	MS (1ppb), IWST-180622B,10
56	N032246-006A,SAMF	17	1000	Unknown		09/27/2018 16:56	Finished	SAMP,10mL
57	N032246-006AMS,MS	18	1000	Unknown		09/27/2018 17:06	Finished	MS (1ppb), IWST-180622B,10
58	CCV-5,CCV,1,	19	1000	Unknown		09/27/2018 17:15	Finished	CCV @5ppb, IWST-180622A
59	CCB-5,CCB,1,	20	1000	Unknown		09/27/2018 17:25	Finished	CCB R180919A
60	SHUTDOWN	21	1000	Unknown		09/27/2018 17:34	Finished	

61	Eluent: R180927A	22	1000	Unknown		n.a.	Finished	Eluent
62	PCR: R180926B	23	1000	Unknown		n.a.	Finished	Post-Column Reagent





# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## Hexavalent Chromium Preparation and Runlog

Sample Preparation						
Date Prepared:	9/24/18	<i>Slope: 98.82</i>	Reagent ID:			
Time Prepared:	11:24	<i>pH 4: 4.02 @ 0.0°C</i>	Sulfuric Acid:	10mM		
Prepared By:	MSB	<i>7: 7.01 @ 0.0°C</i>	Diphenylcarbazide:	CUNV-15276B		
		<i>10: 1.02 @ 0.0°C</i>	NH4OH + NH4SO4 eluent:	MS924B		
			NH4OH + NH4SO4 buffer:	MS919A		
Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1) N032216-001A	9.78	-	~200ul	~200ul		
2) 2A	9.44	-				
3) 3A	9.43	-				
4) 4A	9.59	-				
5) N032218-1G	8.18					
6) N032219-1G	9.03					
7) N032220-1G	9.15					
8) N032221-1G	9.14					
9)						
10)						
11)						
12)						
13)						
14)						
15)						

Sample Preparation						
Date Prepared:	9/27/18	<i>Slope: 98.47</i>	Reagent ID:			
Time Prepared:	16:58	<i>pH 4: 4.02 @ 0.0°C</i>	Sulfuric Acid:	10mM		
Prepared By:	MSA	<i>7: 7.00 @ 0.0°C</i>	Diphenylcarbazide:	CUNV-15276B		
		<i>10: 1.01 @ 0.0°C</i>	NH4OH + NH4SO4 eluent:	MS927A		
		<i>15: 7.02 @ 0.0°C</i>	NH4OH + NH4SO4 buffer:	MS919A		
				<i>6N H2SO4</i>		
				<i>MS919C</i>		
Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1) N032246-1A	9.34	-	~200ul	~200ul		
2) 2A	9.42	-				
3) 3A	9.43	-				
4) 4A	9.48	-				
5) 5A	9.30	-				
6) 6A	9.30	-				
7) 7A	9.28	-				
8) 8A	9.22	9.32				
9) 9A	9.54	-				<i>Final result</i>
10)						
11)						
12)						
13)						
14)						
15)						

Logbook No. 15



*nba* 10/7/2018

**ASSET LABORATORIES**

CALIFORNIA | P: 562.219.7435 F: 562.219.7436  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703

NEVADA | P: 702.307.2659 F: 702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118

ELAP Cert 2921

ELAP Cert 2676 | NV Cert NV00922

ORELAP/NELAP Cert 4046

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07  
Date Calibrated: 9/21/2018

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R <sup>2</sup>
Area,mAU*min	0.0462	0.2400	1.2761	2.5253	3.8020	5.0460	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST-170814H	IWST-180622A

Calibration Acceptance Criteria: > 0.999 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3154476</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.047	0.20	5.000	0	101	90	110				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3154477</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.187	0.20	0.2000	0	93.2	80	120				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154479</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.113	0.20	5.000	0	102	95	105				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154480</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.203	0.20	0.2000	0	101	80	120				

Sample ID <b>CCV-2</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154487</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.220	0.20	10.00	0	102	95	105				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154495</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.103	0.20	5.000	0	102	95	105				

Sample ID <b>CCV-4</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154507</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.241	0.20	10.00	0	102	95	105				

Sample ID <b>CCV-5</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154511</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.156	0.20	5.000	0	103	95	105				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>
Client ID: <b>ICB</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3154478</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154481</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154488</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154496</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154508</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCB-5</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128899</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128899</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3154512</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 9/27/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.115	
CCV-1	4.115	
CCV-2	4.123	
CCV-3	4.123	
CCV-4	4.123	
CCV-5	4.123	

**Average** 4.121

**Actual RT Window** 4.041 - 4.201

**Applied RT Window** 3.921 - 4.321

MB-R128899	4.073	PASS
LCS-R128899	4.123	PASS
MB-R128899	N.A.	N.A.
N032246-001A	4.090	PASS
N032246-001AMS	4.090	PASS
N032246-007A	N.A.	N.A.
N032246-007AMS	4.115	PASS
N032246-007AMSD	4.106	PASS
N032246-009A	4.098	PASS
N032246-009AMS	4.123	PASS
N032246-001ADUP	4.090	PASS
N032246-007A	N.A.	N.A.
N032246-007AMS	3.823	FAIL
N032246-009A	N.A.	N.A.
N032246-009AMS	4.123	PASS
N032246-005A	N.A.	N.A.
N032246-005AMS	4.115	PASS
N032246-008A	4.123	PASS
N032246-008AMS	4.123	PASS
N032246-008AMSD	4.123	PASS
N032246-005A	4.031	PASS
N032246-005AMS	4.040	PASS
N032246-002A	4.065	PASS
N032246-002AMS	4.065	PASS

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 9/27/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.115	
CCV-1	4.115	
CCV-2	4.123	
CCV-3	4.123	
CCV-4	4.123	
CCV-5	4.123	

**Average** 4.121

**Actual RT Window** 4.041 - 4.201

**Applied RT Window** 3.921 - 4.321

N032246-003A	4.073	PASS
N032246-003AMS	4.048	PASS
N032246-004A	4.065	PASS
N032246-004AMS	4.065	PASS
N032246-007A	4.073	PASS
N032246-007AMS	4.081	PASS
N032246-002A	3.656	FAIL
N032246-002AMS	3.673	FAIL
N032246-003A	3.748	FAIL
N032246-003AMS	3.698	FAIL
N032246-004A	3.673	FAIL
N032246-004AMS	3.665	FAIL
N032246-006A	4.048	PASS
N032246-006AMS	4.040	PASS

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**  
 Method Number: EPA 218.6  
 Analysis Date(s): 5/5/2017, 5/8/2017, 5/9/2017, 5/10/2017, 5/11/2017, 5/12/2017, 5/15/2017  
 Analyst: Ria Abes

Matrix: **WATER**  
 Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

	Datafile	170505	170508	170509	170510	170511	170512	170515						
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	t <sub>(n-1)</sub> value	MDL	PQL	Remarks	
Hexavalent Chromium	0.1949	0.2135	0.1840	0.1828	0.2011	0.1936	0.1911	0.20	0.0105	3.143	<b>0.0331</b>	<b>0.20</b>	OK,meets criteria	

Students' t Values at 99% CL

#	t <sub>(n-1)</sub>
10	2.821
9	2.896
8	2.998
7	3.143



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENT

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

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## LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Hexavalent Chromium by IC**                      Matrix: **WATER**  
 Method Number: EPA Method 218.6/7199                      Unit:  $\mu\text{g/L}$   
 Analysis Date(s): 3/21/2018  
 Analyst: Ria Abes  
  
 Instrument Name: **IC-07**

Compound	MDL	LOD Spike Conc., $\mu\text{g/L}$	LOD actual Conc., $\mu\text{g/L}$
Hexavalent Chromium	0.0331	0.100	0.116

Compound	PQL	PQL Spike Conc., $\mu\text{g/L}$	PQL actual Conc., $\mu\text{g/L}$	% Recovery
Hexavalent Chromium	0.200	0.200	0.201	<u>100</u>





# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436



NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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INJECTION LOG: 180921A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	ICV	ICV	1	Hexavalent Chromium	09/21/18 4:09 PM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/21/18 4:18 PM	Reported
11	ICB	ICB	1	Hexavalent Chromium	09/21/18 4:28 PM	Reported

*rba* 9/30/2018

*Nancy* 10/8/2018

IC7 RBA 9/26/2018 8:55 AM

## Injection Log Summary

## Sequence Details

Name:	IC-07_180921A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	25/Sep/18 09:28:56
No. of Injections:	14	Updated By:	ics 5000

## Injection Details

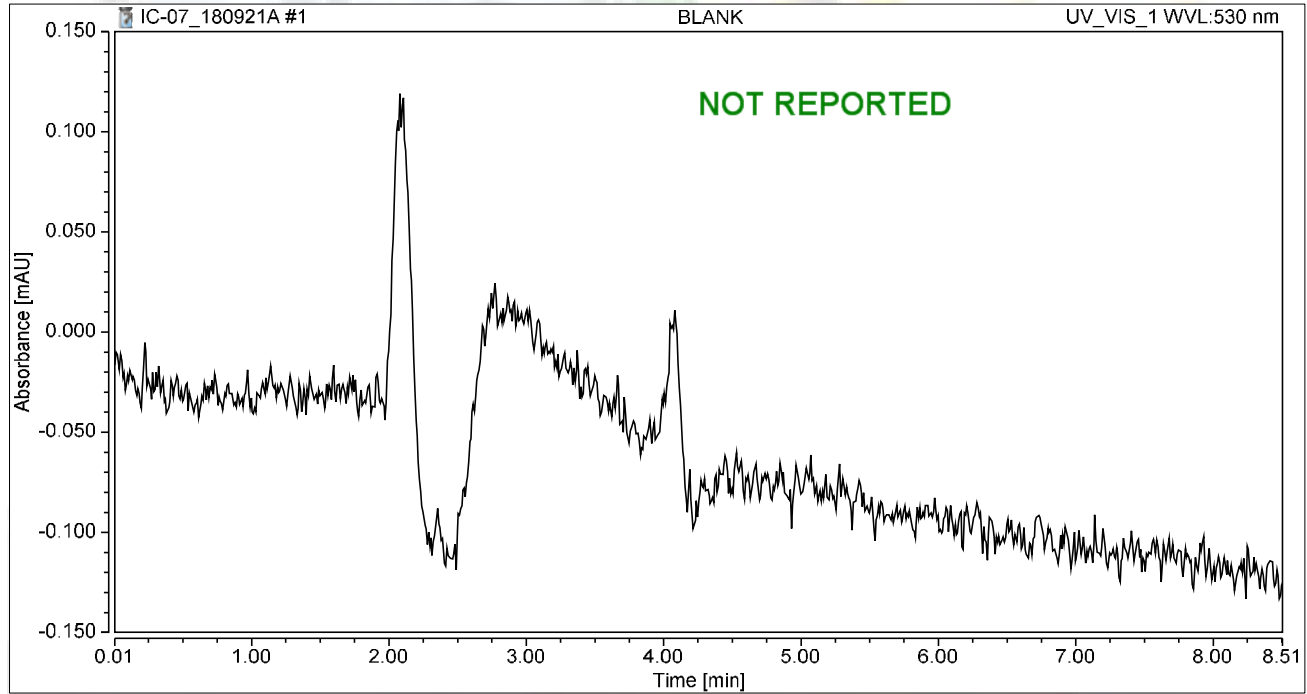
No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	ICV,ICV,1,	10	1000	Unknown		09/21/2018 16:09	Finished	ICV @5ppb, IWST-180622B
10	PQL@0.2ppb,CCV2,	11	1000	Unknown		09/21/2018 16:18	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	12	1000	Unknown		09/21/2018 16:28	Finished	ICB R180919A
12	SHUTDOWN	14	1000	Unknown		09/21/2018 16:45	Finished	
13	Eluent: R180917A	14	1000	Unknown		n.a.	Finished	Eluent
14	PCR: R180921A	15	1000	Unknown		n.a.	Finished	Post-Column Reagent

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

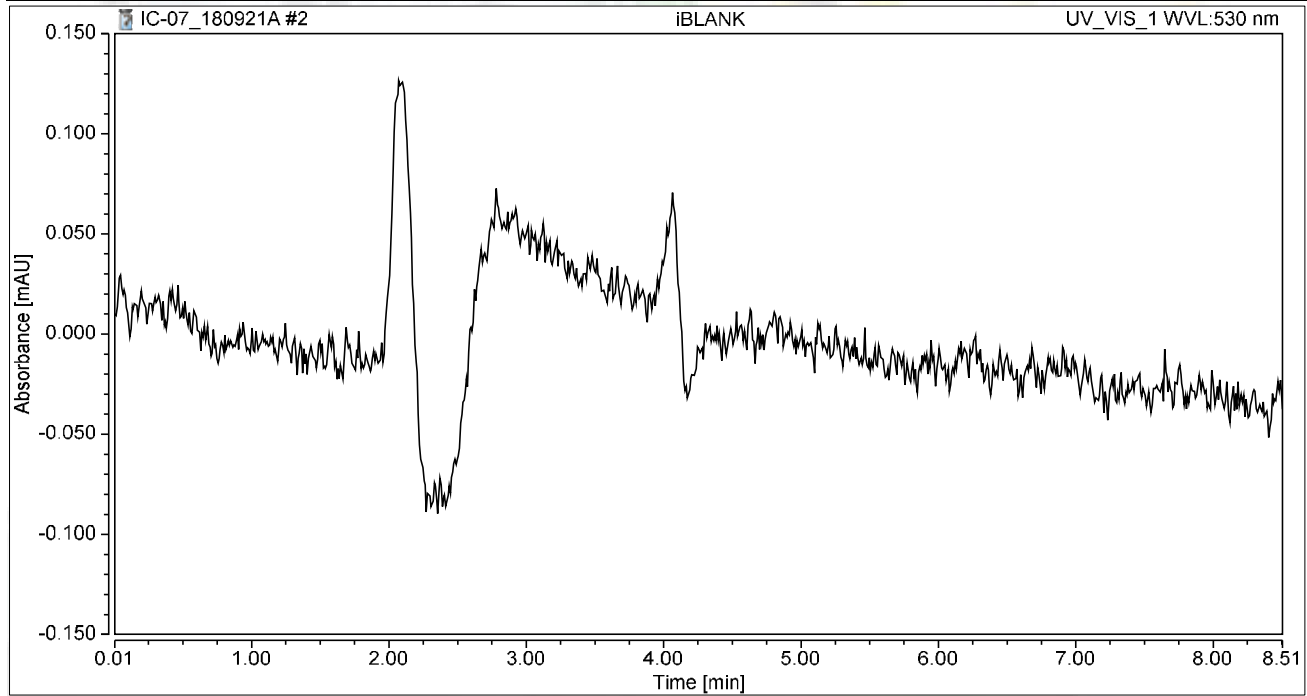
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	iBLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

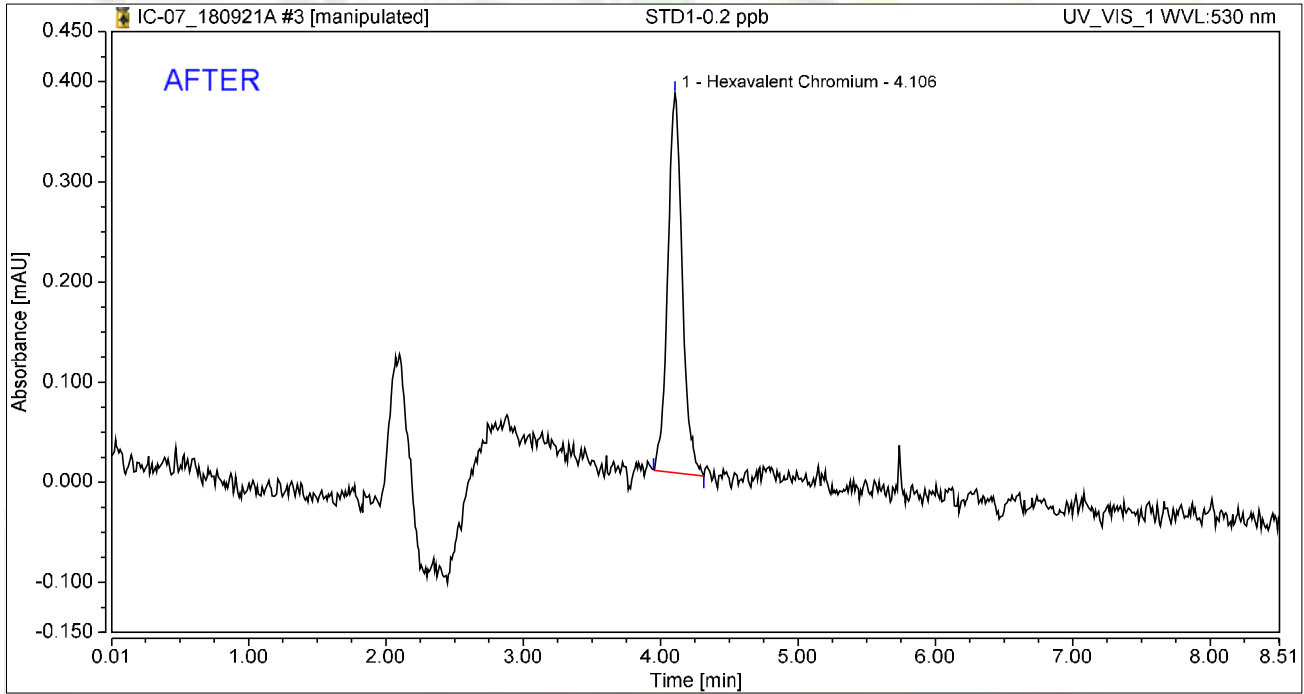
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.046	0.379	100.00	100.00	0.1830
<b>Total:</b>			<b>0.046</b>	<b>0.379</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/30/2018

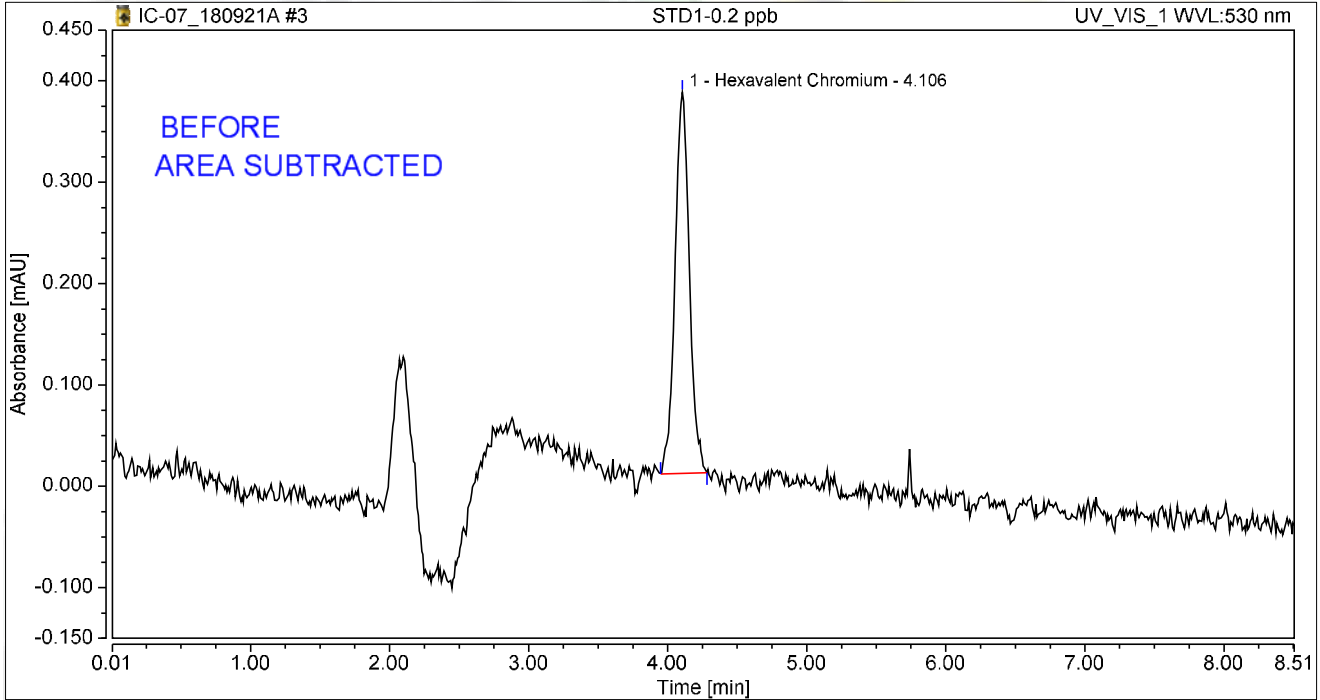
Reviewed by:  
*Murray* 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.045	0.376	100.00	100.00	0.1723
<b>Total:</b>			<b>0.045</b>	<b>0.376</b>	<b>100.00</b>	<b>100.00</b>	

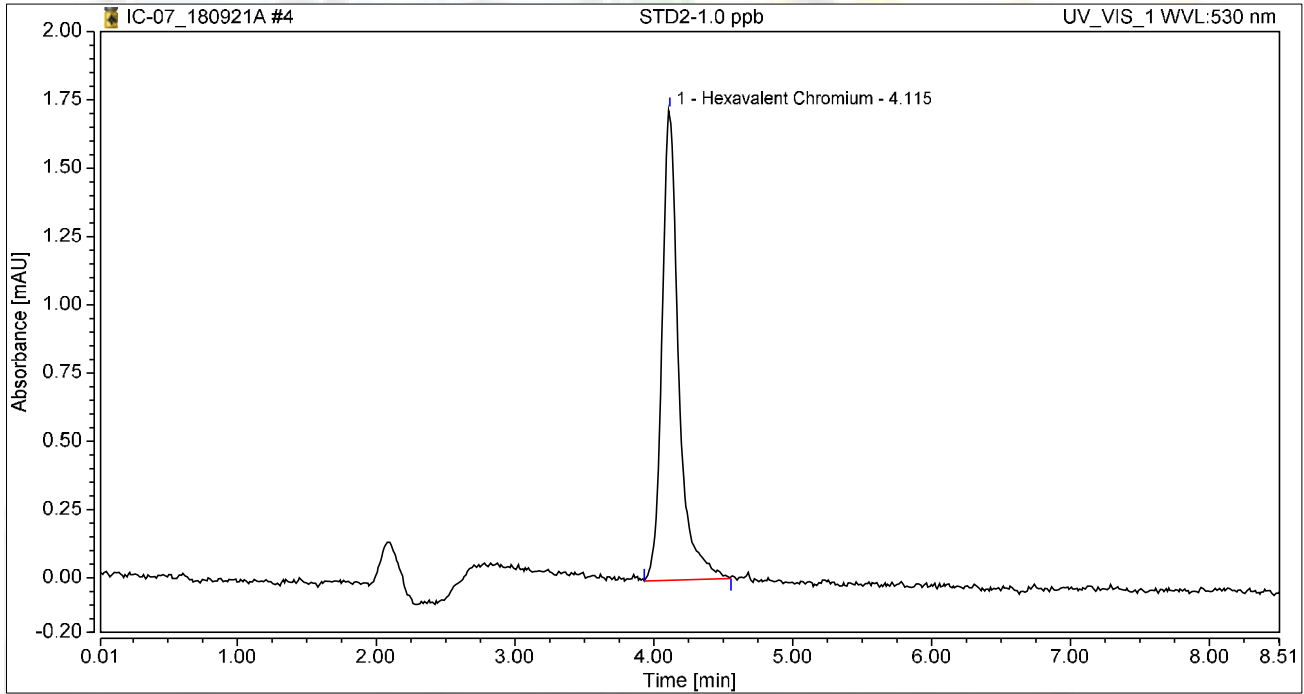
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD2-1.0 ppb	Run Time (min):	8.49
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	02	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:47	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.240	1.724	100.00	100.00	0.9494
<b>Total:</b>			<b>0.240</b>	<b>1.724</b>	<b>100.00</b>	<b>100.00</b>	

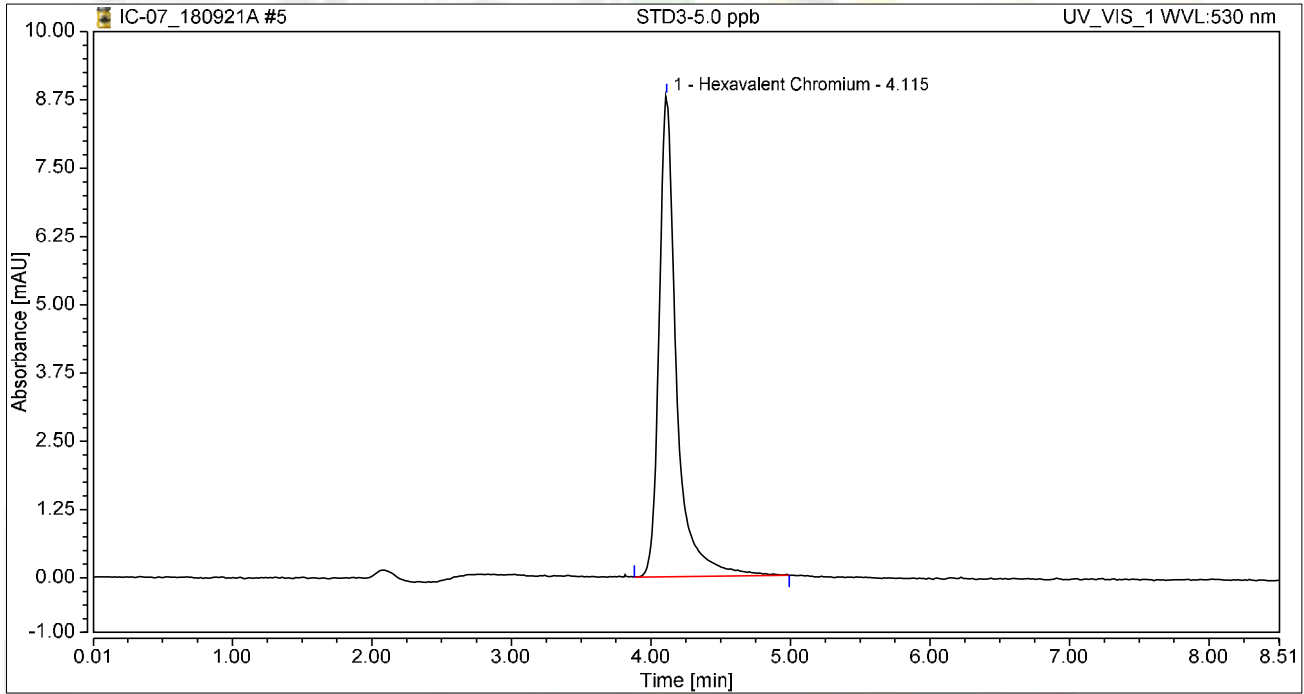


### Chromatogram and Results

**Injection Details**

Injection Name:	STD3-5.0 ppb	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	03	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

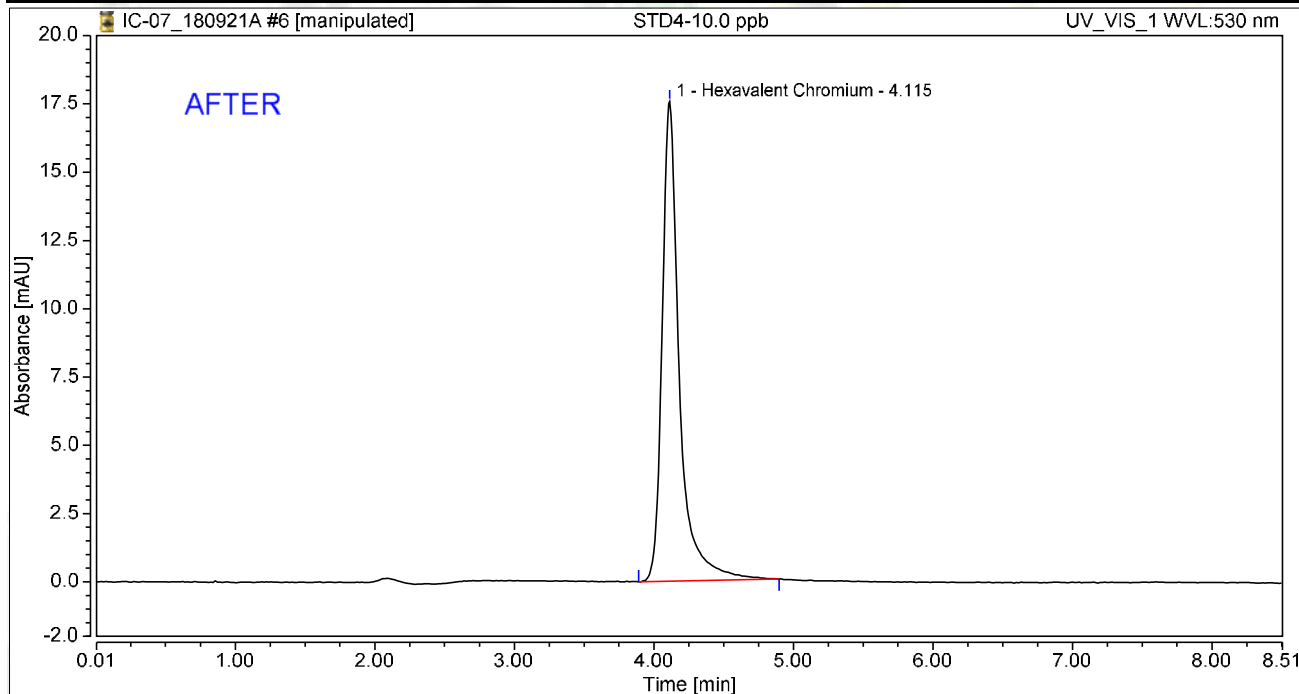
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.276	8.809	100.00	100.00	5.0487
<b>Total:</b>			<b>1.276</b>	<b>8.809</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.525	17.564	100.00	100.00	9.9908
<b>Total:</b>			<b>2.525</b>	<b>17.564</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Reviewed by:

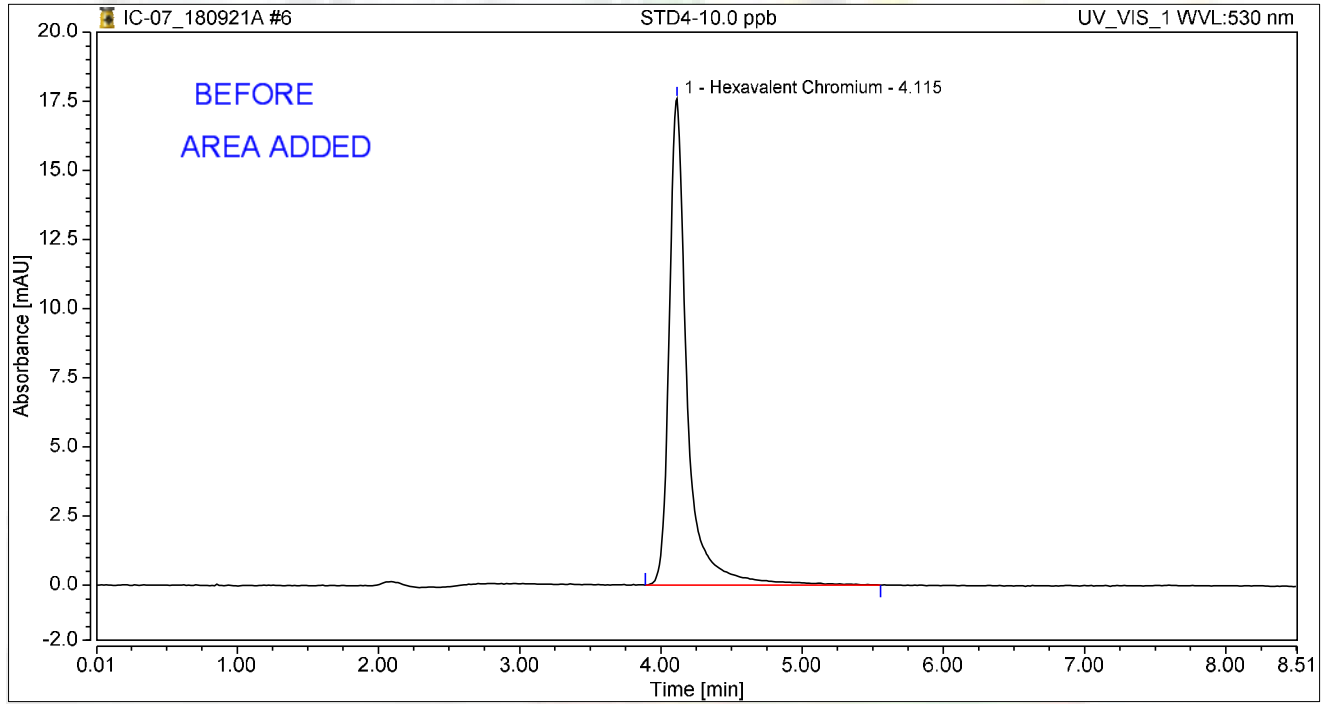
My first record integration  
Mony 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.611	17.589	100.00	100.00	10.0182
<b>Total:</b>			<b>2.611</b>	<b>17.589</b>	<b>100.00</b>	<b>100.00</b>	

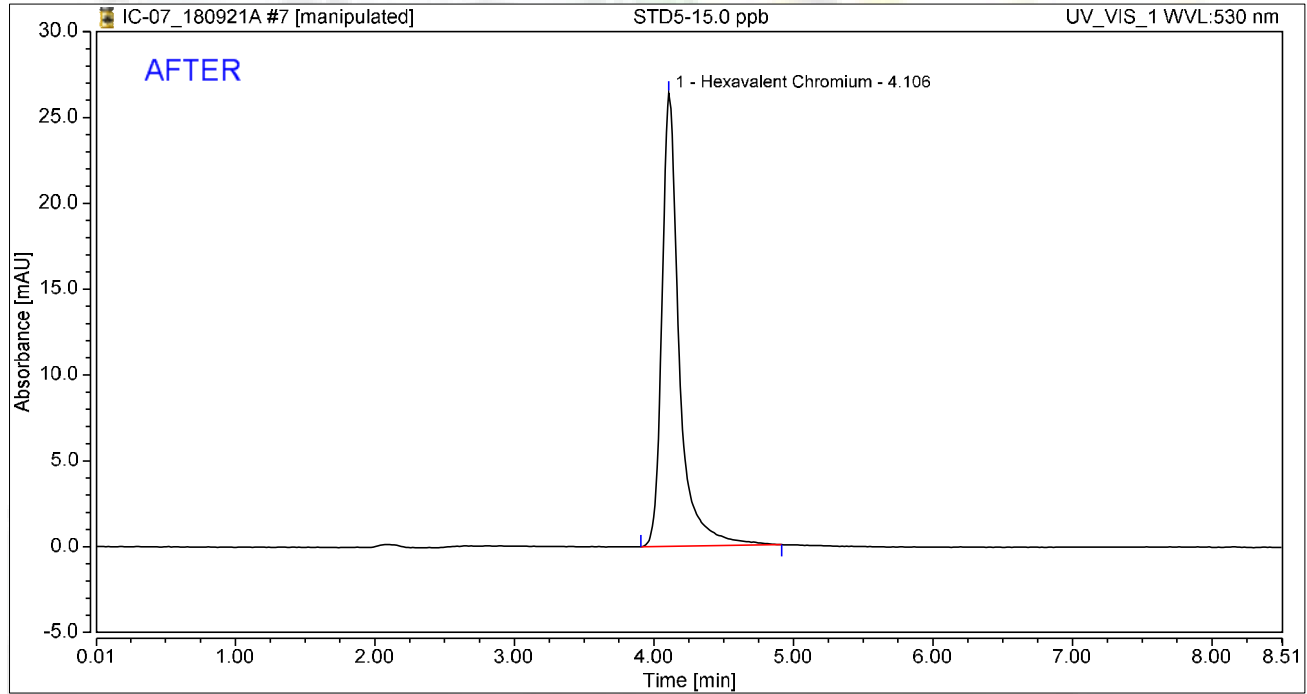
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	3.802	26.404	100.00	100.00	15.0421
<b>Total:</b>			<b>3.802</b>	<b>26.404</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

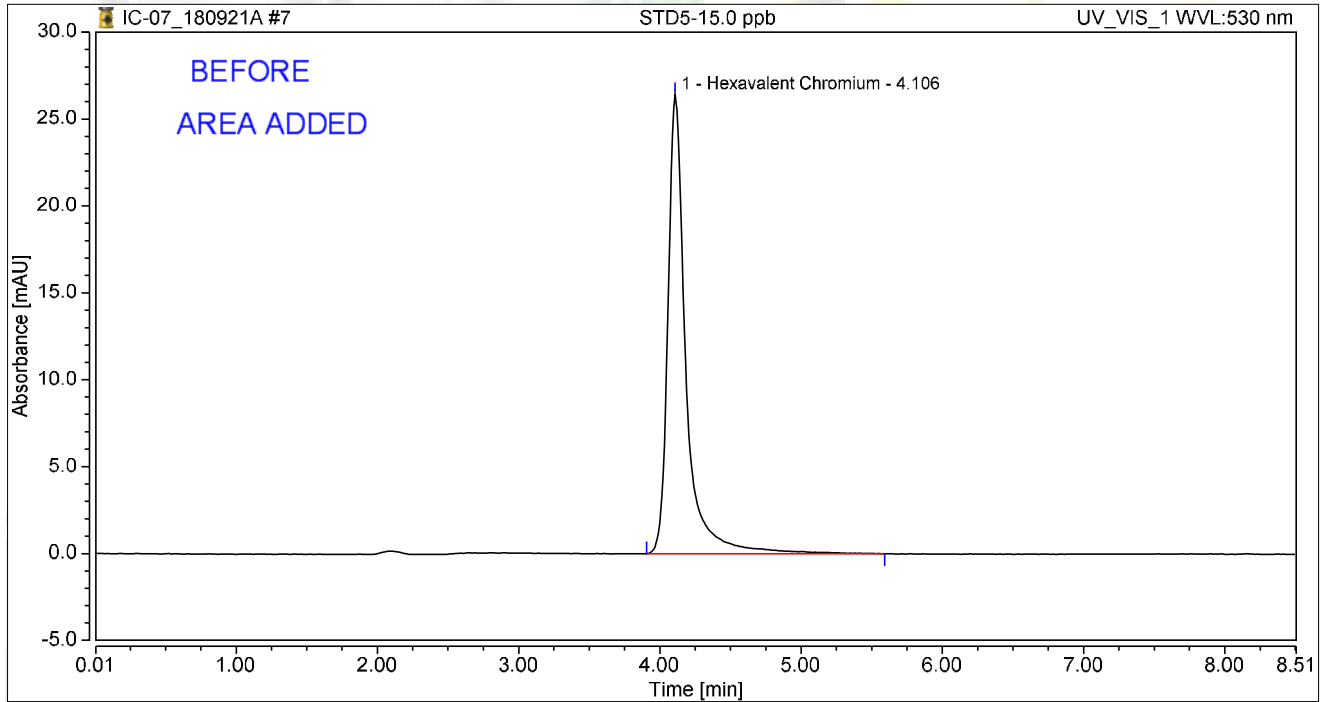
Reviewed by:  
*Money* 10/8/2018  
My first report/integration

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	3.918	26.433	100.00	100.00	15.0352
<b>Total:</b>			<b>3.918</b>	<b>26.433</b>	<b>100.00</b>	<b>100.00</b>	

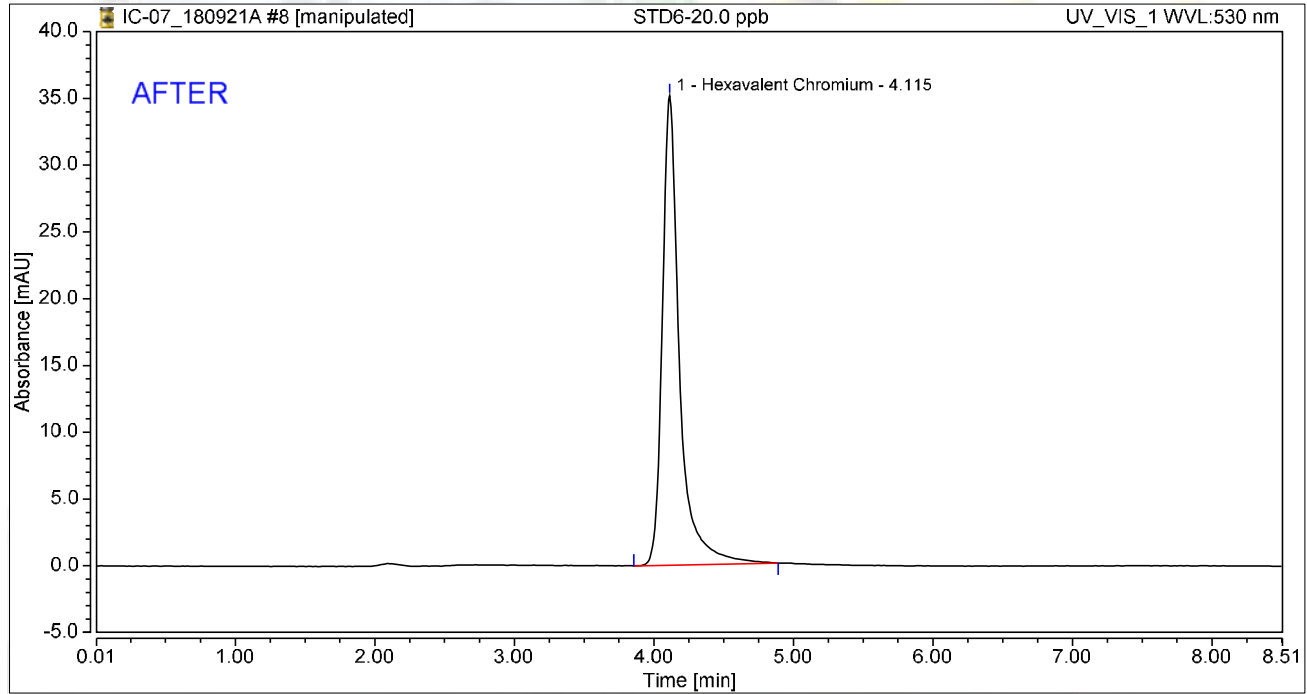
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:25	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	5.046	35.157	100.00	100.00	19.9635
<b>Total:</b>			<b>5.046</b>	<b>35.157</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/30/2018

Reviewed by:  
*Arney* 10/8/2018

My first report/Integration

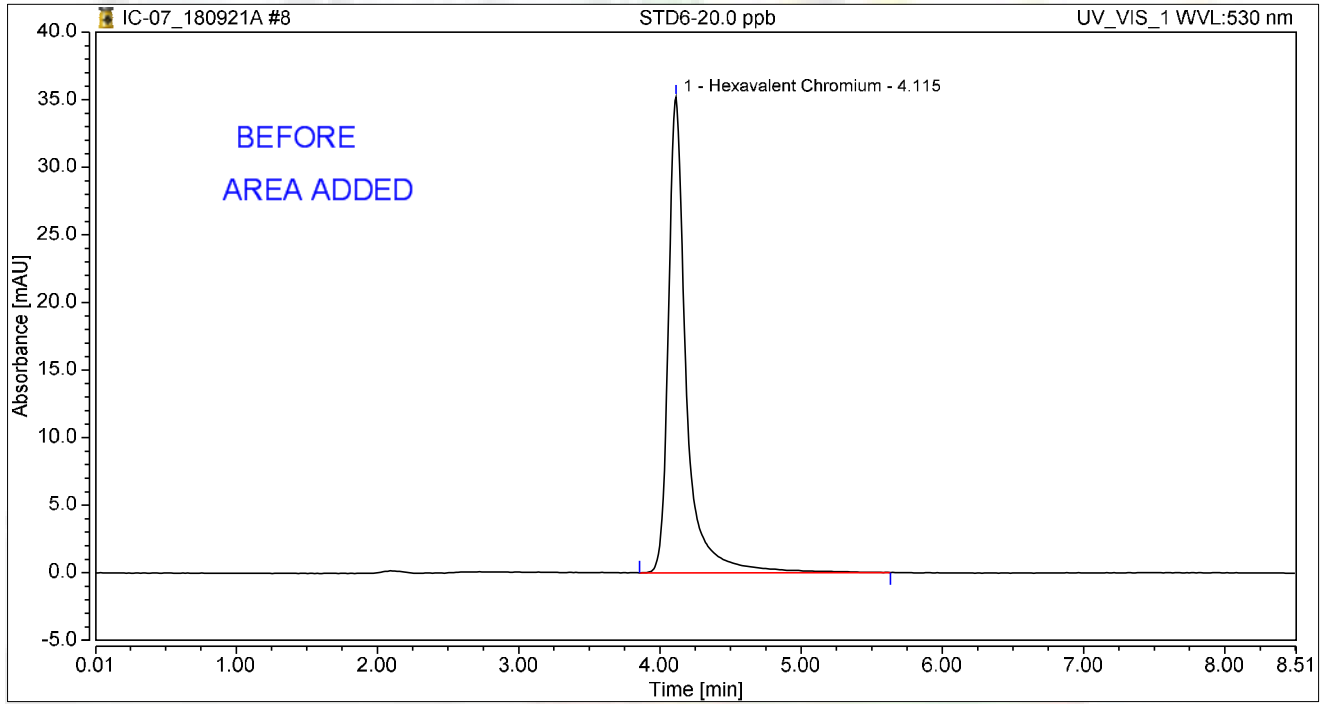
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:25	Sample Weight:	1.0000

**Chromatogram**

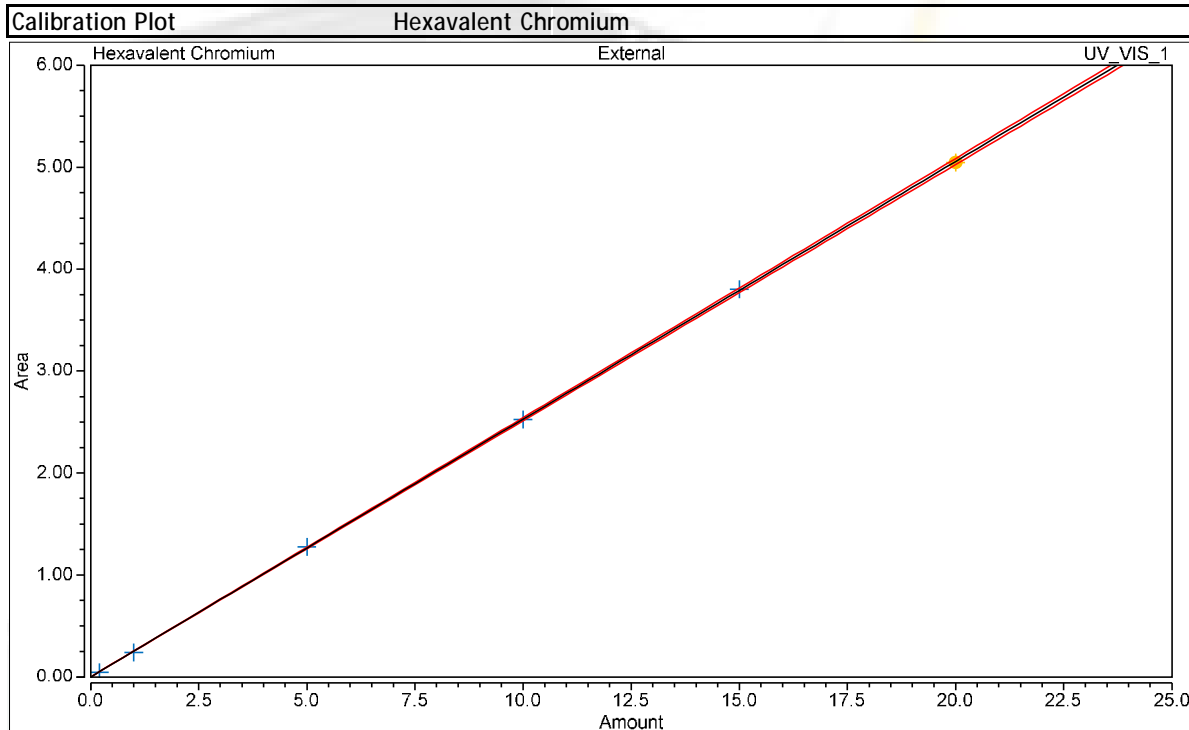


**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	5.210	35.207	100.00	100.00	19.9945
<b>Total:</b>			<b>5.210</b>	<b>35.207</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Initial Calibration Summary			
Calibration Details		Hexavalent Chromium	
Calibration Type	Lin	Offset (C0)	0.0000
Evaluation Type	Area	Slope (C1)	0.2528
Number of Calibration Points	6	Curve (C2)	0.0000
Number of disabled Calibration Points	0	R-Square	0.99997



Calibration Results		Hexavalent Chromium				
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
3	STD1-0.2 ppb	01	0.2000	0.0462	0.046	0.379
4	STD2-1.0 ppb	02	1.0000	0.2400	0.240	1.724
5	STD3-5.0 ppb	03	5.0000	1.2761	1.276	8.809
6	STD4-10.0 ppb	04	10.0000	2.5253	2.525	17.564
7	STD5-15.0 ppb	05	15.0000	3.8020	3.802	26.404
8	STD6-20.0 ppb	06	20.0000	5.0460	5.046	35.157

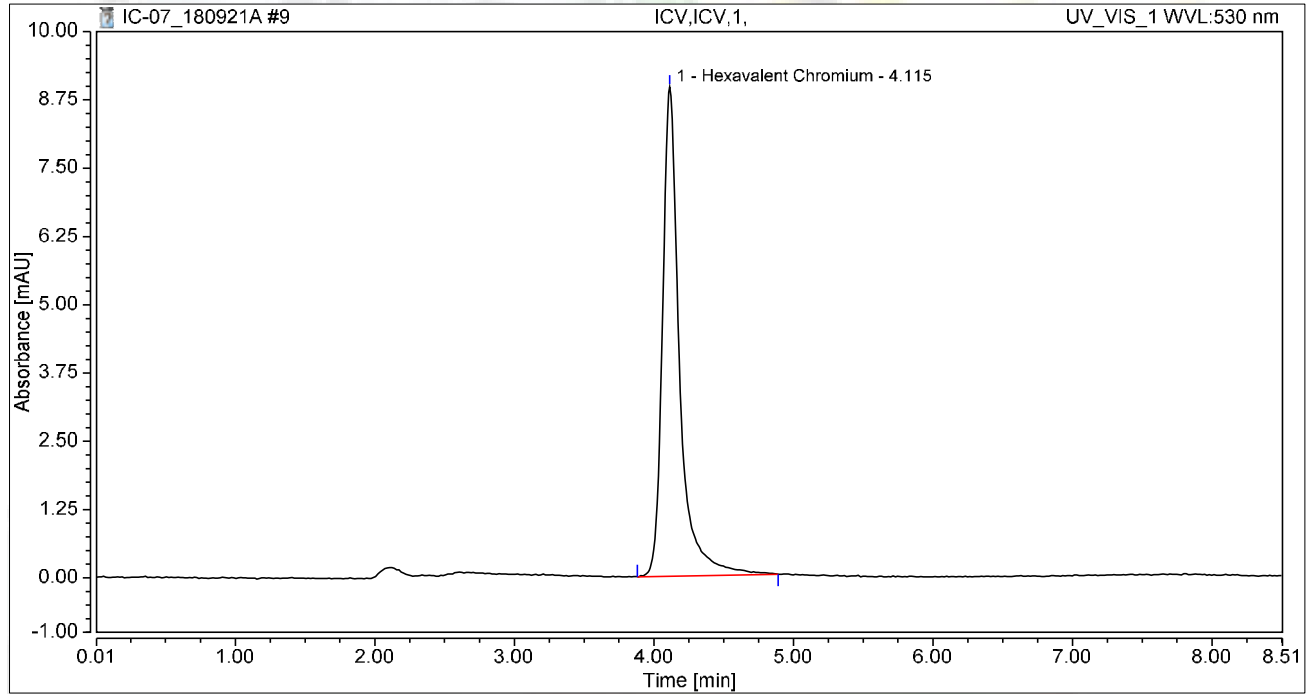


### Chromatogram and Results

**Injection Details**

Injection Name:	ICV,ICV,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

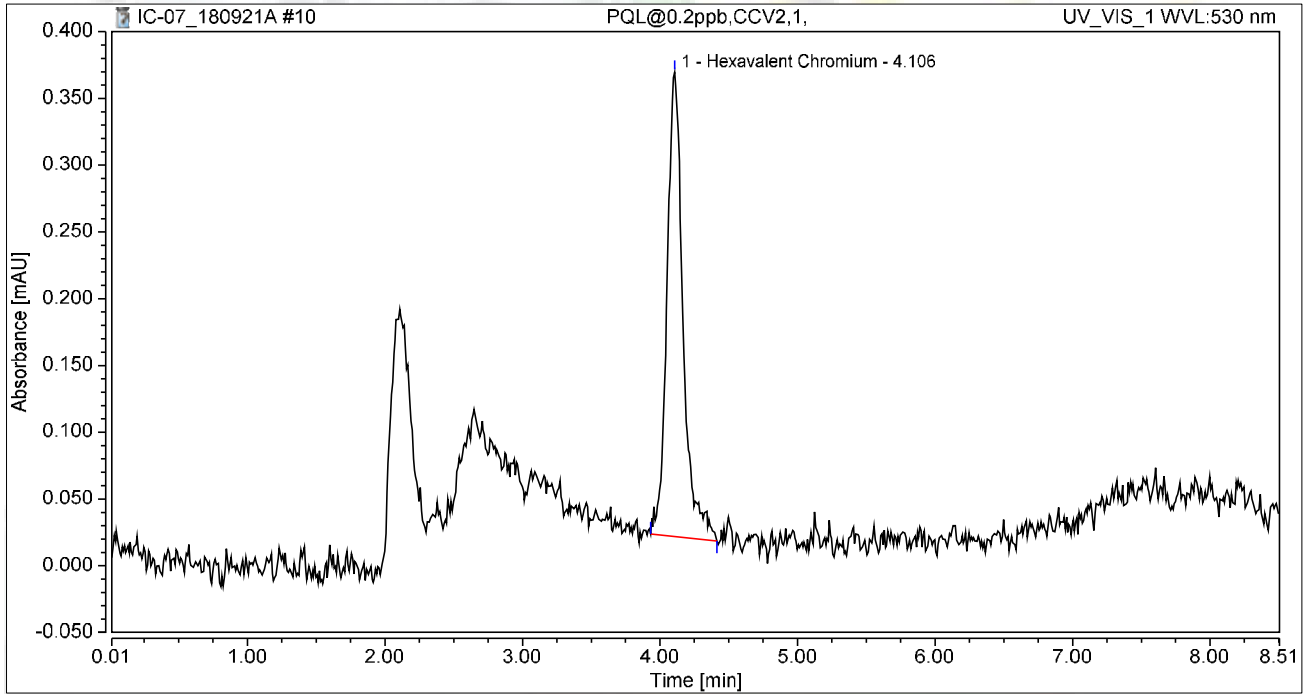
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.276	8.956	100.00	100.00	5.0467
<b>Total:</b>			<b>1.276</b>	<b>8.956</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

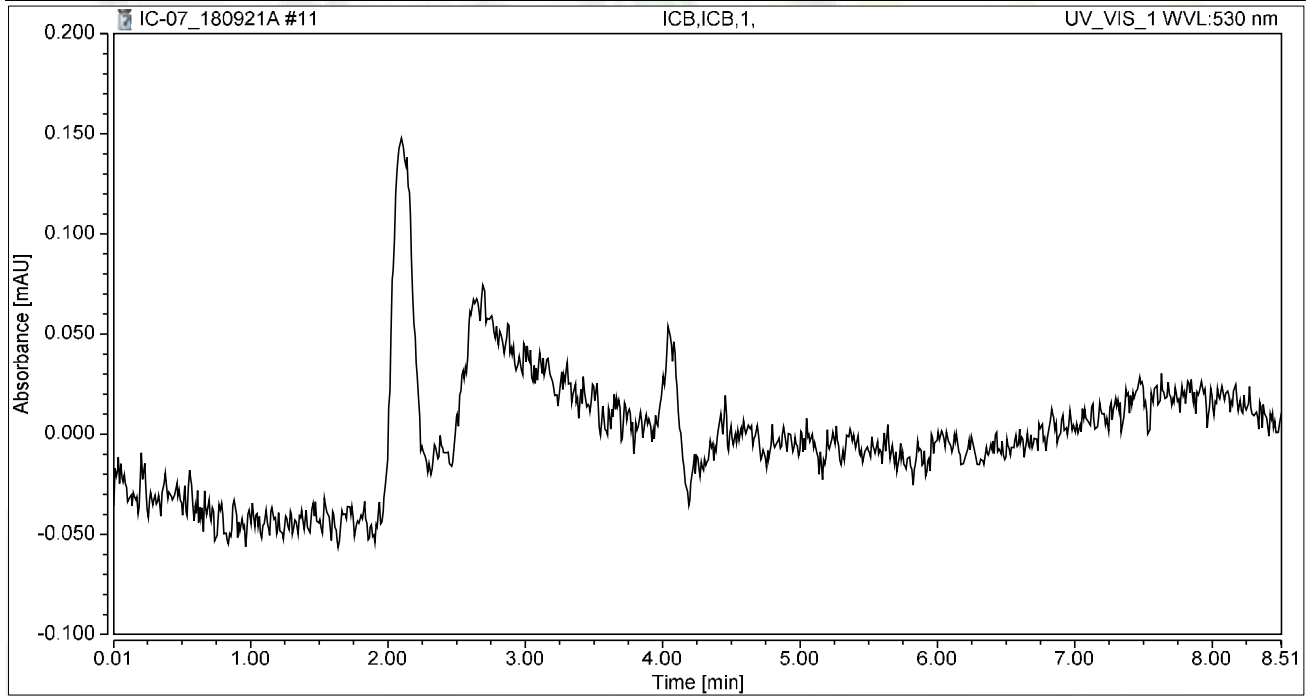
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.047	0.348	100.00	100.00	0.1865
<b>Total:</b>			<b>0.047</b>	<b>0.348</b>	<b>100.00</b>	<b>100.00</b>	

## Chromatogram and Results

**Injection Details**

Injection Name:	ICB,ICB,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2650 F: 702.307.2691



**INJECTION LOG: 180927A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	09/27/18 9:19 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	09/27/18 9:30 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	09/27/18 9:40 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/27/18 9:49 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	09/27/18 9:59 AM	Reported
14	MB-R128899	MBLK	1	Hexavalent Chromium	09/27/18 10:08 AM	Not Reported
15	LCS-R128899	LCS	1	Hexavalent Chromium	09/27/18 10:18 AM	Reported
16	MB-R128899	MBLK	1	Hexavalent Chromium	09/27/18 10:31 AM	Reported
17	N032246-001A	SAMP	10	Hexavalent Chromium	09/27/18 10:42 AM	Reported
18	N032246-001AMS	MS	10	Hexavalent Chromium	09/27/18 10:52 AM	Reported
19	N032246-007A	SAMP	20	Hexavalent Chromium	09/27/18 11:01 AM	Not Reported
20	N032246-007AMS	MS	20	Hexavalent Chromium	09/27/18 11:10 AM	Not Reported
21	N032246-007AMSD	MSD	20	Hexavalent Chromium	09/27/18 11:20 AM	Not Reported
22	N032246-009A	SAMP	100	Hexavalent Chromium	09/27/18 11:29 AM	Not Reported
23	N032246-009AMS	MS	100	Hexavalent Chromium	09/27/18 11:39 AM	Not Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	09/27/18 11:48 AM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	09/27/18 11:58 AM	Reported
26	N032246-001ADUP	DUP	10	Hexavalent Chromium	09/27/18 12:07 PM	Reported
27	N032246-007A	SAMP	1	Hexavalent Chromium	09/27/18 12:17 PM	Not Reported
28	N032246-007AMS	MS	1	Hexavalent Chromium	09/27/18 12:26 PM	Not Reported
29	N032246-009A	SAMP	1	Hexavalent Chromium	09/27/18 12:36 PM	Reported
30	N032246-009AMS	MS	1	Hexavalent Chromium	09/27/18 12:45 PM	Reported
31	N032246-005A	SAMP	20	Hexavalent Chromium	09/27/18 12:55 PM	Not Reported
32	N032246-005AMS	MS	20	Hexavalent Chromium	09/27/18 1:04 PM	Not Reported
33	N032246-008A	SAMP	100	Hexavalent Chromium	09/27/18 1:13 PM	Reported
34	N032246-008AMS	MS	100	Hexavalent Chromium	09/27/18 1:23 PM	Reported
35	N032246-008AMSD	MSD	100	Hexavalent Chromium	09/27/18 1:32 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	09/27/18 1:42 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	09/27/18 1:51 PM	Reported
38	N032246-005A	SAMP	1	Hexavalent Chromium	09/27/18 2:01 PM	Reported
39	N032246-005AMS	MS	1	Hexavalent Chromium	09/27/18 2:10 PM	Reported
40	N032246-002A	SAMP	5	Hexavalent Chromium	09/27/18 2:23 PM	Reported
41	N032246-002AMS	MS	5	Hexavalent Chromium	09/27/18 2:34 PM	Reported
42	N032246-003A	SAMP	5	Hexavalent Chromium	09/27/18 2:44 PM	Reported

**INJECTION LOG: 180927A**

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N032246-003AMS	MS	5	Hexavalent Chromium	09/27/18 2:53 PM	Reported
44	N032246-004A	SAMP	5	Hexavalent Chromium	09/27/18 3:03 PM	Reported
45	N032246-004AMS	MS	5	Hexavalent Chromium	09/27/18 3:12 PM	Reported
46	N032246-007A	SAMP	5	Hexavalent Chromium	09/27/18 3:22 PM	Reported
47	N032246-007AMS	MS	5	Hexavalent Chromium	09/27/18 3:31 PM	Reported
48	CCV-4	CCV1	1	Hexavalent Chromium	09/27/18 3:41 PM	Reported
49	CCB-4	CCB	1	Hexavalent Chromium	09/27/18 3:50 PM	Reported
50	N032246-002A	SAMP	1	Hexavalent Chromium	09/27/18 3:59 PM	Not Reported
51	N032246-002AMS	MS	1	Hexavalent Chromium	09/27/18 4:09 PM	Not Reported
52	N032246-003A	SAMP	1	Hexavalent Chromium	09/27/18 4:18 PM	Not Reported
53	N032246-003AMS	MS	1	Hexavalent Chromium	09/27/18 4:28 PM	Not Reported
54	N032246-004A	SAMP	1	Hexavalent Chromium	09/27/18 4:37 PM	Not Reported
55	N032246-004AMS	MS	1	Hexavalent Chromium	09/27/18 4:47 PM	Not Reported
56	N032246-006A	SAMP	1	Hexavalent Chromium	09/27/18 4:56 PM	Reported
57	N032246-006AMS	MS	1	Hexavalent Chromium	09/27/18 5:06 PM	Reported
58	CCV-5	CCV	1	Hexavalent Chromium	09/27/18 5:15 PM	Reported
59	CCB-5	CCB	1	Hexavalent Chromium	09/27/18 5:25 PM	Reported

### Injection Log Summary

**Sequence Details**

Name:	IC-07_180927A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	27/Sep/18 17:55:26
No. of Injections:	62	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	IBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	BLANK	1	1000	Unknown		09/27/2018 09:19	Finished	BLANK
10	BLANK	2	1000	Unknown		09/27/2018 09:30	Finished	BLANK
11	CCV-1,CCV,1,	3	1000	Unknown		09/27/2018 09:40	Finished	CCV @5ppb, IWST-180622A
12	PQL@0.2ppb,CCV2,	4	1000	Unknown		09/27/2018 09:49	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		09/27/2018 09:59	Finished	CCB R180919A
14	MB-H2O,MBLK,1,	6	1000	Unknown		09/27/2018 10:08	Finished	MB R180919A
15	LCS-H2O,LCS,1,	7	1000	Unknown		09/27/2018 10:18	Finished	LCS @5ppb, IWST-180622B
16	MB-H2O,MBLK,1,	9	1000	Unknown		09/27/2018 10:31	Finished	MB R180919A
17	N032246-001A,SAMF	10	1000	Unknown		09/27/2018 10:42	Finished	SAMP,1>10mL
18	N032246-001AMS,MS	11	1000	Unknown		09/27/2018 10:52	Finished	MS (5ppb), IWST-180622B,1>
19	N032246-007A,SAMF	12	1000	Unknown		09/27/2018 11:01	Finished	SAMP,0.5>10mL
20	N032246-007AMS,MS	13	1000	Unknown		09/27/2018 11:10	Finished	MS (5ppb), IWST-180622B,0.5
21	N032246-007AMSD,N	14	1000	Unknown		09/27/2018 11:20	Finished	MSD (5ppb), IWST-180622B,0
22	N032246-009A,SAMF	15	1000	Unknown		09/27/2018 11:29	Finished	SAMP,0.1>10mL
23	N032246-009AMS,MS	16	1000	Unknown		09/27/2018 11:39	Finished	MS (5ppb), IWST-180622B,0.1
24	CCV-2,CCV1,1,	17	1000	Unknown		09/27/2018 11:48	Finished	CCV @10ppb, IWST-180622A
25	CCB-2,CCB,1,	18	1000	Unknown		09/27/2018 11:58	Finished	CCB R180919A
26	N032246-001ADUP,D	19	1000	Unknown		09/27/2018 12:07	Finished	DUP,1>10mL
27	N032246-007A,SAMF	20	1000	Unknown		09/27/2018 12:17	Finished	SAMP,10mL
28	N032246-007AMS,MS	21	1000	Unknown		09/27/2018 12:26	Finished	MS (1ppb), IWST-180622B,10
29	N032246-009A,SAMF	22	1000	Unknown		09/27/2018 12:36	Finished	SAMP,10mL
30	N032246-009AMS,MS	23	1000	Unknown		09/27/2018 12:45	Finished	MS (1ppb), IWST-180622B,10
31	N032246-005A,SAMF	24	1000	Unknown		09/27/2018 12:55	Finished	SAMP,0.5>10mL
32	N032246-005AMS,MS	25	1000	Unknown		09/27/2018 13:04	Finished	MS (5ppb), IWST-180622B,0.5
33	N032246-008A,SAMF	26	1000	Unknown		09/27/2018 13:13	Finished	SAMP,0.1>10mL
34	N032246-008AMS,MS	27	1000	Unknown		09/27/2018 13:23	Finished	MS (5ppb), IWST-180622B,0.1
35	N032246-008AMSD,N	28	1000	Unknown		09/27/2018 13:32	Finished	MSD (5ppb), IWST-180622B,0
36	CCV-3,CCV,1,	29	1000	Unknown		09/27/2018 13:42	Finished	CCV @5ppb, IWST-180622A
37	CCB-3,CCB,1,	30	1000	Unknown		09/27/2018 13:51	Finished	CCB R180919A
38	N032246-005A,SAMF	31	1000	Unknown		09/27/2018 14:01	Finished	SAMP,10mL
39	N032246-005AMS,MS	32	1000	Unknown		09/27/2018 14:10	Finished	MS (1ppb), IWST-180622B,10
40	N032246-002A,SAMF	1	1000	Unknown		09/27/2018 14:23	Finished	SAMP,2>10mL
41	N032246-002AMS,MS	2	1000	Unknown		09/27/2018 14:34	Finished	MS (1ppb), IWST-180622B,2>
42	N032246-003A,SAMF	3	1000	Unknown		09/27/2018 14:44	Finished	SAMP,2>10mL
43	N032246-003AMS,MS	4	1000	Unknown		09/27/2018 14:53	Finished	MS (1ppb), IWST-180622B,2>
44	N032246-004A,SAMF	5	1000	Unknown		09/27/2018 15:03	Finished	SAMP,2>10mL
45	N032246-004AMS,MS	6	1000	Unknown		09/27/2018 15:12	Finished	MS (1ppb), IWST-180622B,2>
46	N032246-007A,SAMF	7	1000	Unknown		09/27/2018 15:22	Finished	SAMP,2>10mL
47	N032246-007AMS,MS	8	1000	Unknown		09/27/2018 15:31	Finished	MS (1ppb), IWST-180622B,2>
48	CCV-4,CCV1,1,	9	1000	Unknown		09/27/2018 15:41	Finished	CCV @10ppb, IWST-180622A
49	CCB-4,CCB,1,	10	1000	Unknown		09/27/2018 15:50	Finished	CCB R180919A
50	N032246-002A,SAMF	11	1000	Unknown		09/27/2018 15:59	Finished	SAMP,10mL
51	N032246-002AMS,MS	12	1000	Unknown		09/27/2018 16:09	Finished	MS (1ppb), IWST-180622B,10
52	N032246-003A,SAMF	13	1000	Unknown		09/27/2018 16:18	Finished	SAMP,10mL
53	N032246-003AMS,MS	14	1000	Unknown		09/27/2018 16:28	Finished	MS (1ppb), IWST-180622B,10
54	N032246-004A,SAMF	15	1000	Unknown		09/27/2018 16:37	Finished	SAMP,10mL
55	N032246-004AMS,MS	16	1000	Unknown		09/27/2018 16:47	Finished	MS (1ppb), IWST-180622B,10
56	N032246-006A,SAMF	17	1000	Unknown		09/27/2018 16:56	Finished	SAMP,10mL
57	N032246-006AMS,MS	18	1000	Unknown		09/27/2018 17:06	Finished	MS (1ppb), IWST-180622B,10
58	CCV-5,CCV,1,	19	1000	Unknown		09/27/2018 17:15	Finished	CCV @5ppb, IWST-180622A
59	CCB-5,CCB,1,	20	1000	Unknown		09/27/2018 17:25	Finished	CCB R180919A
60	SHUTDOWN	21	1000	Unknown		09/27/2018 17:34	Finished	

61	Eluent: R180927A	22	1000	Unknown		n.a.	Finished	Eluent
62	PCR: R180926B	23	1000	Unknown		n.a.	Finished	Post-Column Reagent



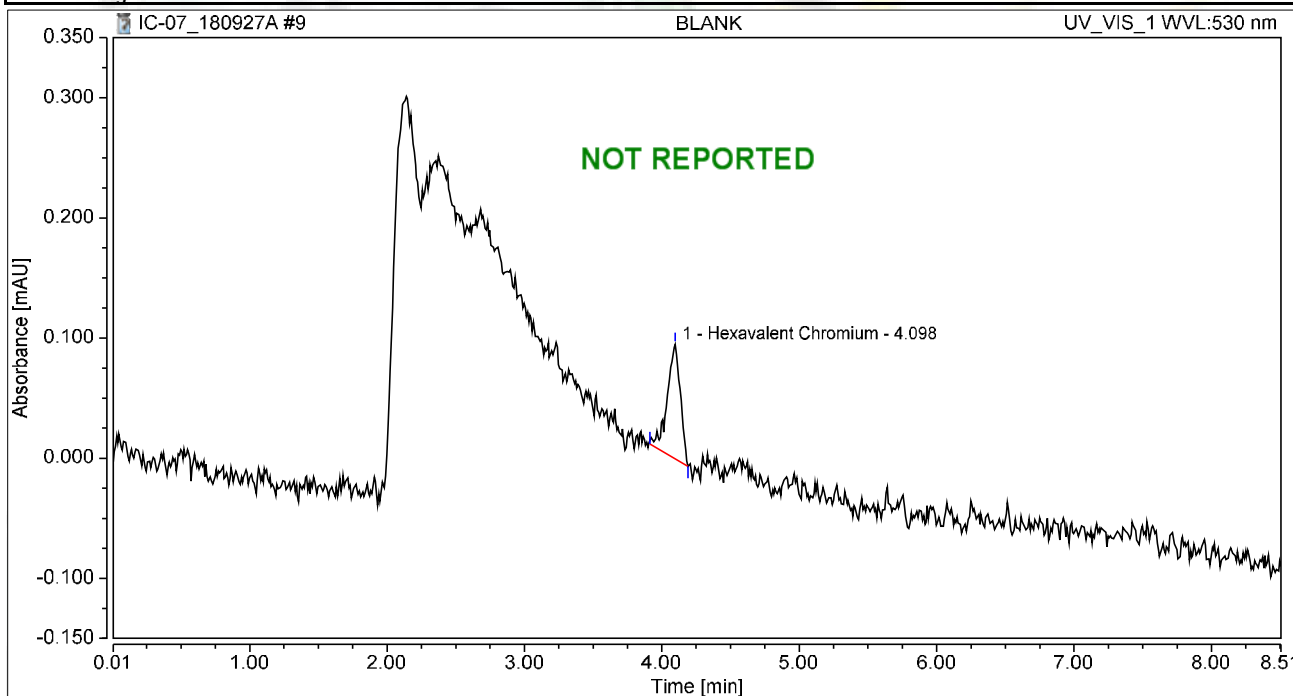


### Chromatogram and Results

#### Injection Details

Injection Name:	<b>BLANK</b>	Run Time (min):	<b>8.50</b>
Vial Number:	<b>1</b>	Injection Volume:	<b>1000.00</b>
Injection Type:	<b>Unknown</b>	Channel:	<b>UV_VIS_1</b>
Calibration Level:		Wavelength:	<b>530.0</b>
Instrument Method:	<b>Hex Chrom 4 mm</b>	Bandwidth:	<b>n.a.</b>
Processing Method:	<b>180921_IC-07_Cr6_218_6_HIGH</b>	Dilution Factor:	<b>1.0000</b>
Injection Date/Time:	<b>27/Sep/18 09:19</b>	Sample Weight:	<b>1.0000</b>

#### Chromatogram



#### Integration Results

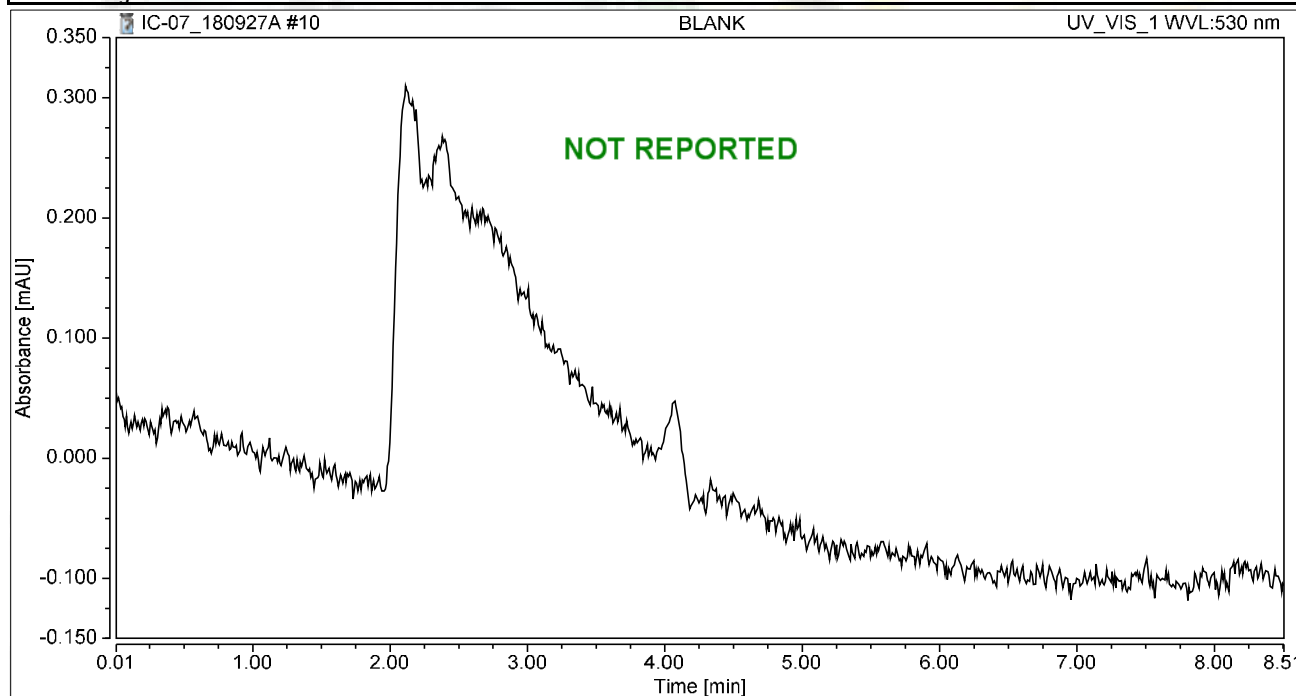
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.010	0.095	100.00	100.00	0.0414
<b>Total:</b>			<b>0.010</b>	<b>0.095</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 09:30	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

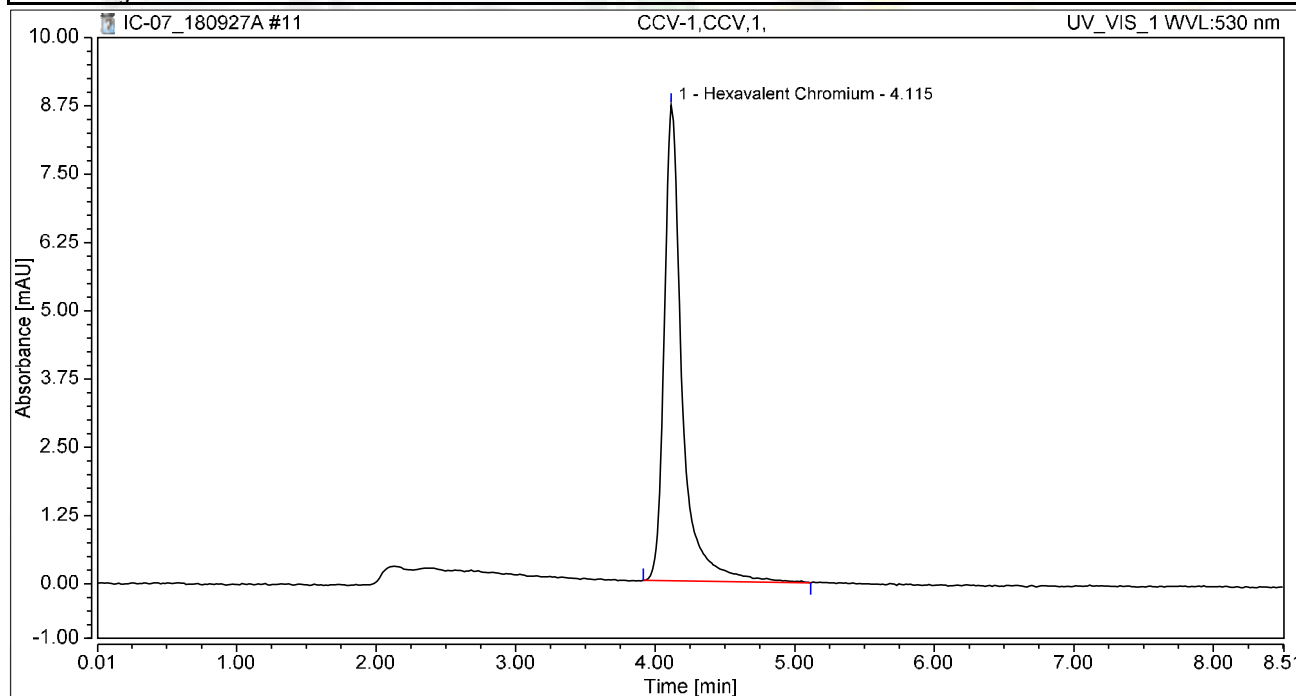
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-1,CCV,1,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 09:40	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

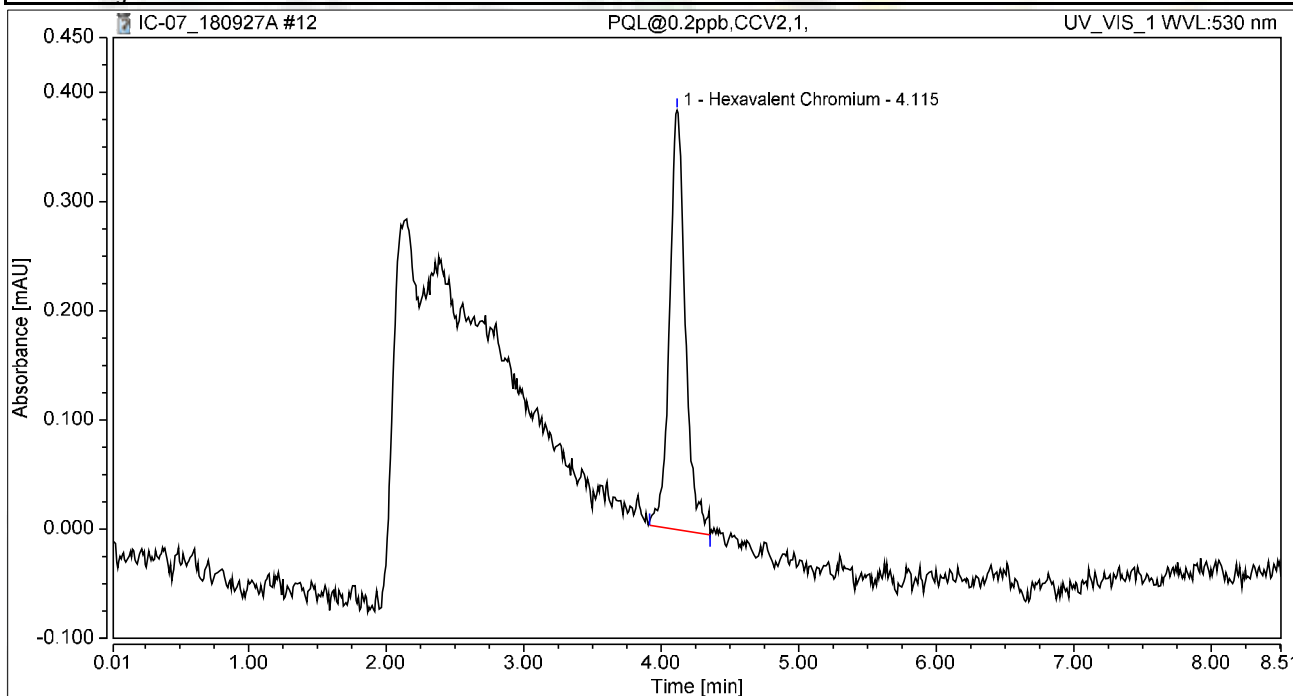
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.292	8.707	100.00	100.00	5.1132
<b>Total:</b>			<b>1.292</b>	<b>8.707</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.49
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 09:49	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.051	0.384	100.00	100.00	0.2025
<b>Total:</b>			<b>0.051</b>	<b>0.384</b>	<b>100.00</b>	<b>100.00</b>	

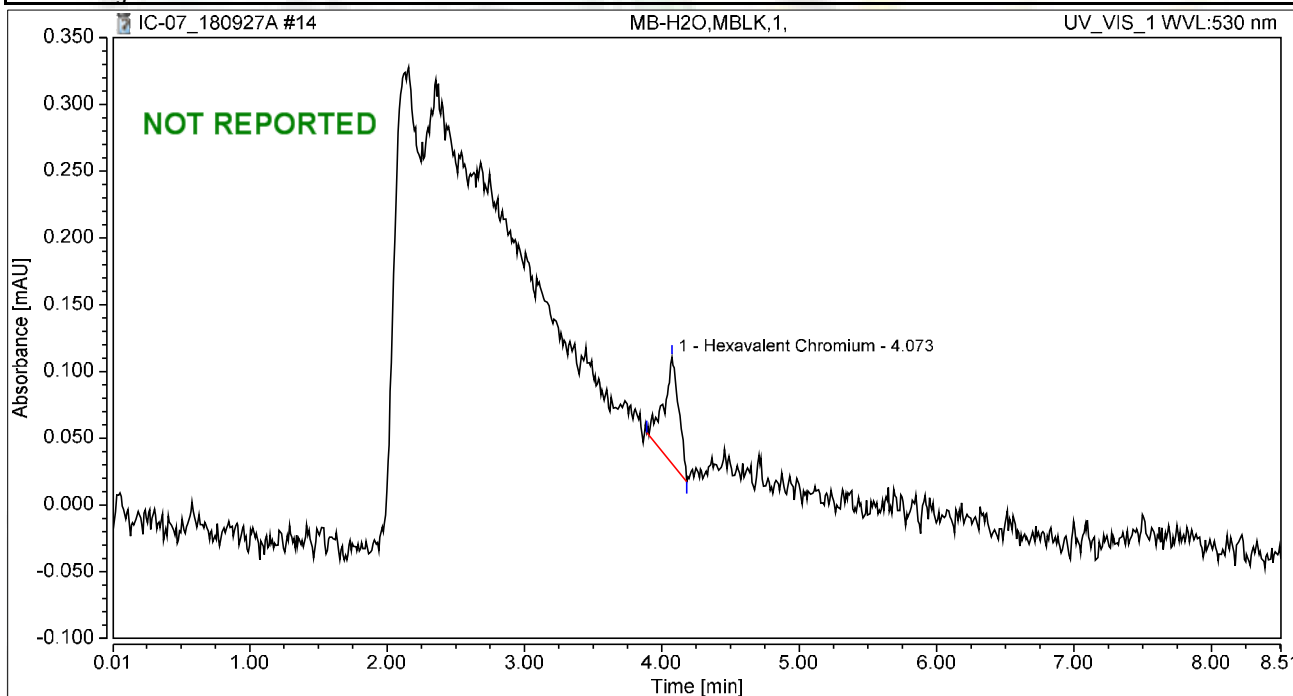


### Chromatogram and Results

**Injection Details**

Injection Name:	MB-H2O,MBLK,1,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 10:08	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

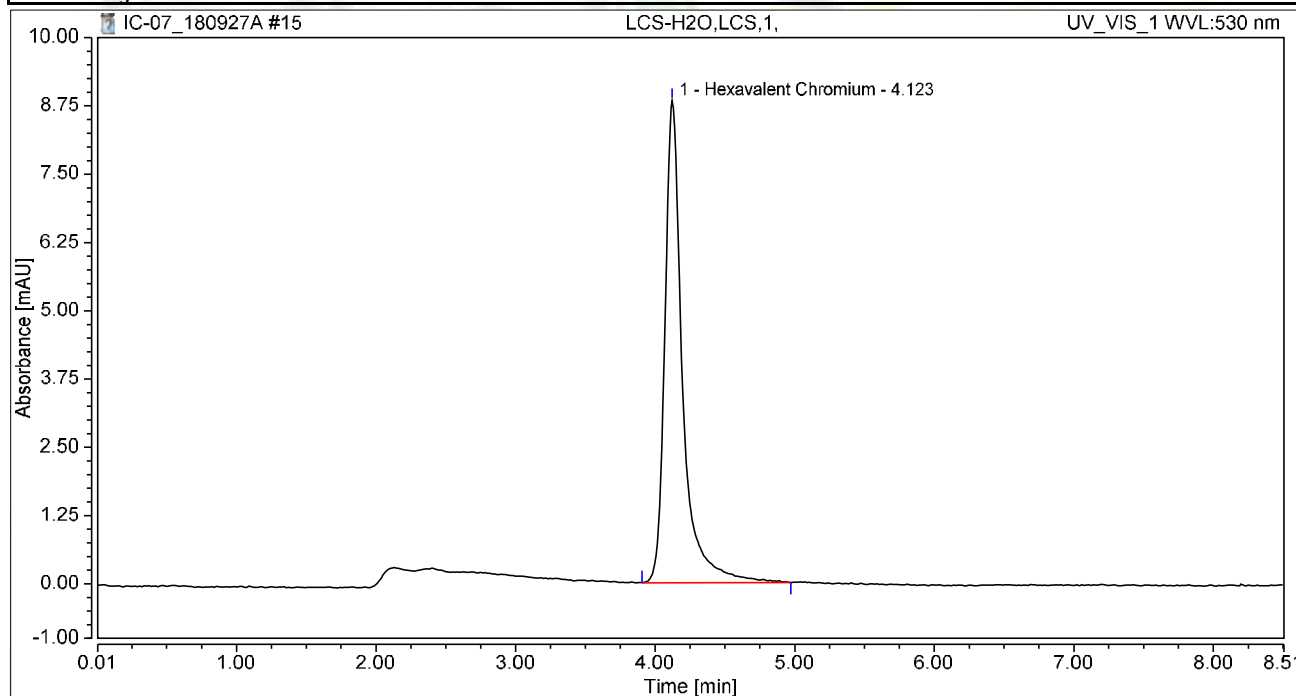
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.010	0.080	100.00	100.00	0.0403
<b>Total:</b>			<b>0.010</b>	<b>0.080</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	LCS-H2O,LCS,1,	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 10:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

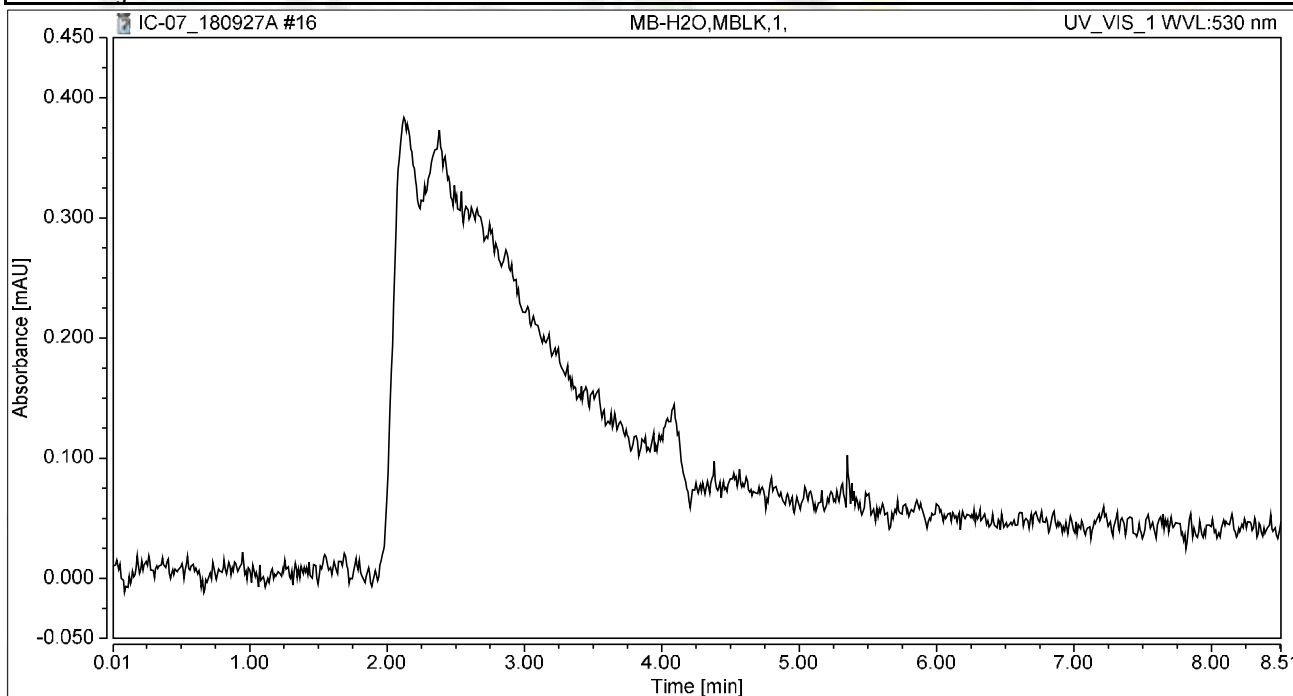
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	1.299	8.827	100.00	100.00	5.1378
<b>Total:</b>			<b>1.299</b>	<b>8.827</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	MB-H2O,MBLK,1,	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 10:31	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

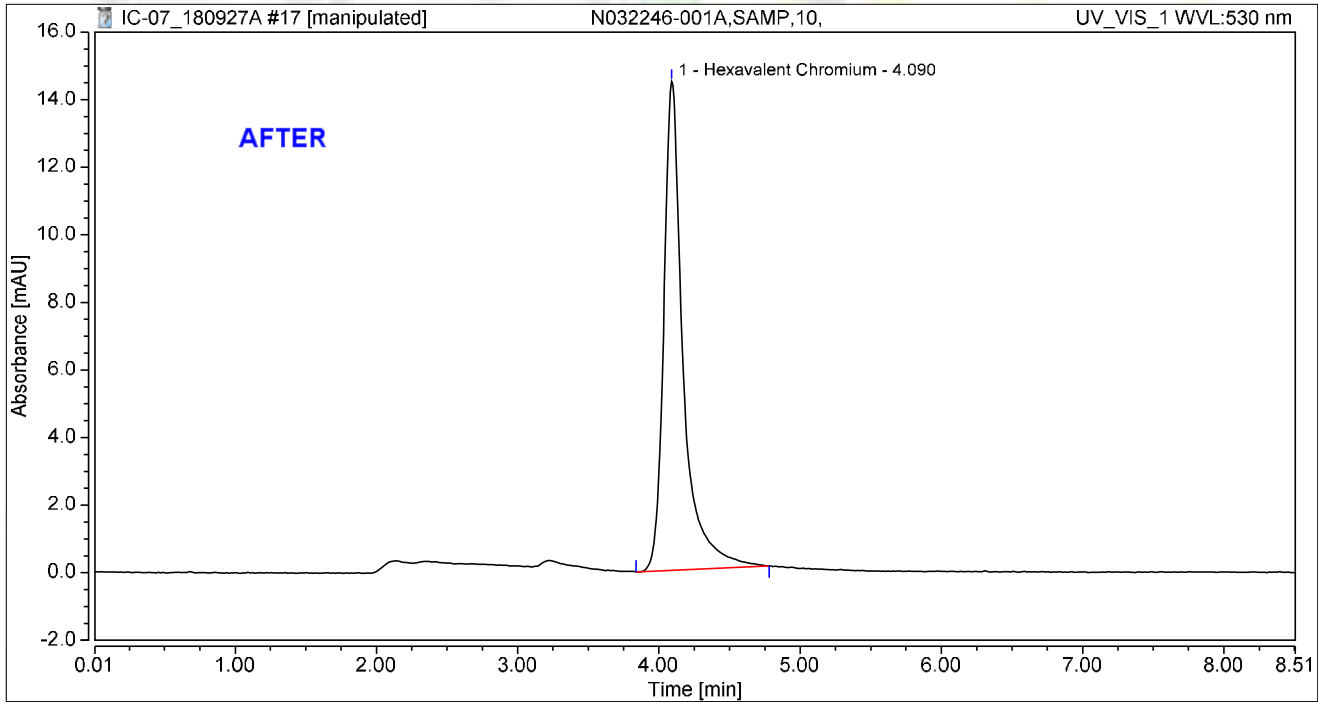


### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-001A,SAMP,10,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 10:42	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	2.301	14.465	100.00	100.00	9.1031
<b>Total:</b>			<b>2.301</b>	<b>14.465</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/7/2018

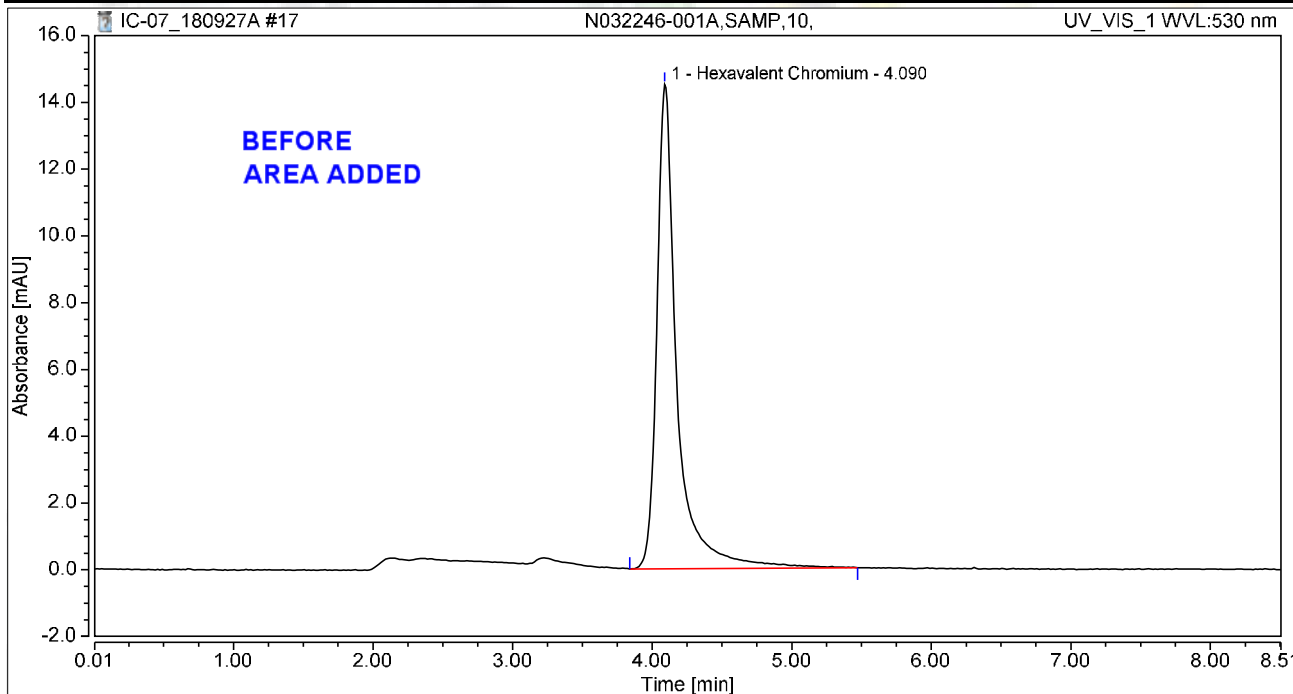
Reviewed by:  
*Nancy* 10/11/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-001A,SAMP,10,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 10:42	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	2.429	14.510	100.00	100.00	9.6108
<b>Total:</b>			<b>2.429</b>	<b>14.510</b>	<b>100.00</b>	<b>100.00</b>	

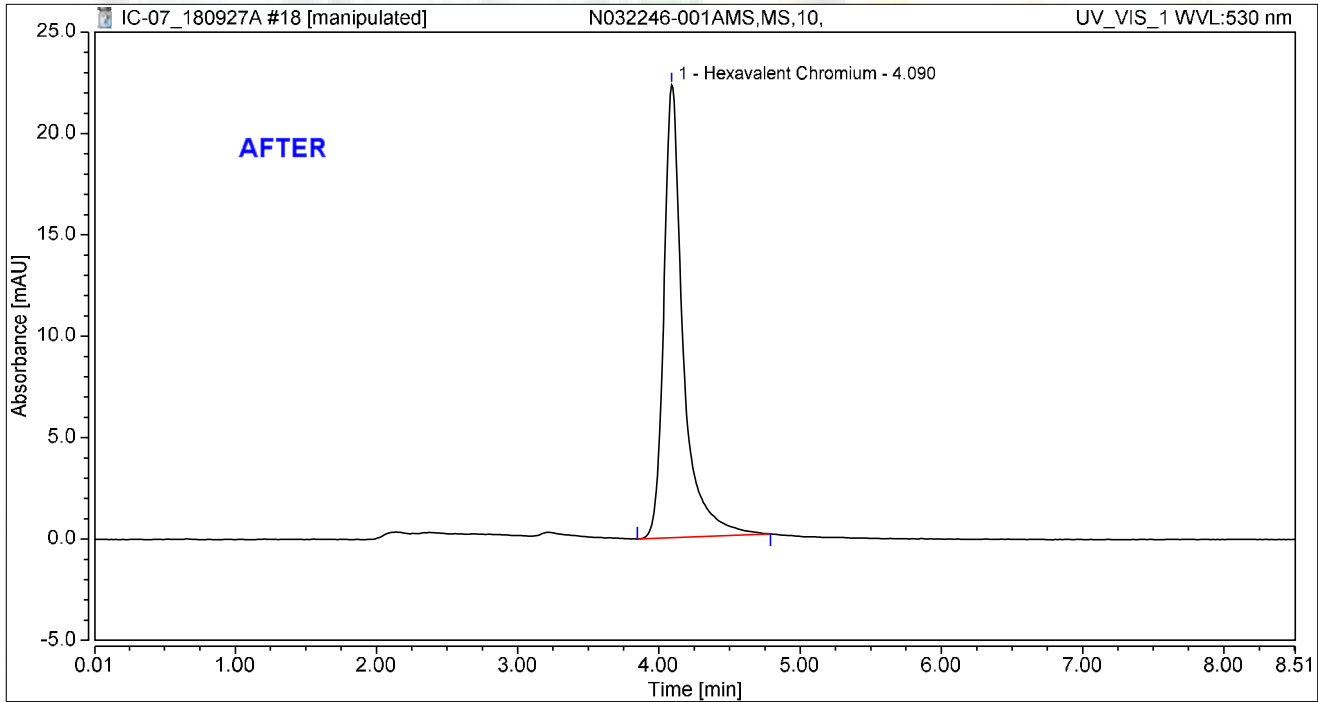
rba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-001AMS,MS,10,	Run Time (min):	8.50
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 10:52	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	3.554	22.344	100.00	100.00	14.0625
<b>Total:</b>			<b>3.554</b>	<b>22.344</b>	<b>100.00</b>	<b>100.00</b>	

*nba* 10/7/2018

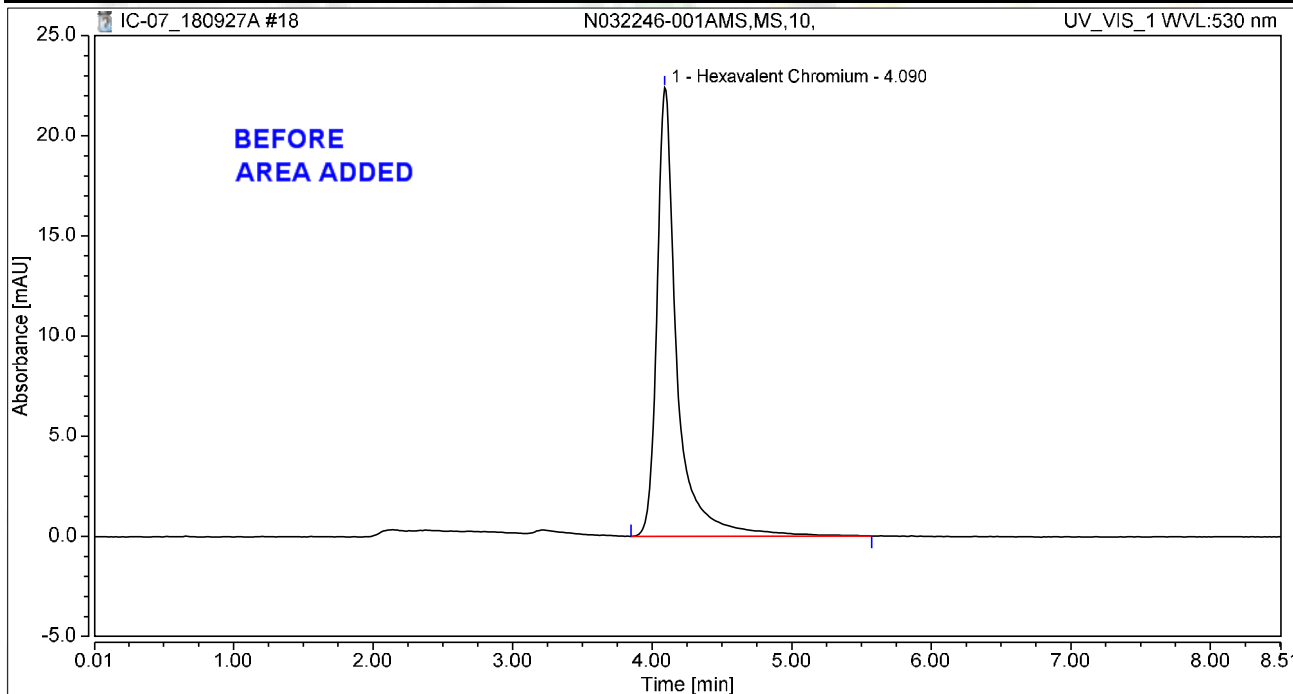
Reviewed by:  
*Money* 10/11/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-001AMS,MS,10,	Run Time (min):	8.50
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 10:52	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	3.745	22.406	100.00	100.00	14.8155
Total:			3.745	22.406	100.00	100.00	

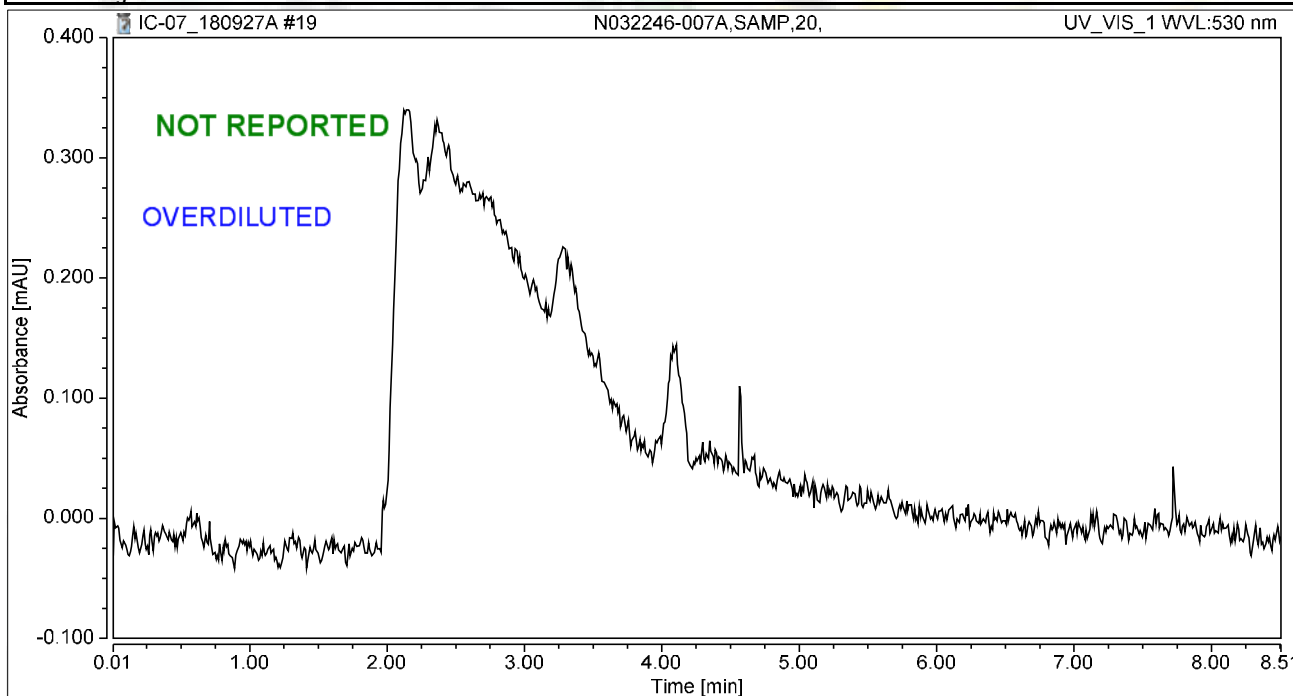
nba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-007A,SAMP,20,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 11:01	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

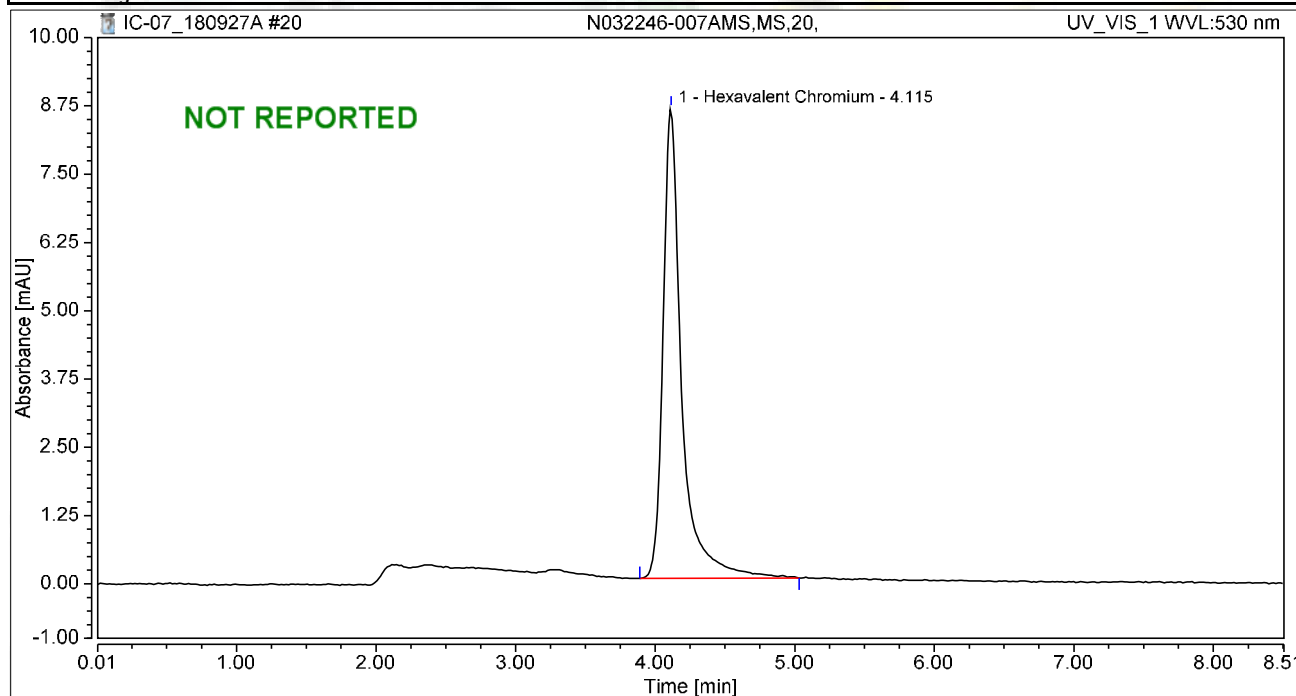
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-007AMS,MS,20,	Run Time (min):	8.50
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 11:10	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

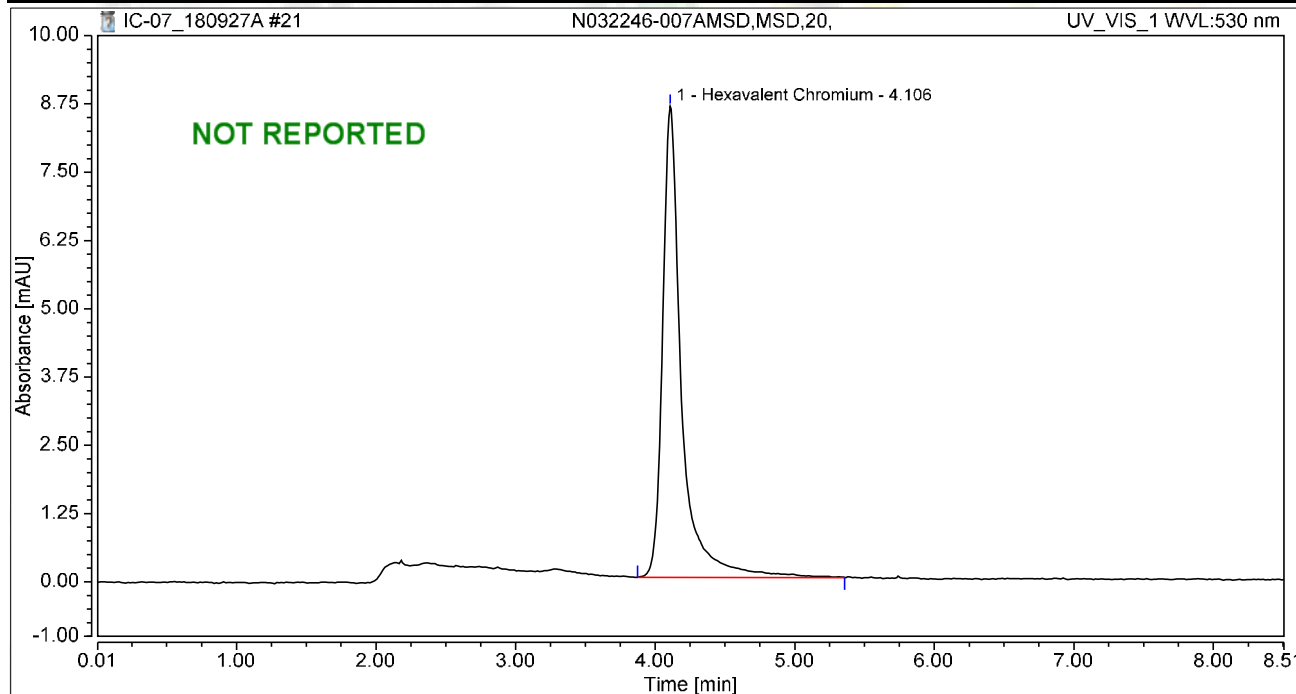
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.335	8.613	100.00	100.00	5.2807
<b>Total:</b>			<b>1.335</b>	<b>8.613</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-007AMSD,MSD,20,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 11:20	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

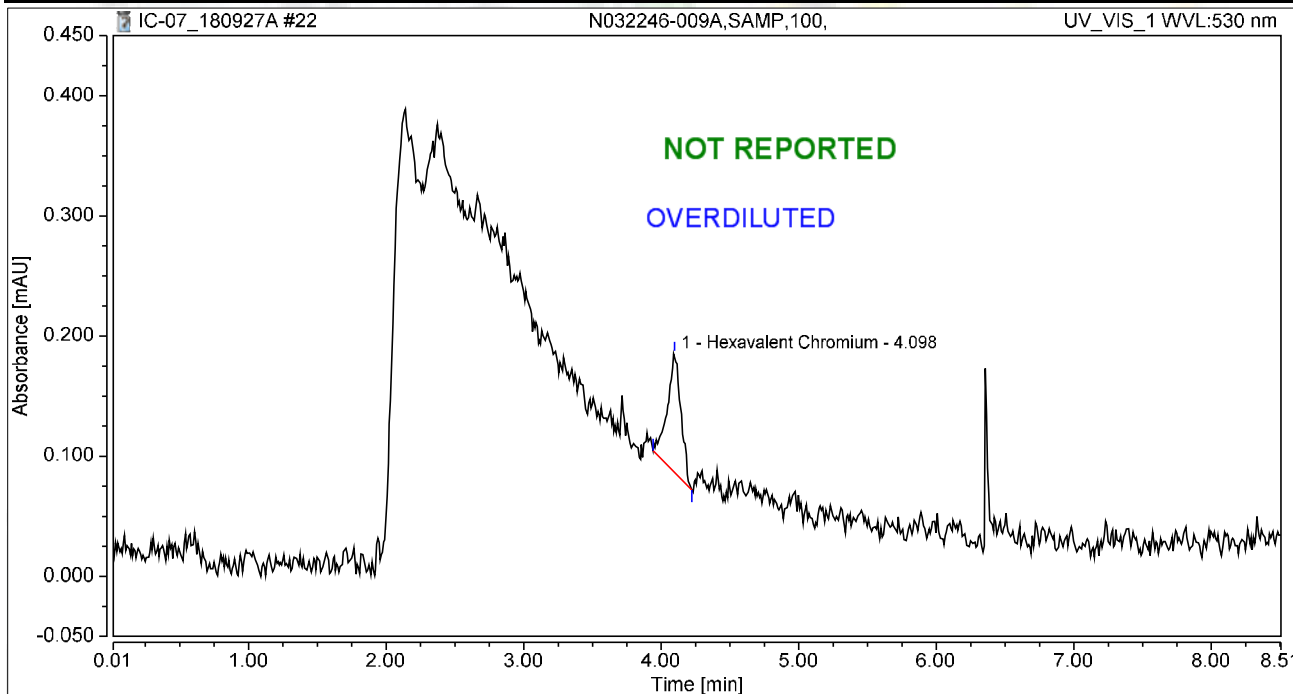
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	1.366	8.629	100.00	100.00	5.4058
<b>Total:</b>			<b>1.366</b>	<b>8.629</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-009A,SAMP,100,	Run Time (min):	8.49
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 11:29	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.011	0.099	100.00	100.00	0.0450
<b>Total:</b>			<b>0.011</b>	<b>0.099</b>	<b>100.00</b>	<b>100.00</b>	

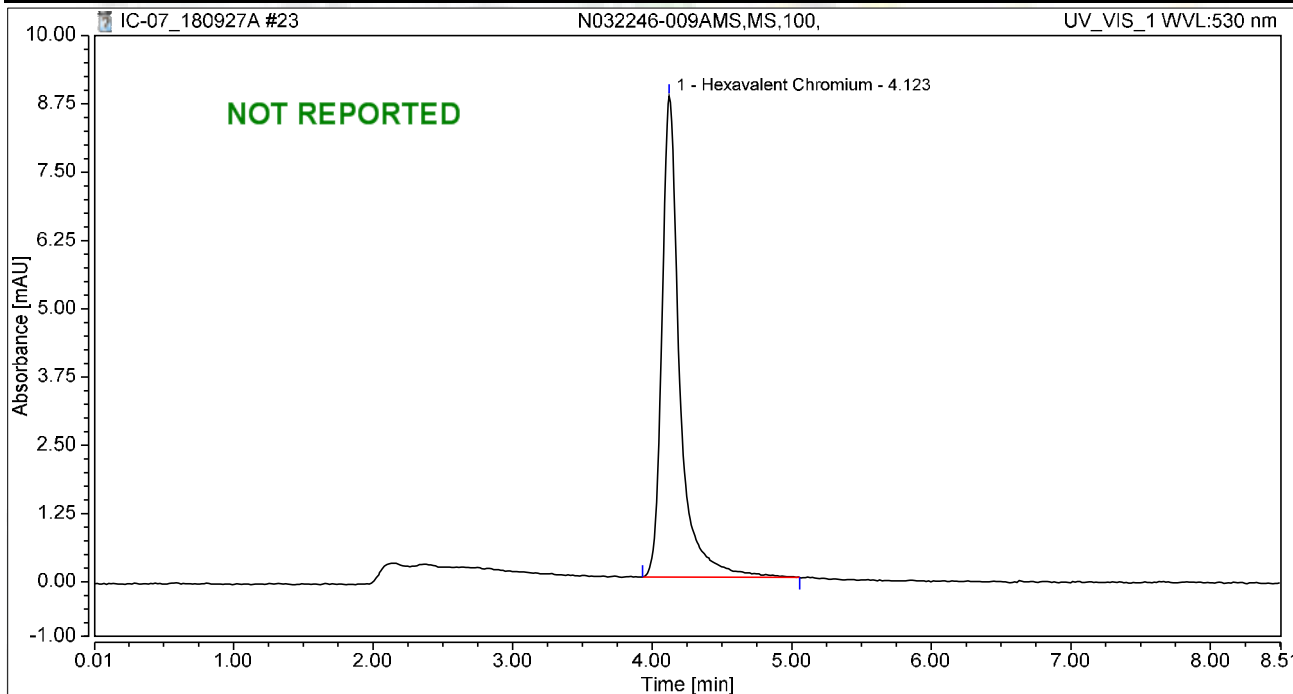


### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-009AMS,MS,100,	Run Time (min):	8.50
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 11:39	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

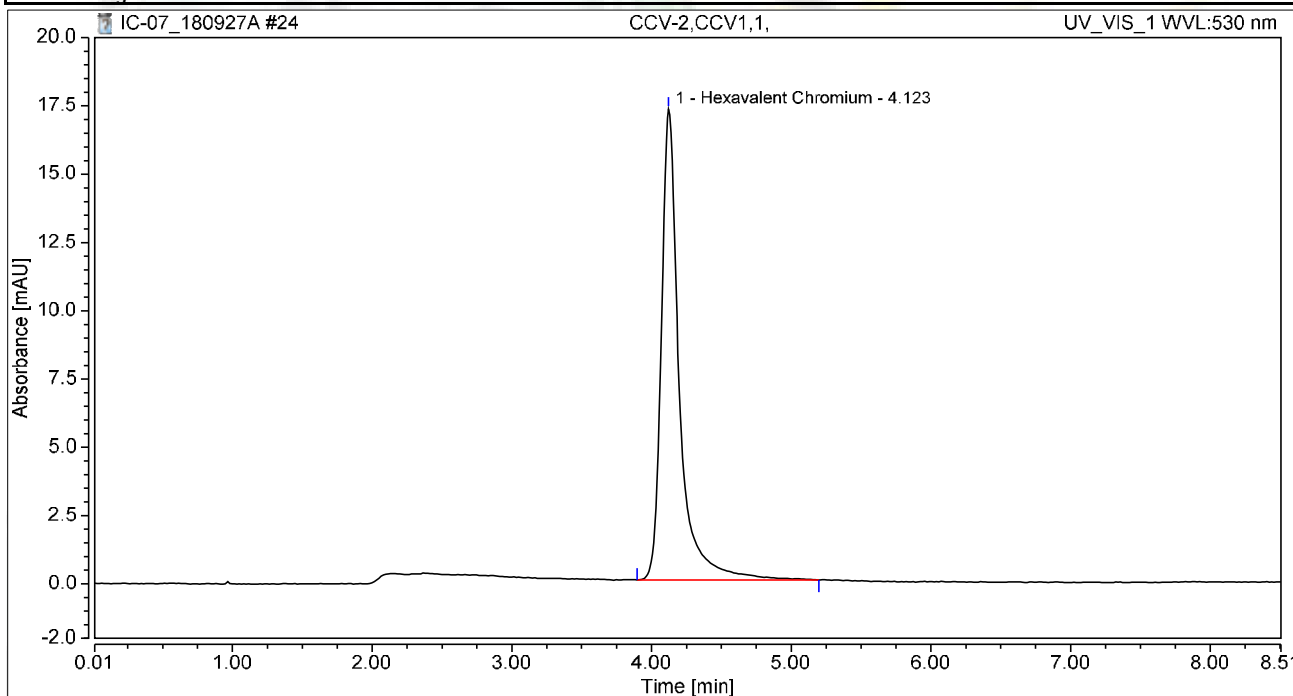
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	1.307	8.811	100.00	100.00	5.1707
Total:			1.307	8.811	100.00	100.00	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-2,CCV1,1,	Run Time (min):	8.49
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 11:48	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

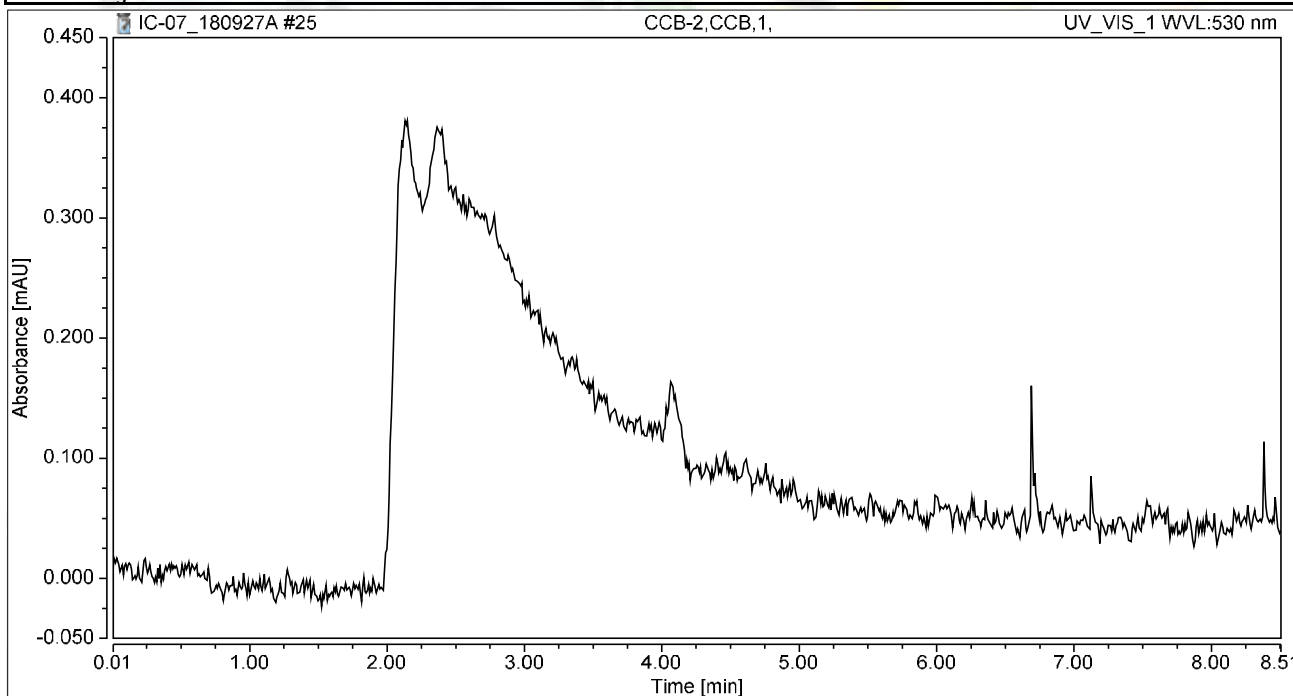
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	2.583	17.241	100.00	100.00	10.2198
<b>Total:</b>			<b>2.583</b>	<b>17.241</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-2,CCB,1,	Run Time (min):	8.50
Vial Number:	18	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 11:58	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

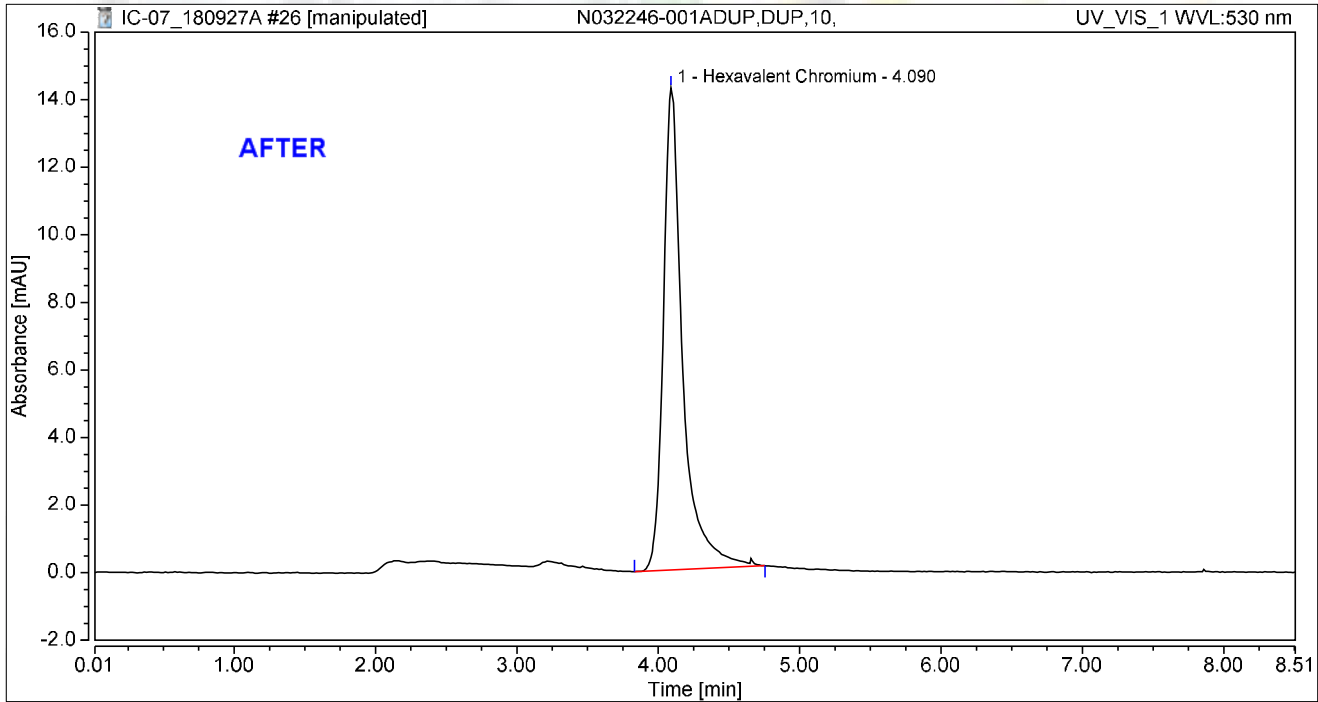
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-001ADUP,DUP,10,	Run Time (min):	8.49
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 12:07	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	2.271	14.265	100.00	100.00	8.9850
<b>Total:</b>			<b>2.271</b>	<b>14.265</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/7/2018

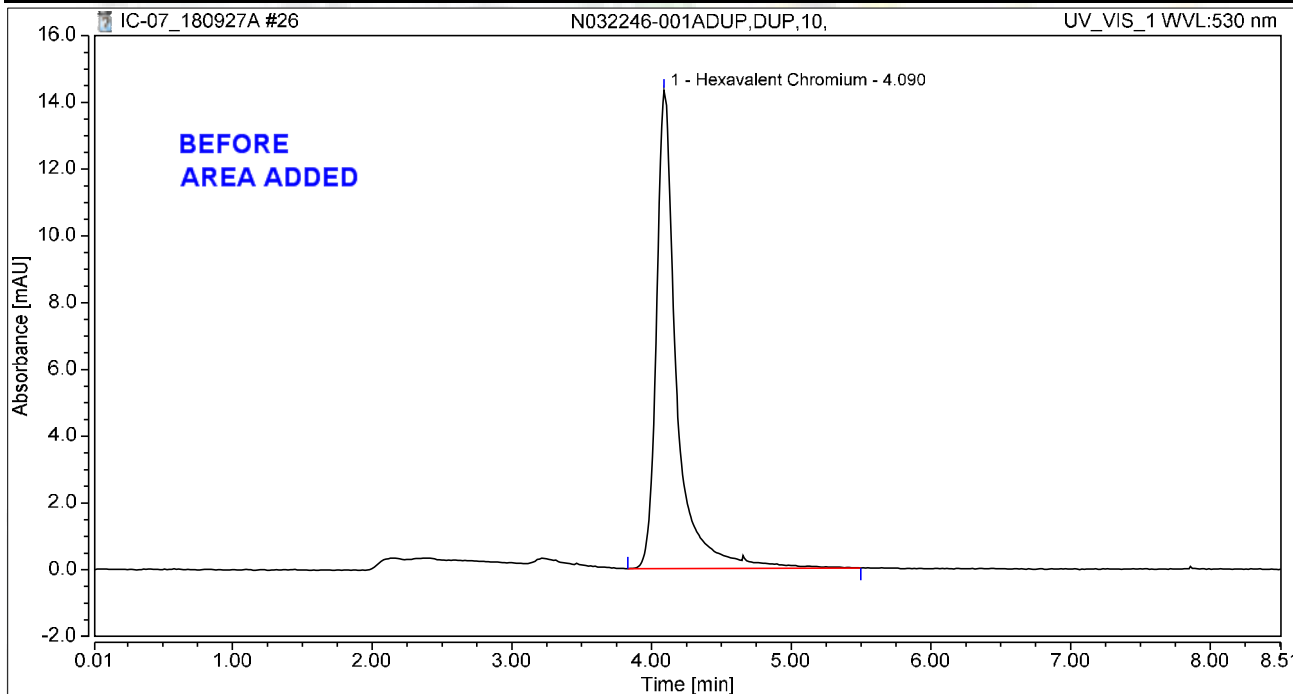
Reviewed by:  
*Harvey* 10/11/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-001ADUP,DUP,10,	Run Time (min):	8.49
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 12:07	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	2.404	14.314	100.00	100.00	9.5129
<b>Total:</b>			<b>2.404</b>	<b>14.314</b>	<b>100.00</b>	<b>100.00</b>	

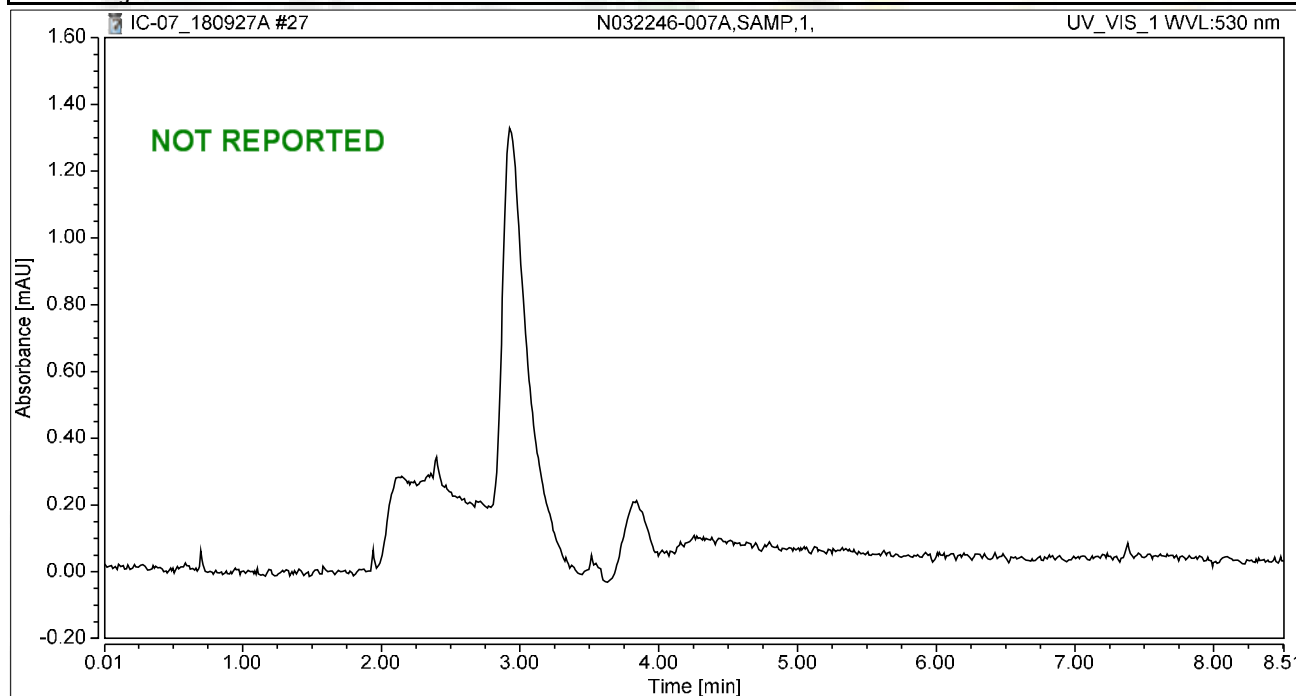
rba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-007A,SAMP,1,	Run Time (min):	8.50
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 12:17	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

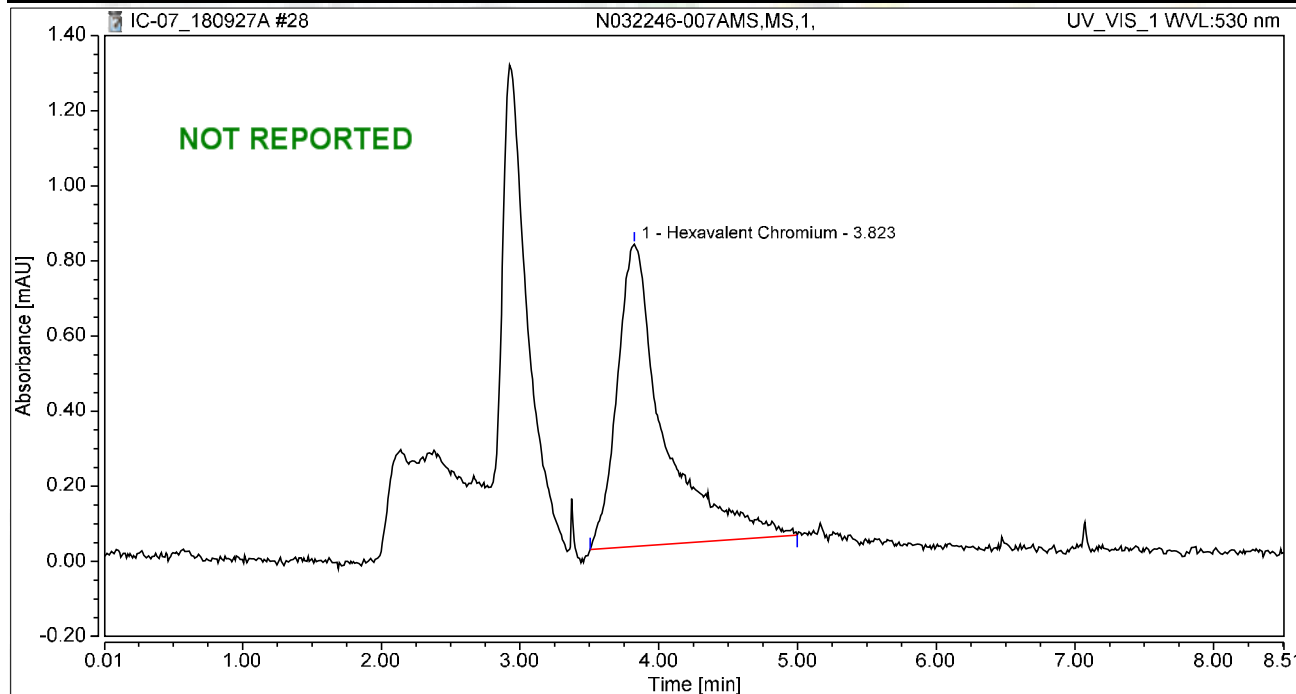
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-007AMS,MS,1,	Run Time (min):	8.50
Vial Number:	21	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 12:26	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

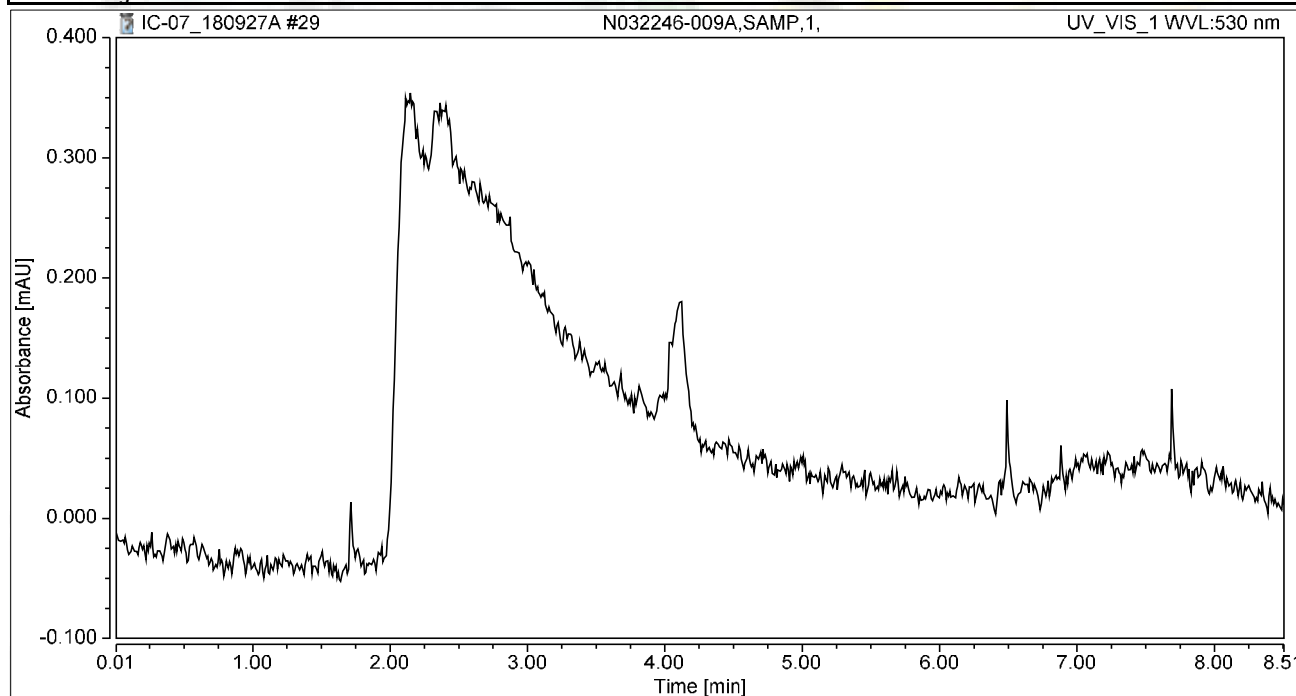
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.823	0.316	0.806	100.00	100.00	1.2512
<b>Total:</b>			<b>0.316</b>	<b>0.806</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-009A,SAMP,1,	Run Time (min):	8.50
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 12:36	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

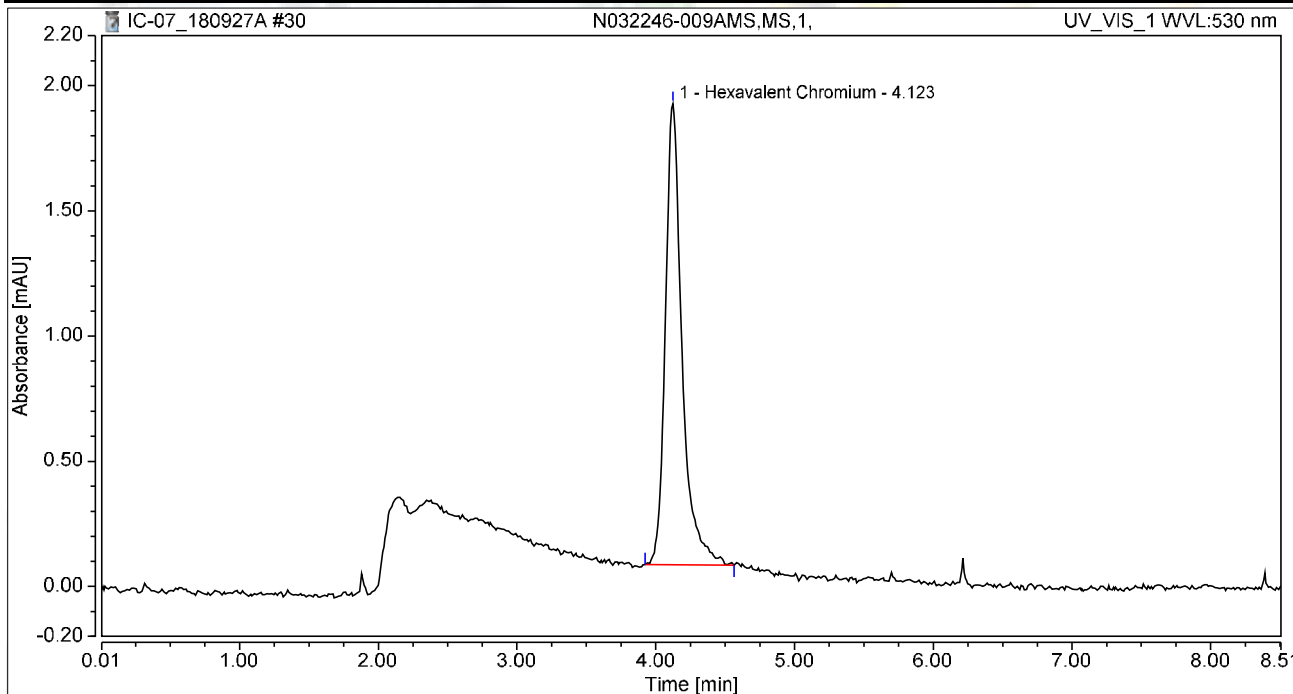


### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-009AMS,MS,1,	Run Time (min):	8.50
Vial Number:	23	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 12:45	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

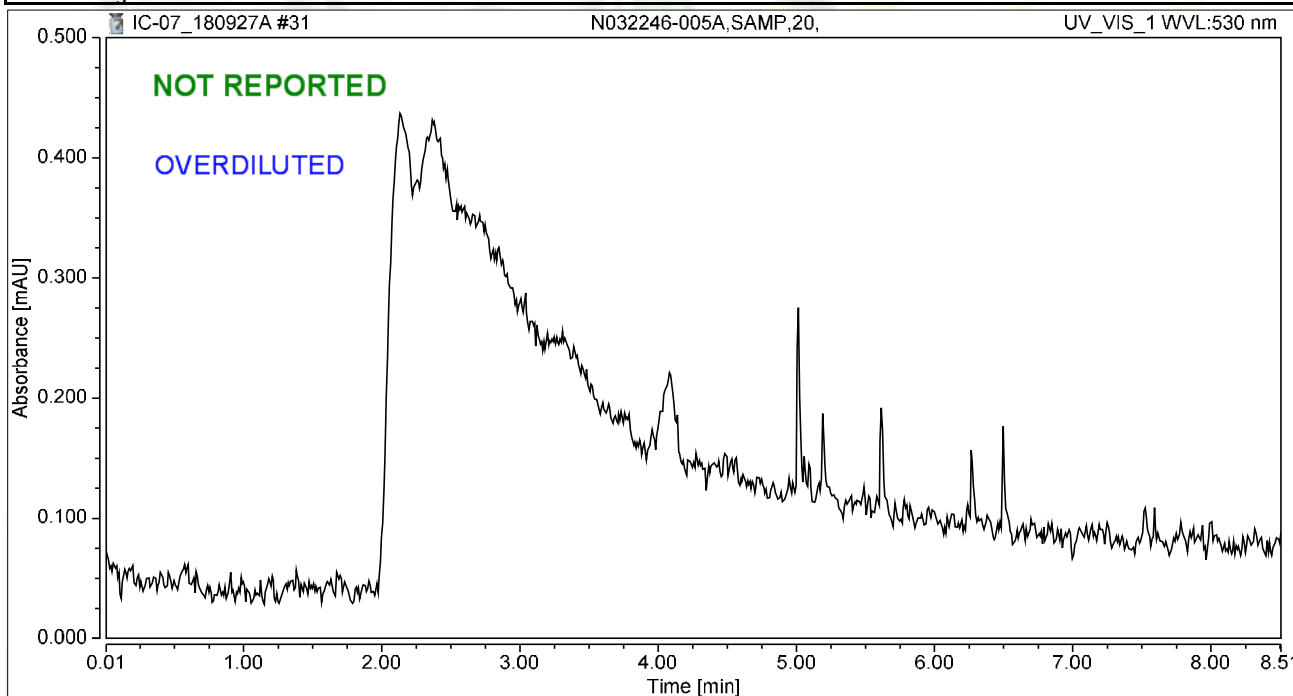
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.257	1.842	100.00	100.00	1.0186
<b>Total:</b>			<b>0.257</b>	<b>1.842</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-005A,SAMP,20,	Run Time (min):	8.50
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 12:55	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

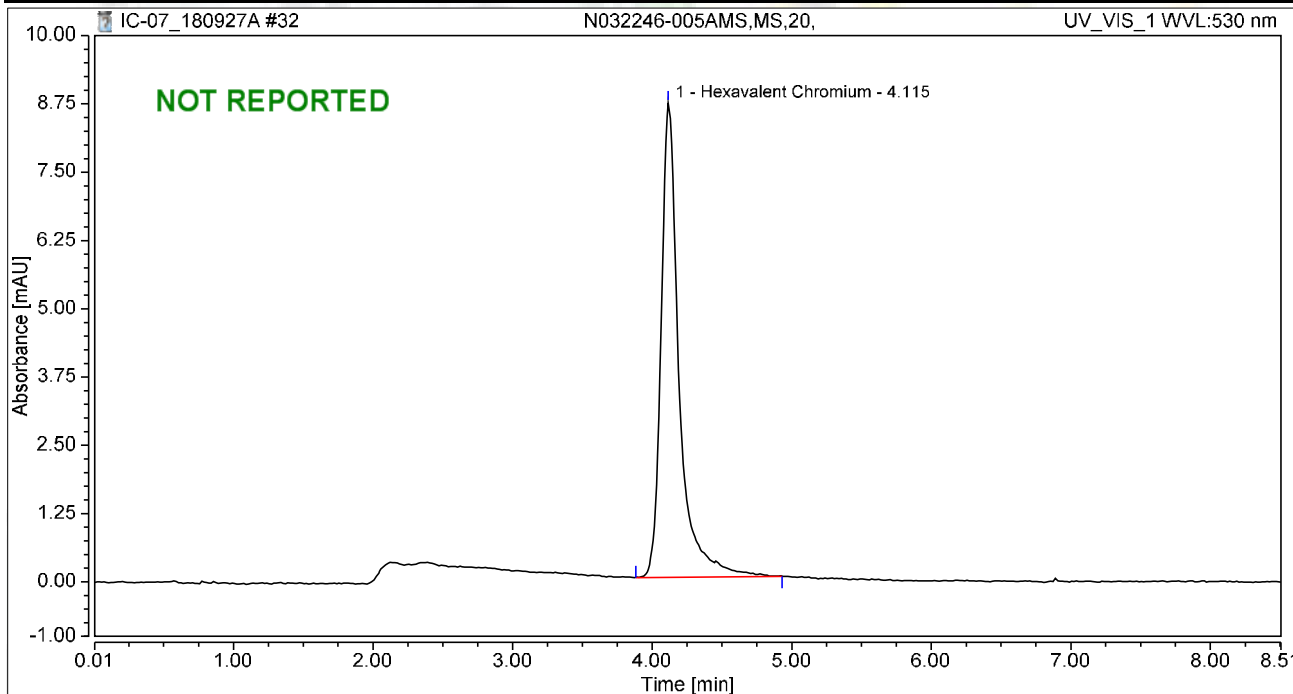
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-005AMS,MS,20,	Run Time (min):	8.50
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 13:04	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

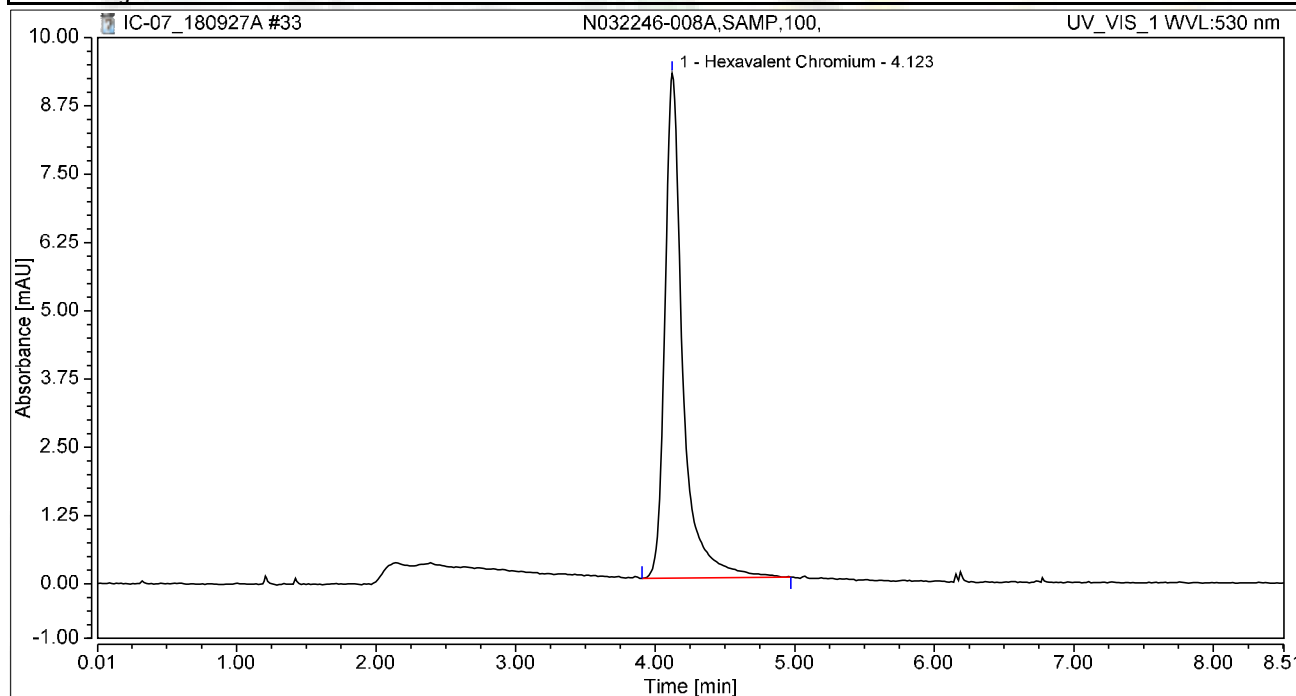
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.305	8.685	100.00	100.00	5.1611
<b>Total:</b>			<b>1.305</b>	<b>8.685</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-008A,SAMP,100,	Run Time (min):	8.50
Vial Number:	26	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 13:13	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

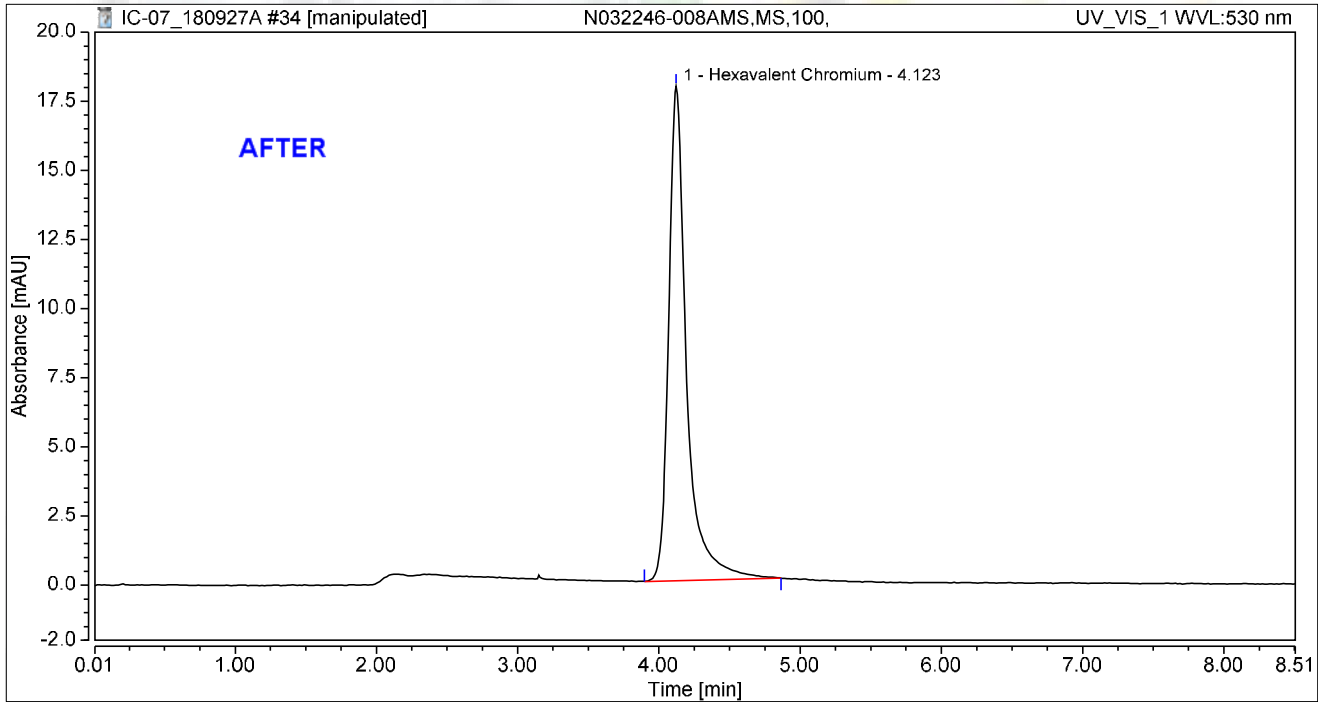
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	1.373	9.241	100.00	100.00	5.4325
<b>Total:</b>			<b>1.373</b>	<b>9.241</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-008AMS,MS,100,	Run Time (min):	8.50
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 13:23	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	2.639	17.894	100.00	100.00	10.4405
<b>Total:</b>			<b>2.639</b>	<b>17.894</b>	<b>100.00</b>	<b>100.00</b>	

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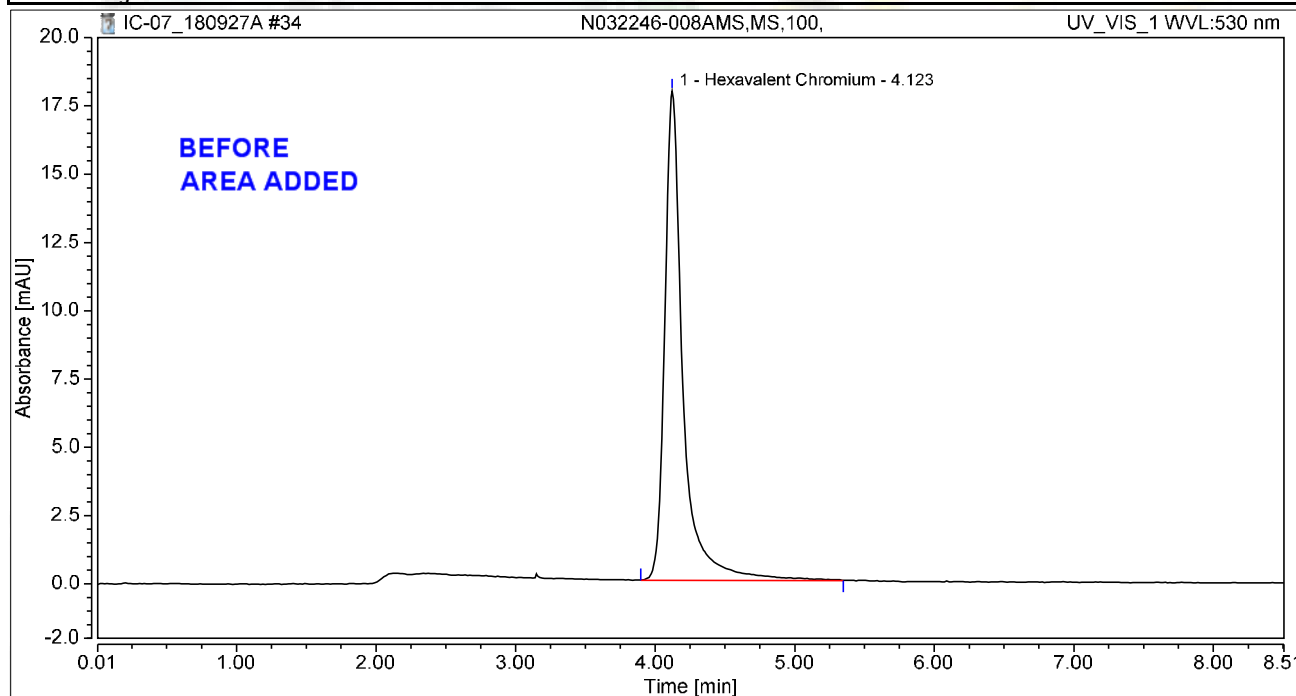
Reviewed by:  
*Marcy* 10/11/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-008AMS,MS,100,	Run Time (min):	8.50
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 13:23	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	2.725	17.921	100.00	100.00	10.7820
<b>Total:</b>			<b>2.725</b>	<b>17.921</b>	<b>100.00</b>	<b>100.00</b>	

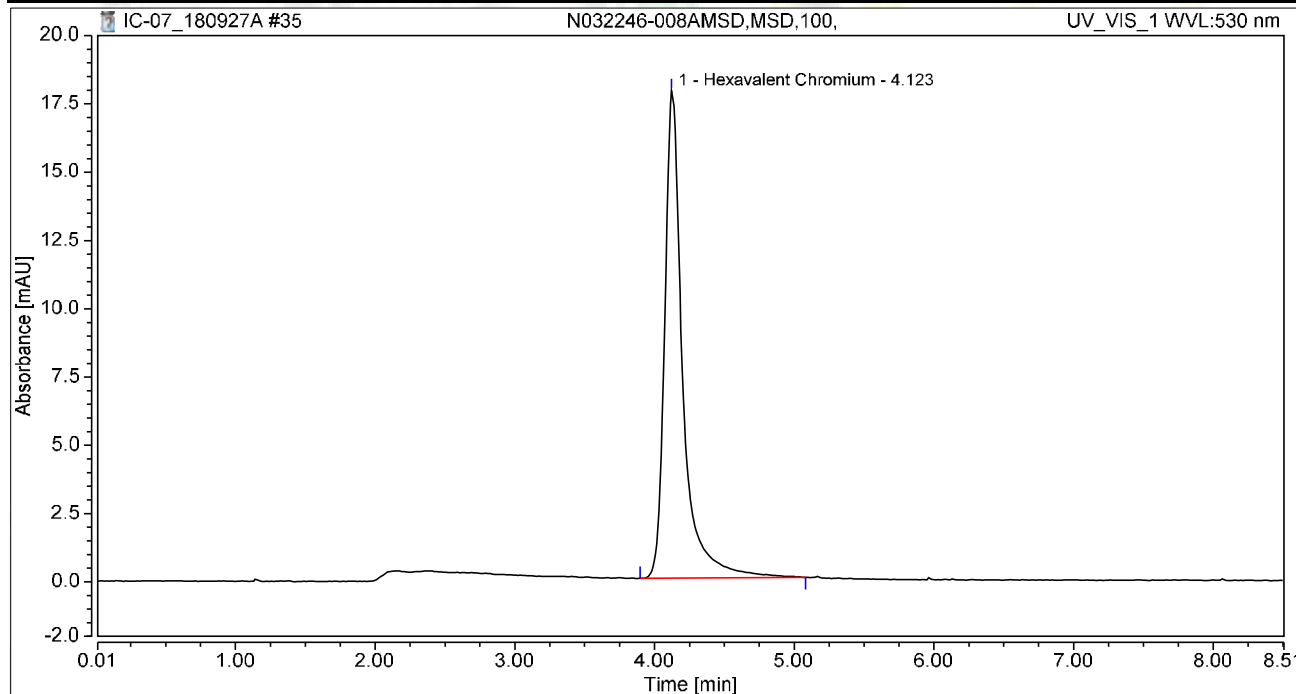
rba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-008AMSD,MSD,100,	Run Time (min):	8.49
Vial Number:	28	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 13:32	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

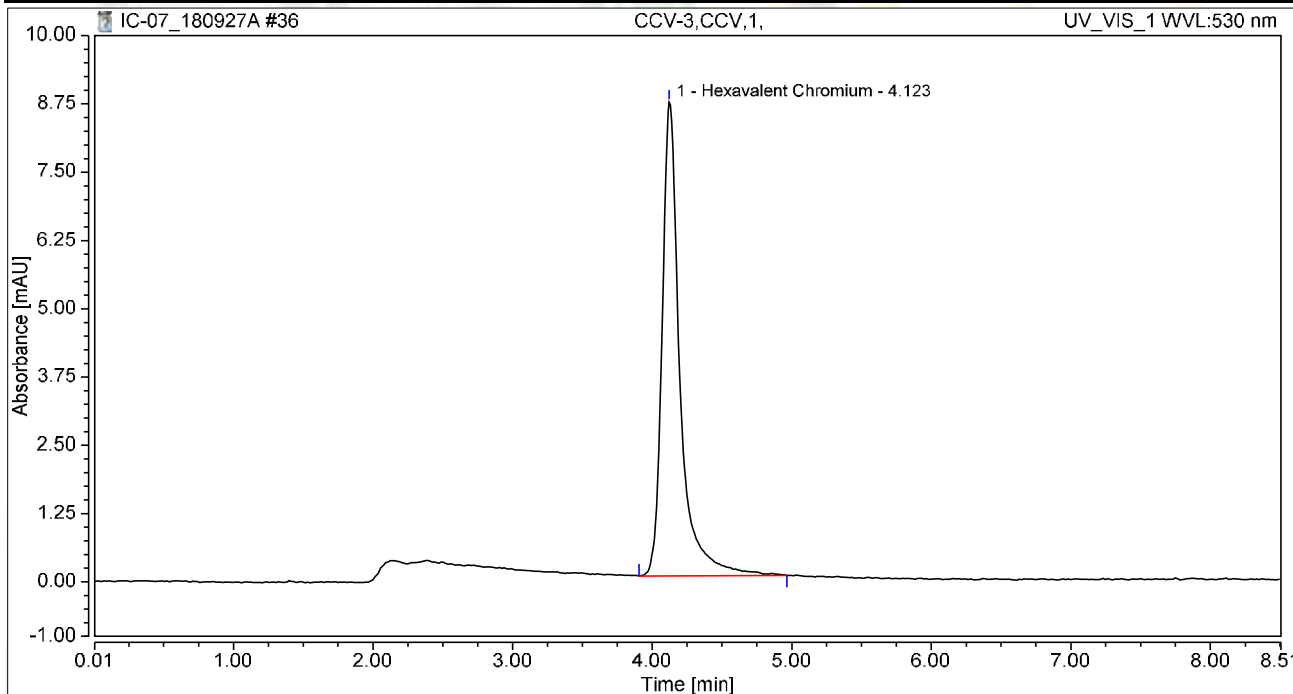
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	2.672	17.846	100.00	100.00	10.5725
<b>Total:</b>			<b>2.672</b>	<b>17.846</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-3,CCV,1,	Run Time (min):	8.50
Vial Number:	29	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 13:42	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	1.290	8.676	100.00	100.00	5.1032
<b>Total:</b>			<b>1.290</b>	<b>8.676</b>	<b>100.00</b>	<b>100.00</b>	

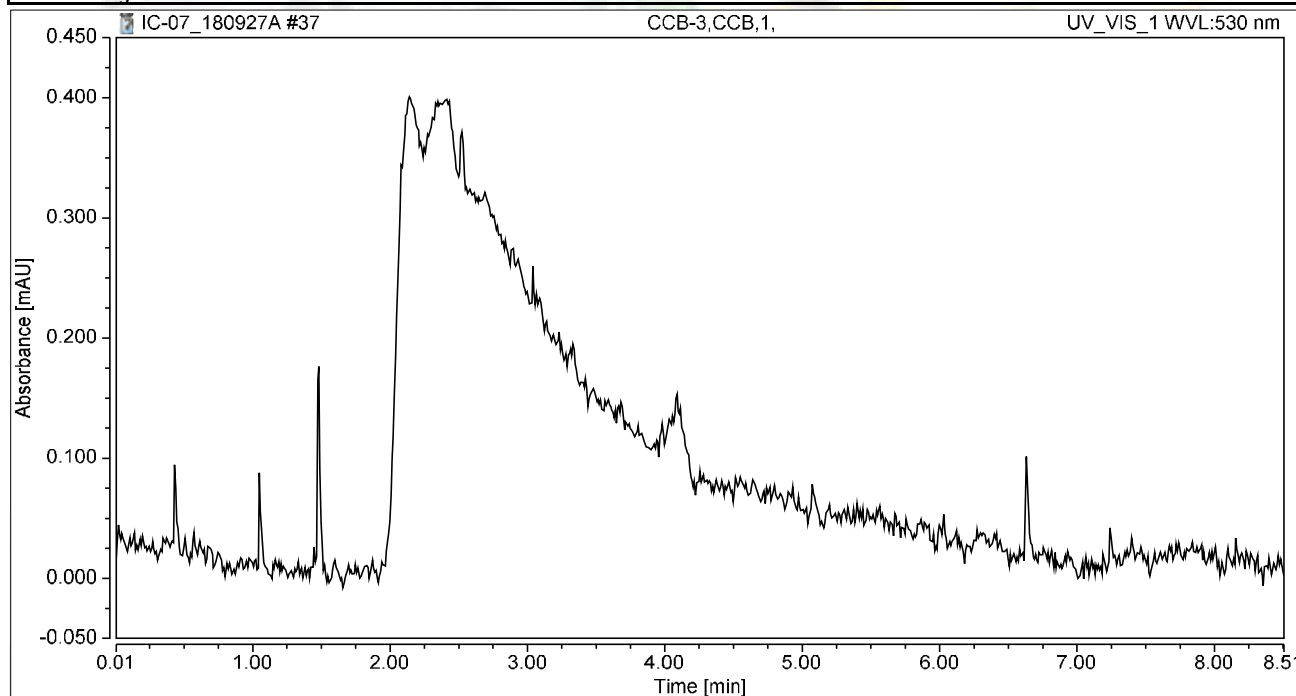


### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-3,CCB,1,	Run Time (min):	8.50
Vial Number:	30	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 13:51	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

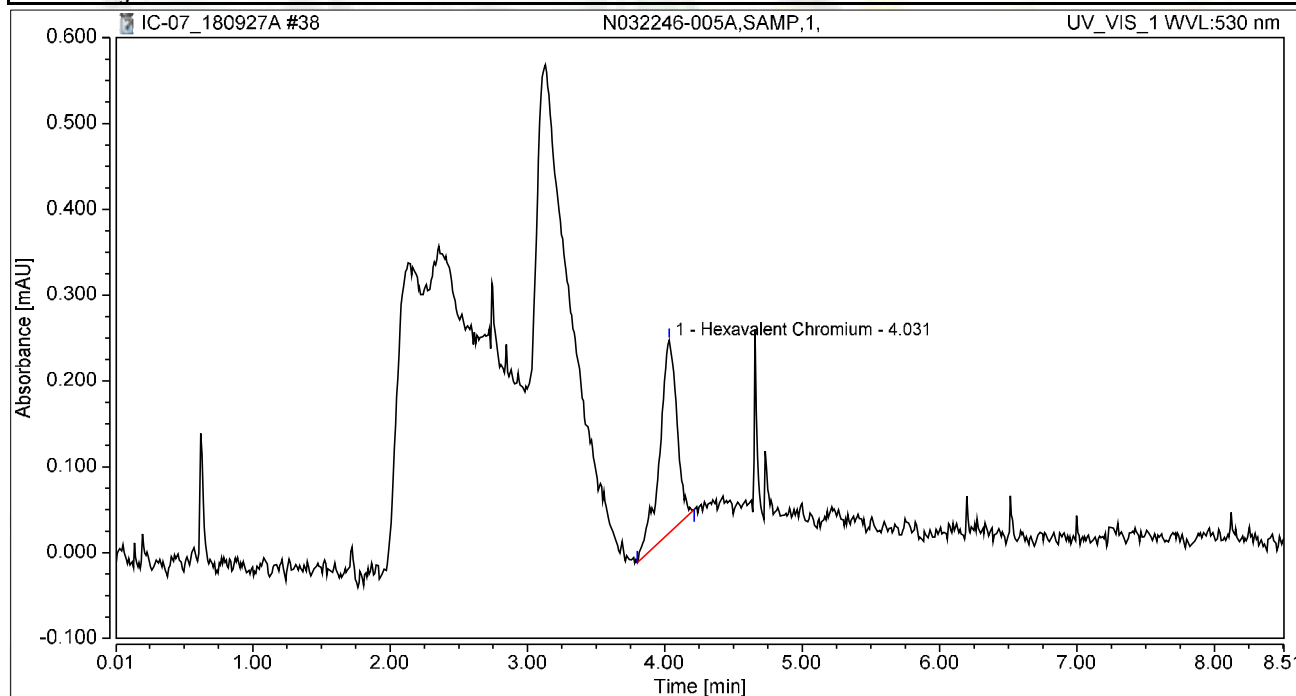
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-005A,SAMP,1,	Run Time (min):	8.50
Vial Number:	31	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 14:01	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

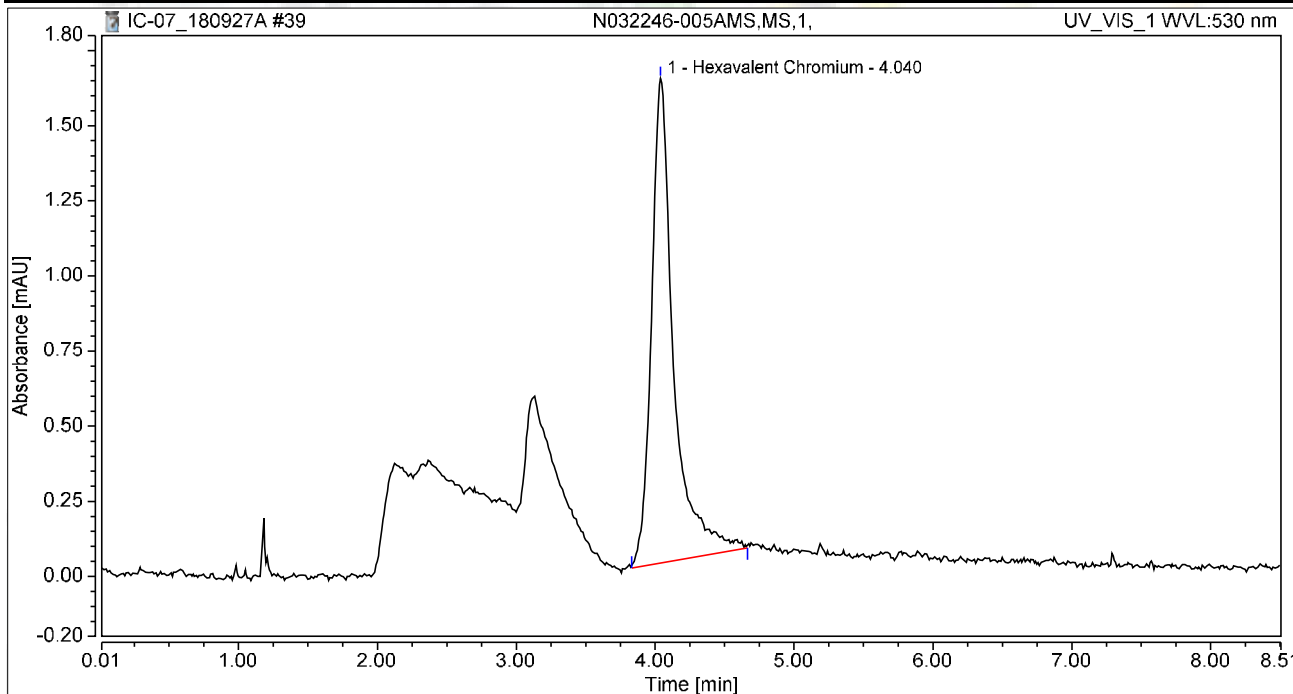
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.031	0.033	0.224	100.00	100.00	0.1289
<b>Total:</b>			<b>0.033</b>	<b>0.224</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-005AMS,MS,1,	Run Time (min):	8.49
Vial Number:	32	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 14:10	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

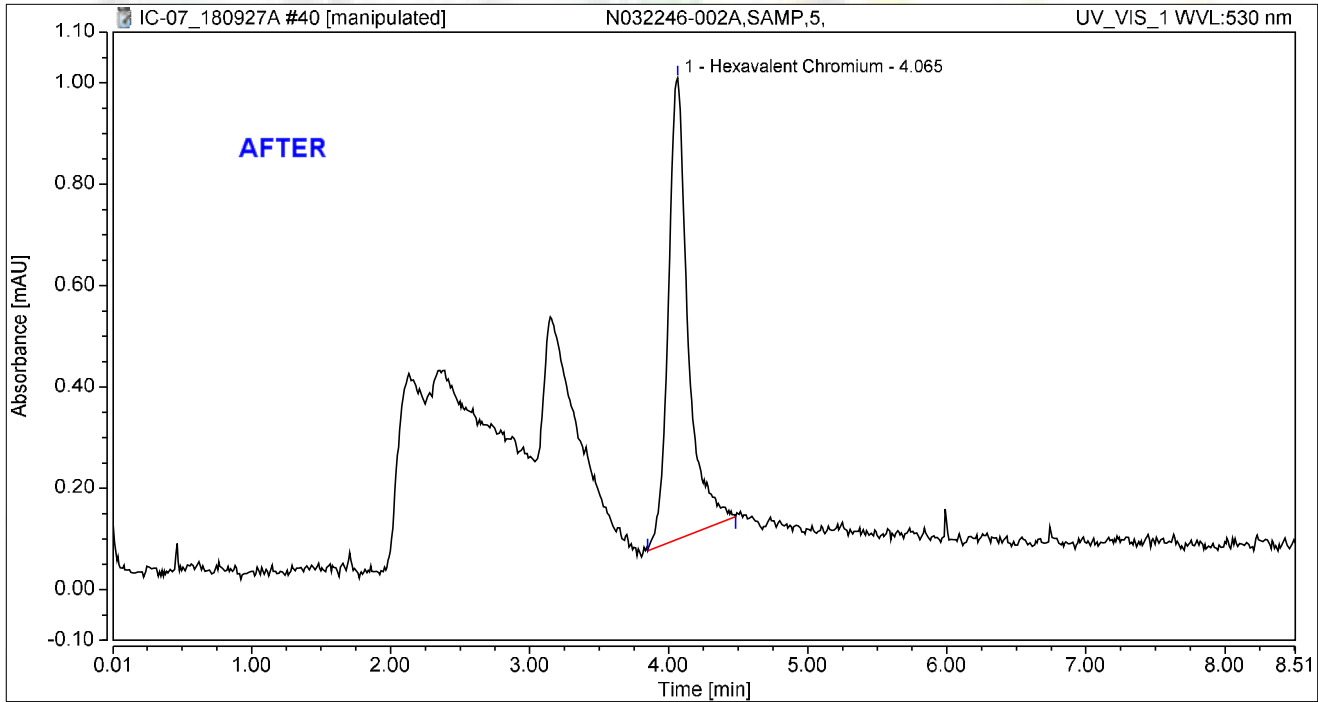
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.040	0.299	1.613	100.00	100.00	1.1833
<b>Total:</b>			<b>0.299</b>	<b>1.613</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-002A,SAMP,5,	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 14:23	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.065	0.150	0.910	100.00	100.00	0.5946
<b>Total:</b>			<b>0.150</b>	<b>0.910</b>	<b>100.00</b>	<b>100.00</b>	

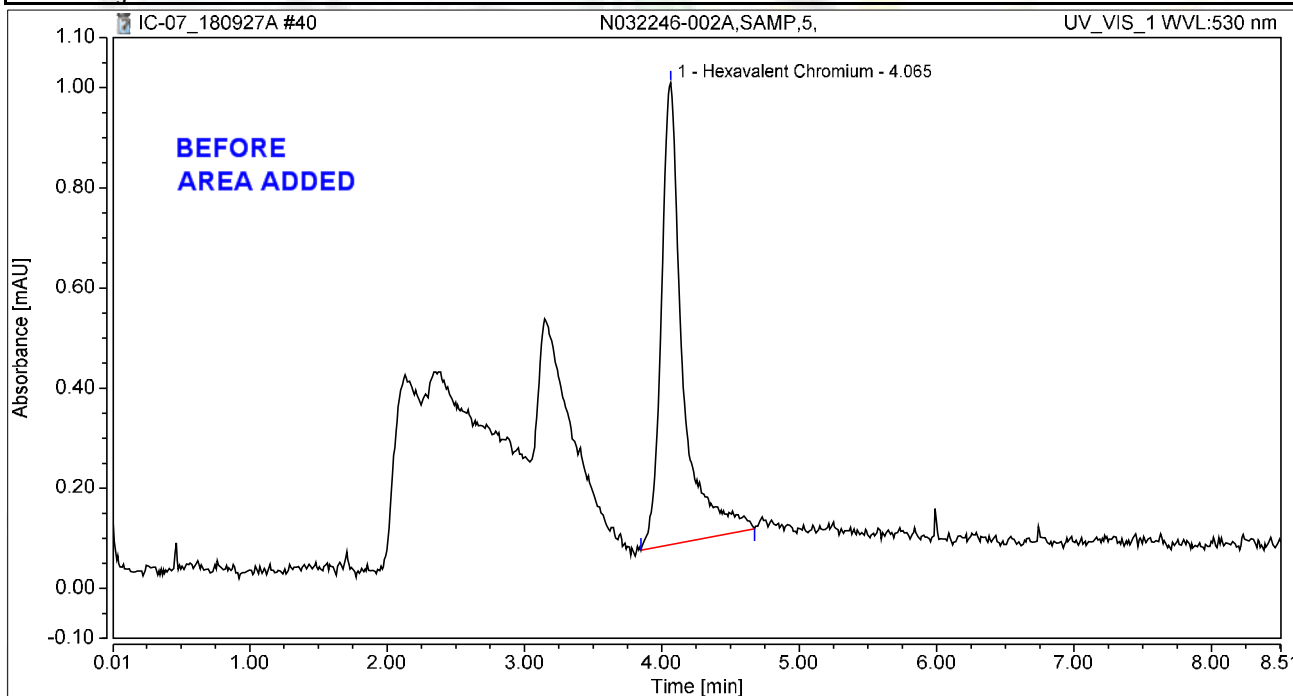
*rba* 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-002A,SAMP,5,	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 14:23	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.065	0.166	0.922	100.00	100.00	0.6587
<b>Total:</b>			<b>0.166</b>	<b>0.922</b>	<b>100.00</b>	<b>100.00</b>	

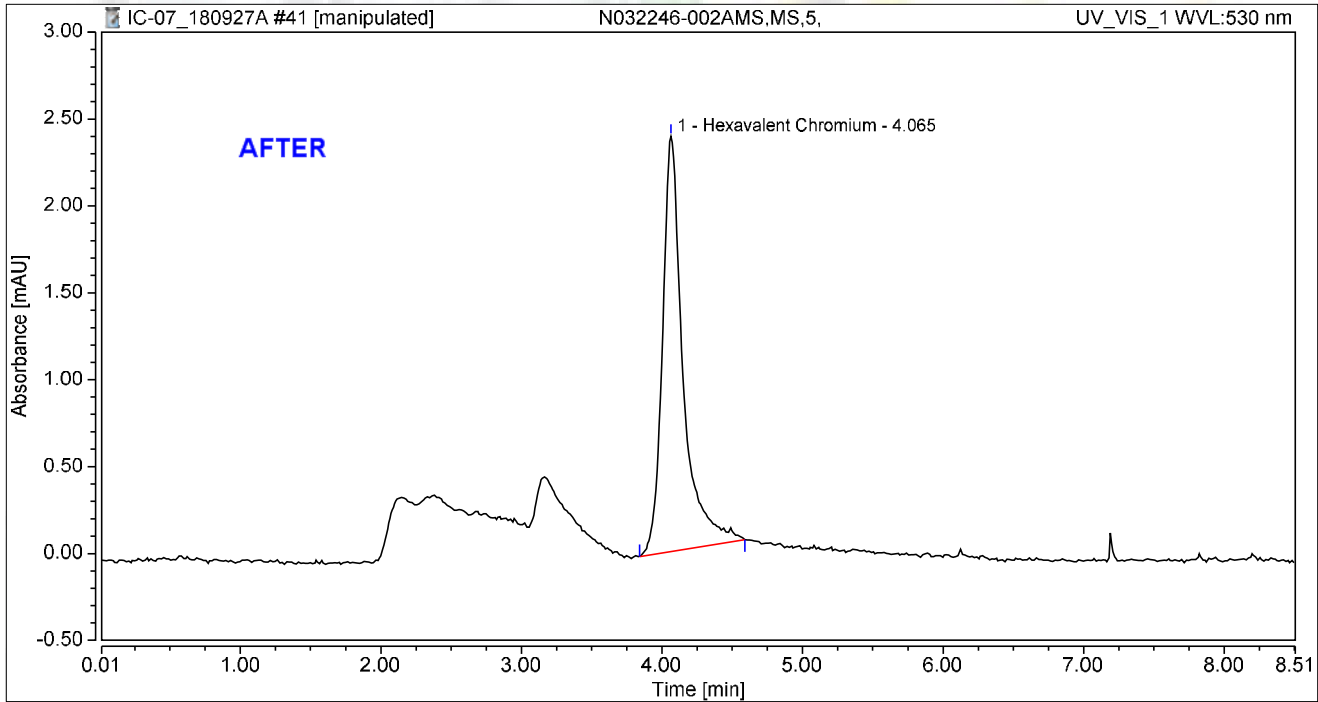
jba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-002AMS,MS,5,	Run Time (min):	8.49
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 14:34	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.065	0.407	2.389	100.00	100.00	1.6084
<b>Total:</b>			<b>0.407</b>	<b>2.389</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/7/2018

Reviewed by:

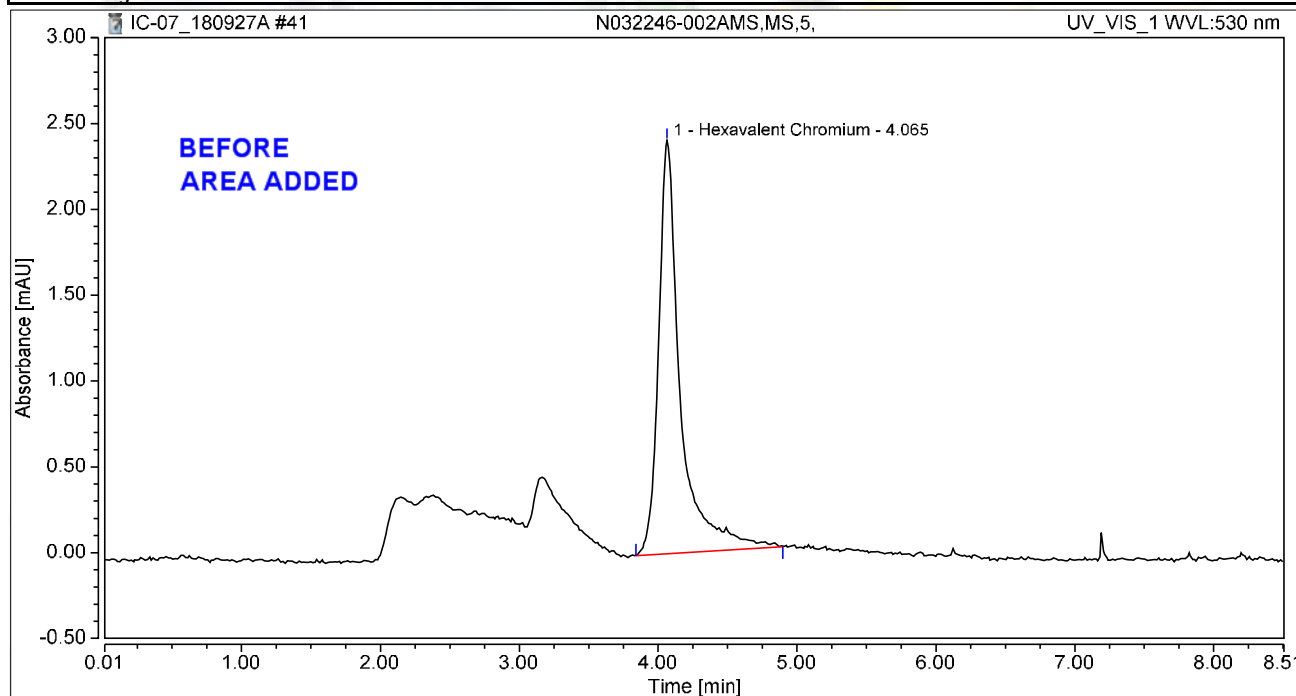
*Manning* 10/11/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-002AMS,MS,5,	Run Time (min):	8.49
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 14:34	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.065	0.441	2.408	100.00	100.00	1.7431
<b>Total:</b>			<b>0.441</b>	<b>2.408</b>	<b>100.00</b>	<b>100.00</b>	

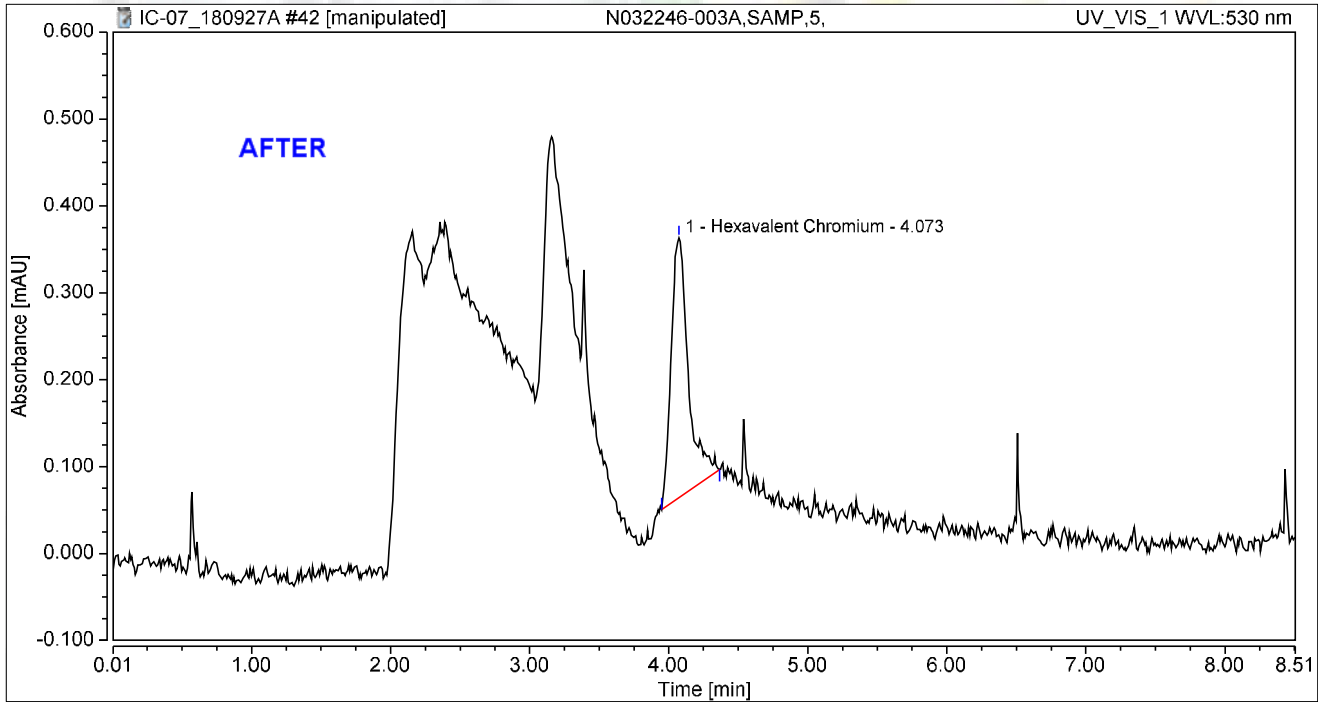
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### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-003A,SAMP,5,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 14:44	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.043	0.299	100.00	100.00	0.1698
<b>Total:</b>			<b>0.043</b>	<b>0.299</b>	<b>100.00</b>	<b>100.00</b>	

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Reviewed by:

Money

My first report/Integration 10/11/2018

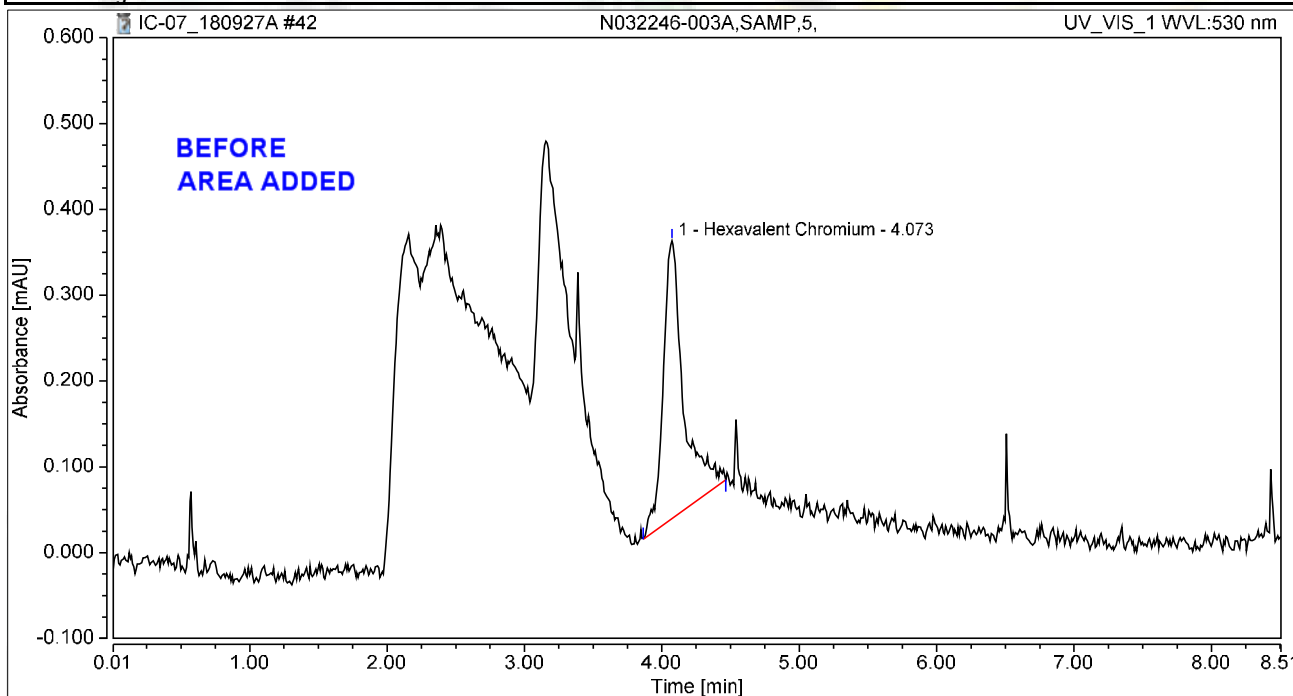


### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-003A,SAMP,5,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 14:44	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.056	0.324	100.00	100.00	0.2216
<b>Total:</b>			<b>0.056</b>	<b>0.324</b>	<b>100.00</b>	<b>100.00</b>	

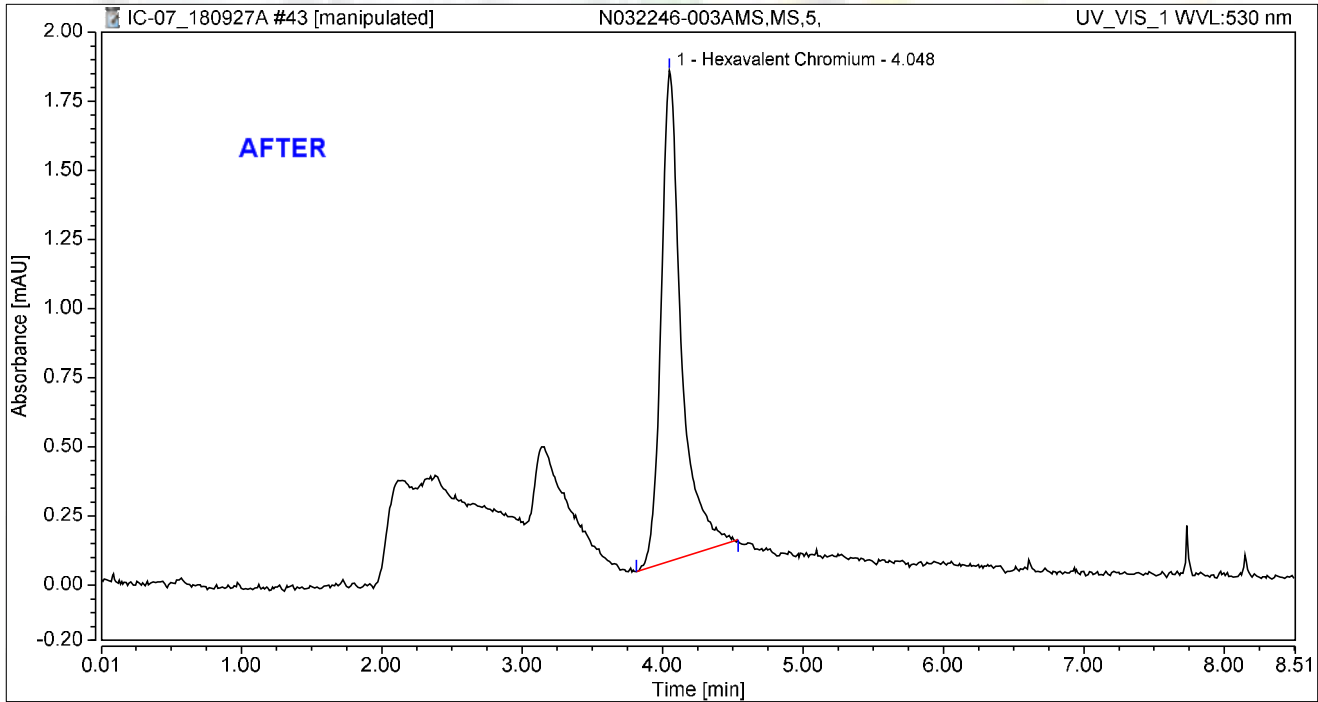
rba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-003AMS,MS,5,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 14:53	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.048	0.299	1.775	100.00	100.00	1.1825
<b>Total:</b>			<b>0.299</b>	<b>1.775</b>	<b>100.00</b>	<b>100.00</b>	

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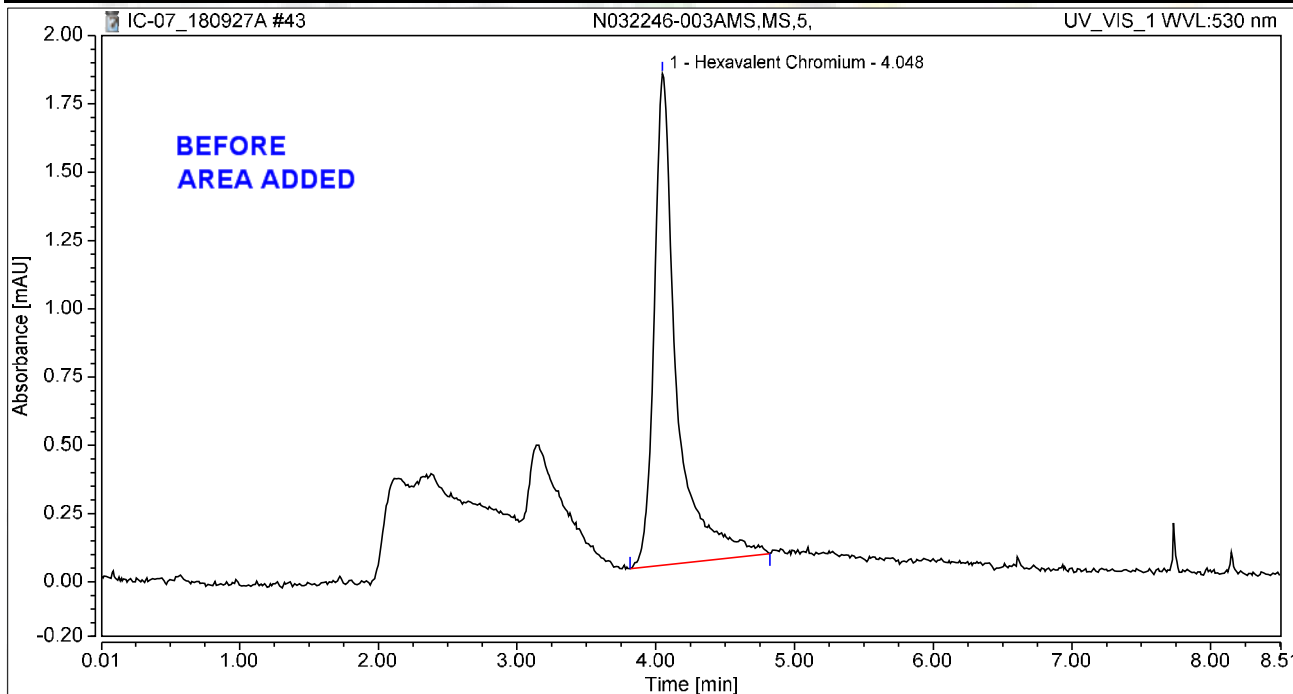
Reviewed by:  
*Dancy* 10/11/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-003AMS,MS,5,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 14:53	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.048	0.338	1.800	100.00	100.00	1.3362
<b>Total:</b>			<b>0.338</b>	<b>1.800</b>	<b>100.00</b>	<b>100.00</b>	

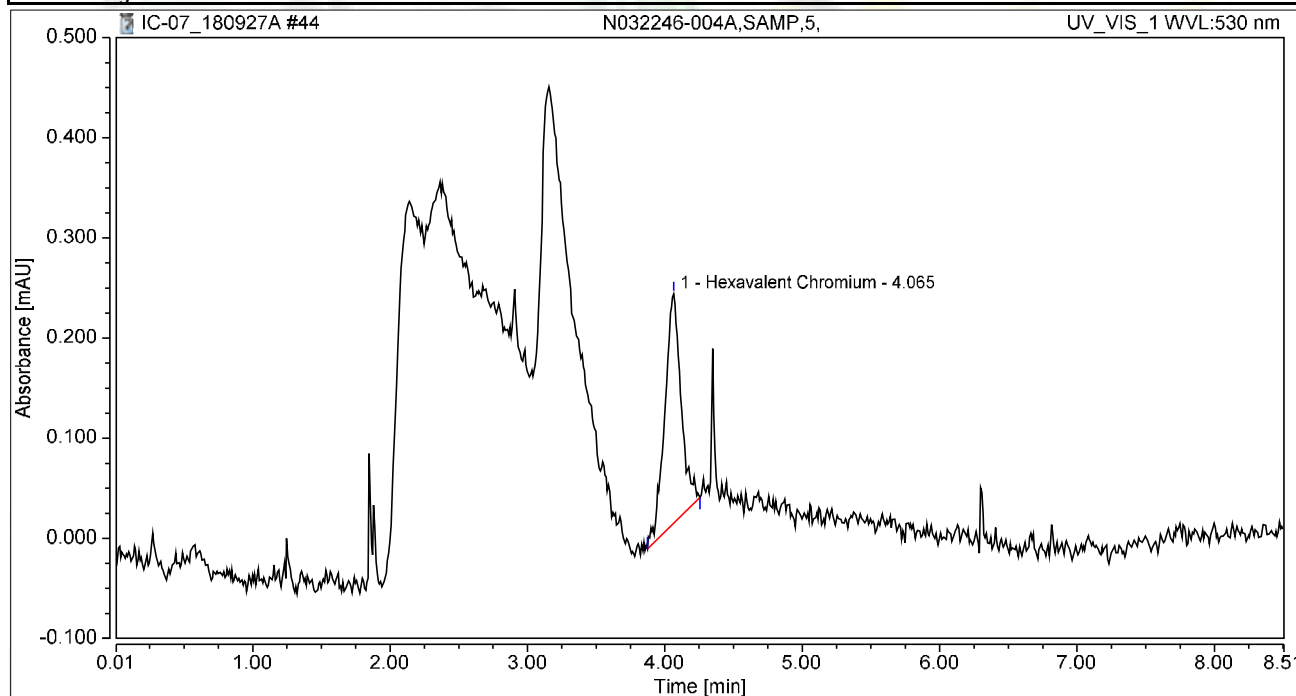
jba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-004A,SAMP,5,	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 15:03	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

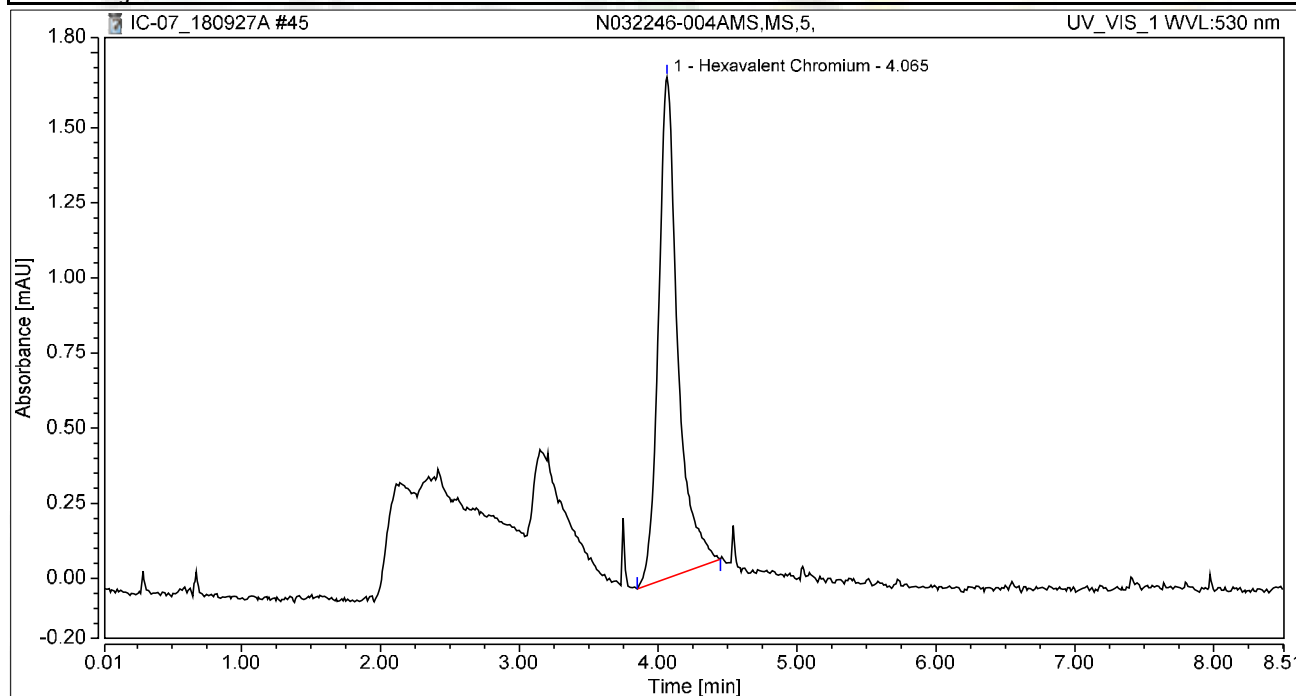
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.065	0.032	0.229	100.00	100.00	0.1248
<b>Total:</b>			<b>0.032</b>	<b>0.229</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-004AMS,MS,5,	Run Time (min):	8.49
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 15:12	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

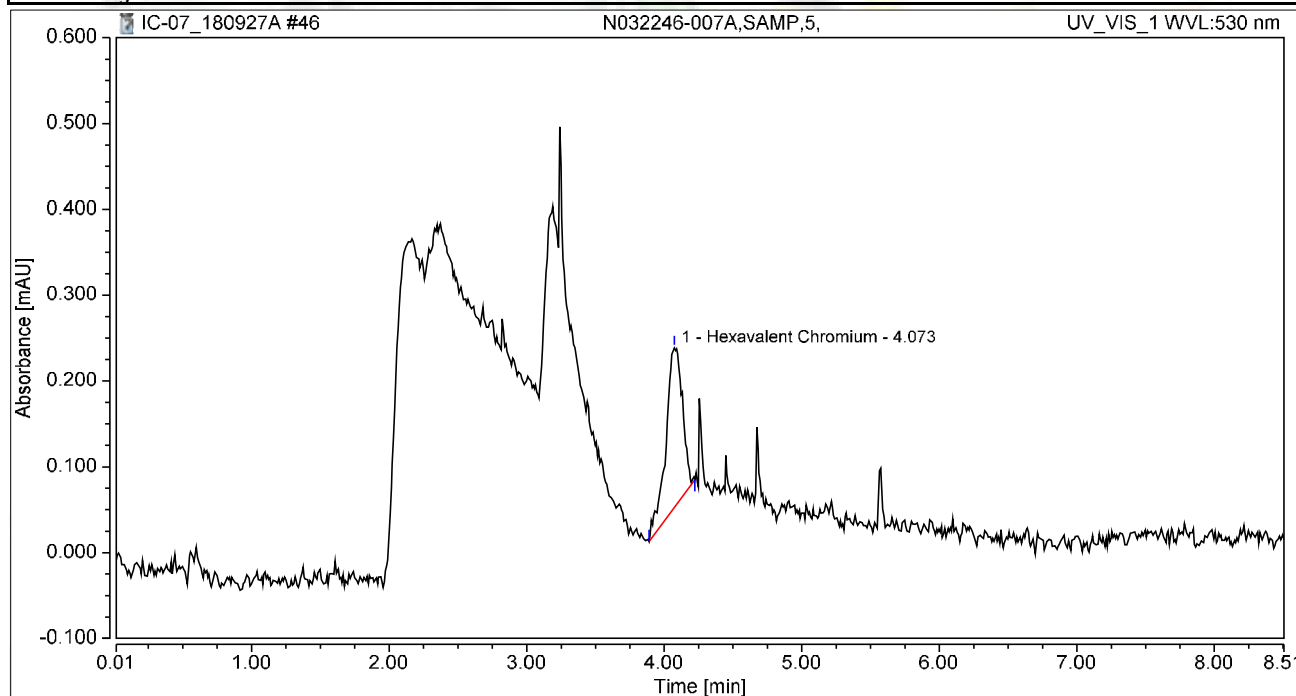
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.065	0.270	1.668	100.00	100.00	1.0664
<b>Total:</b>			<b>0.270</b>	<b>1.668</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-007A,SAMP,5,	Run Time (min):	8.49
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 15:22	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

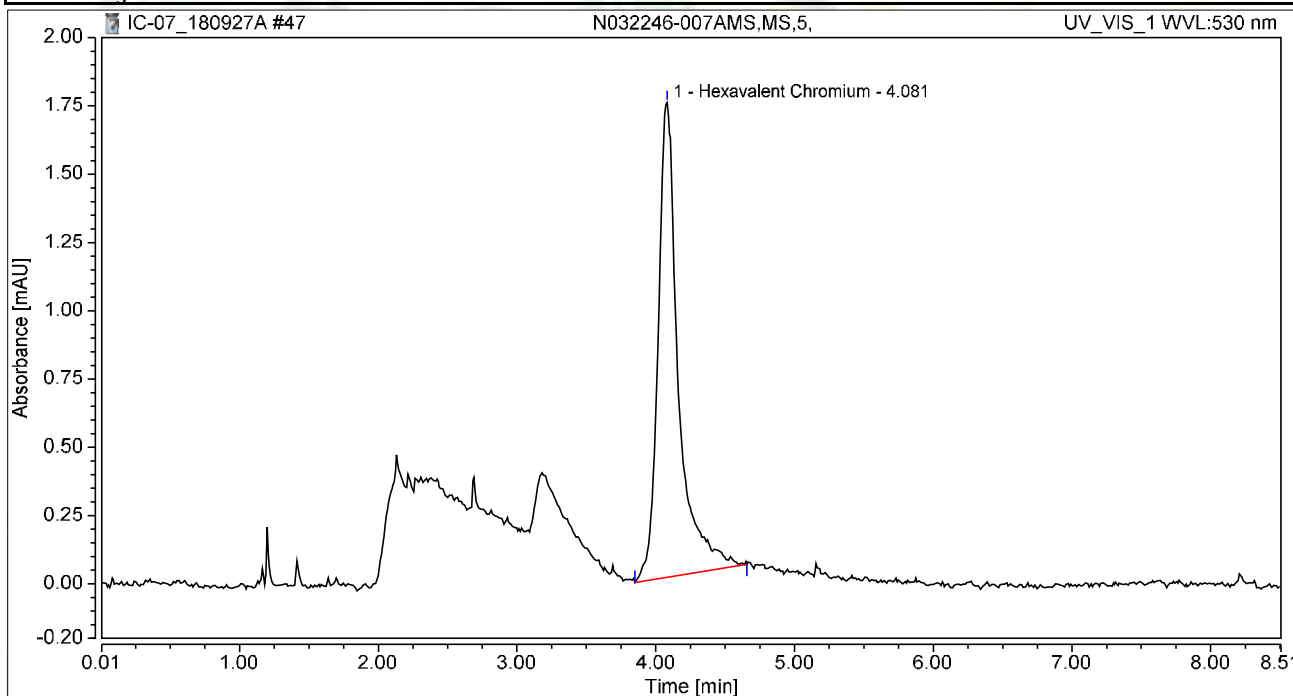
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.026	0.186	100.00	100.00	0.1015
<b>Total:</b>			<b>0.026</b>	<b>0.186</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-007AMS,MS,5,	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 15:31	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

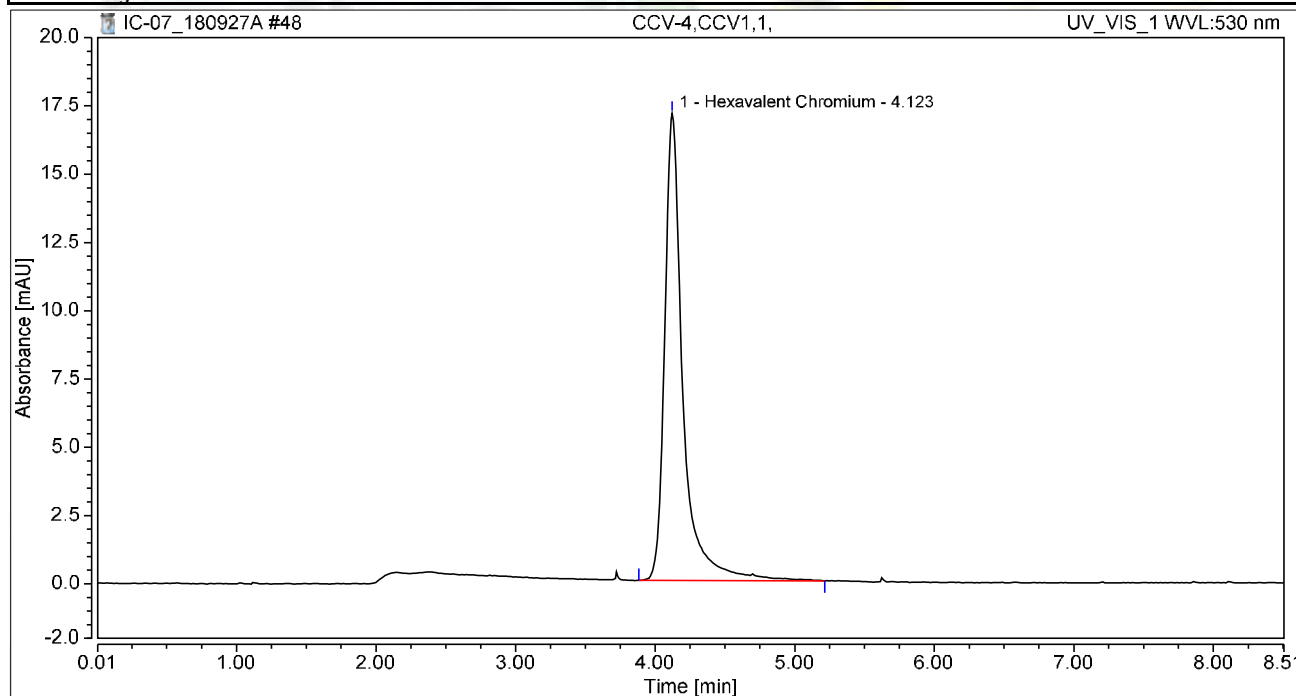
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.296	1.737	100.00	100.00	1.1698
<b>Total:</b>			<b>0.296</b>	<b>1.737</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-4,CCV1,1,	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 15:41	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	2.588	17.106	100.00	100.00	10.2405
<b>Total:</b>			<b>2.588</b>	<b>17.106</b>	<b>100.00</b>	<b>100.00</b>	

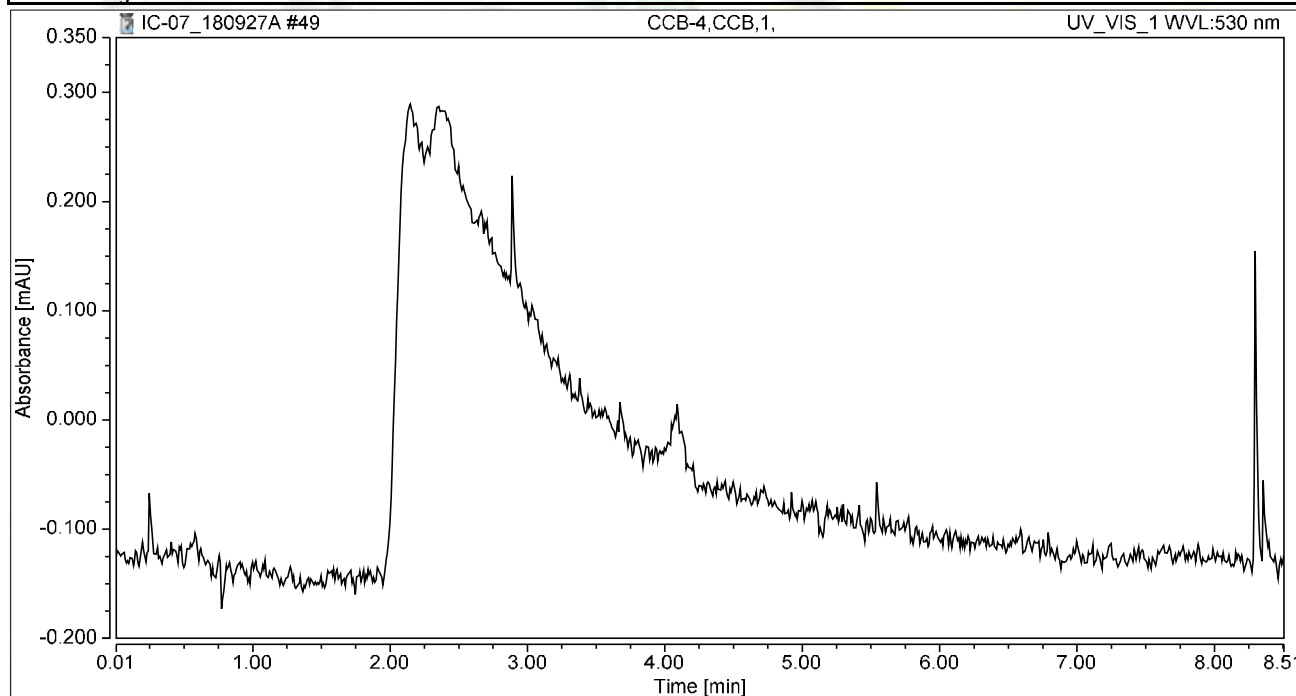


### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-4,CCB,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 15:50	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

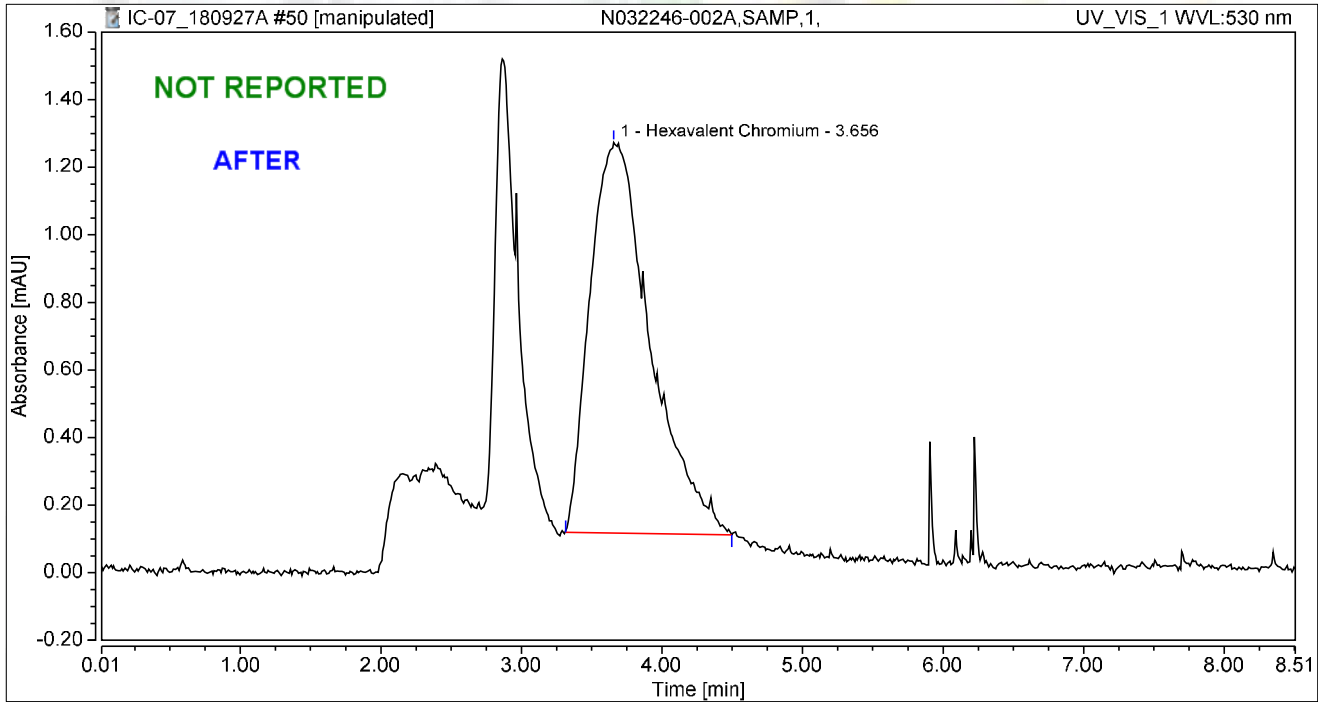
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-002A,SAMP,1,	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 15:59	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.656	0.575	1.157	100.00	100.00	2.2750
<b>Total:</b>			<b>0.575</b>	<b>1.157</b>	<b>100.00</b>	<b>100.00</b>	

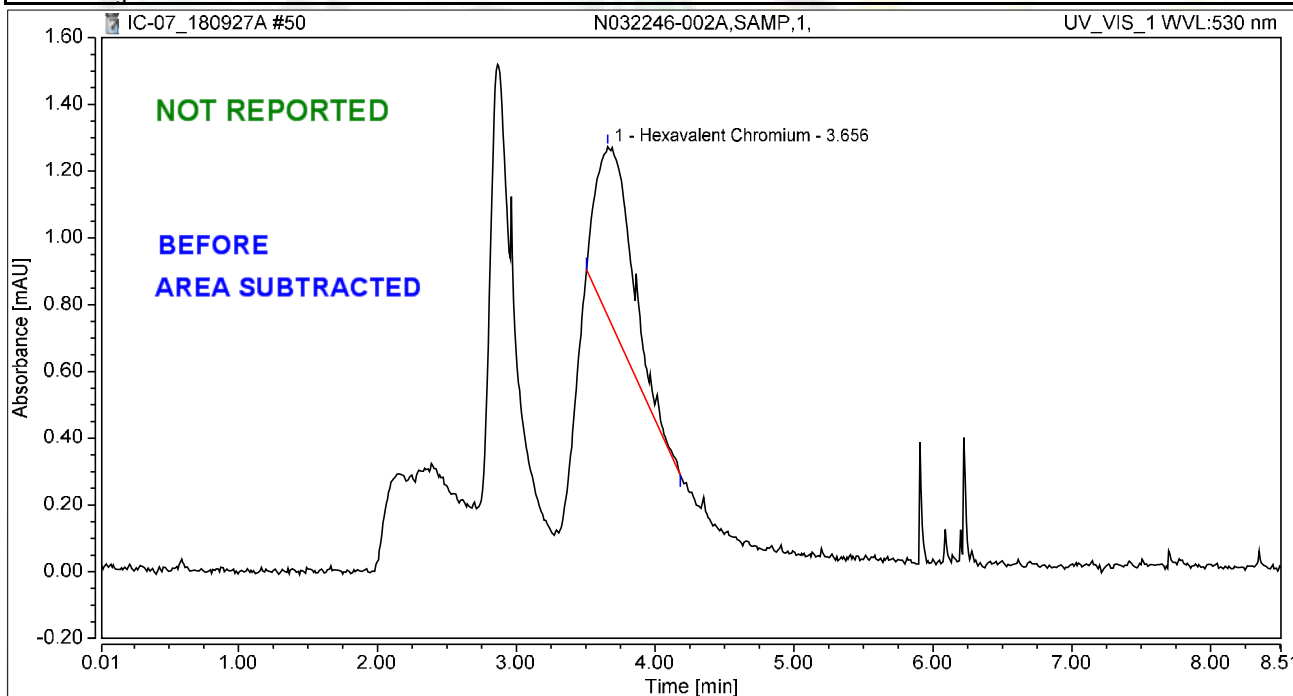
jba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-002A,SAMP,1,	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 15:59	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.656	0.158	0.505	100.00	100.00	0.6257
Total:			0.158	0.505	100.00	100.00	

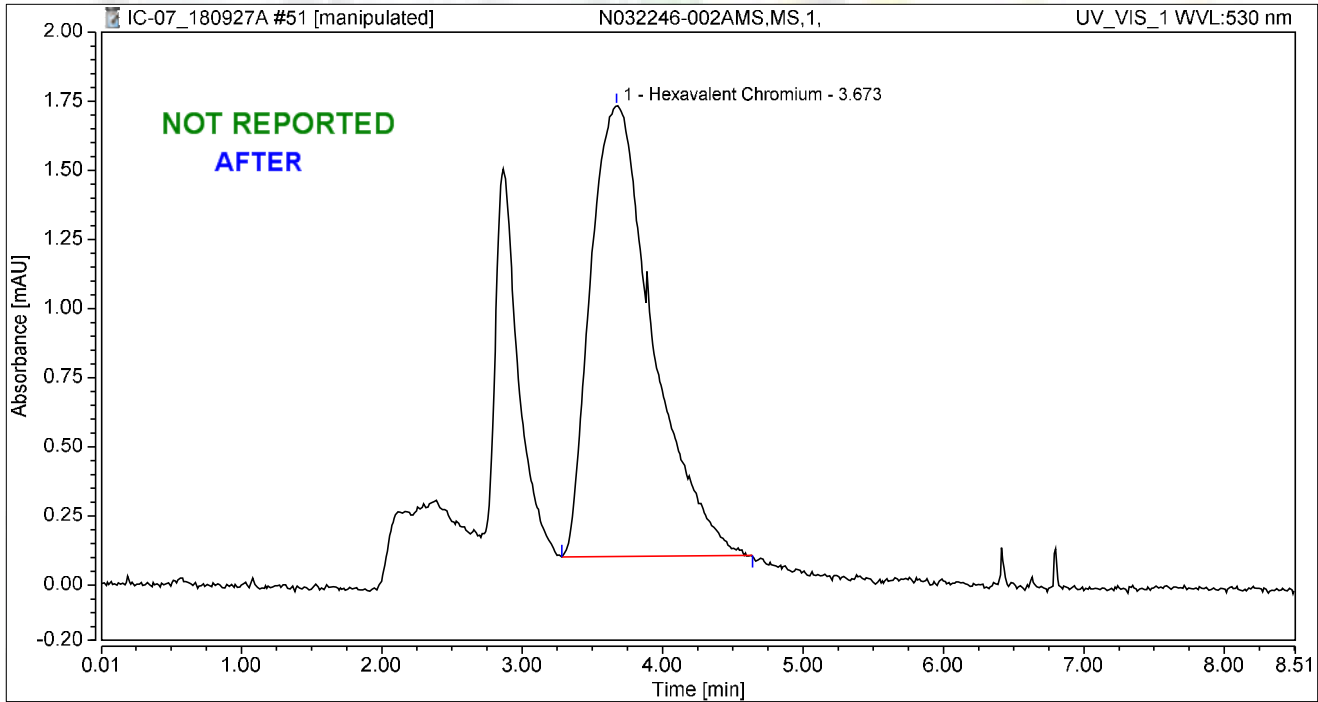
rba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-002AMS,MS,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 16:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.673	0.836	1.631	100.00	100.00	3.3092
<b>Total:</b>			<b>0.836</b>	<b>1.631</b>	<b>100.00</b>	<b>100.00</b>	

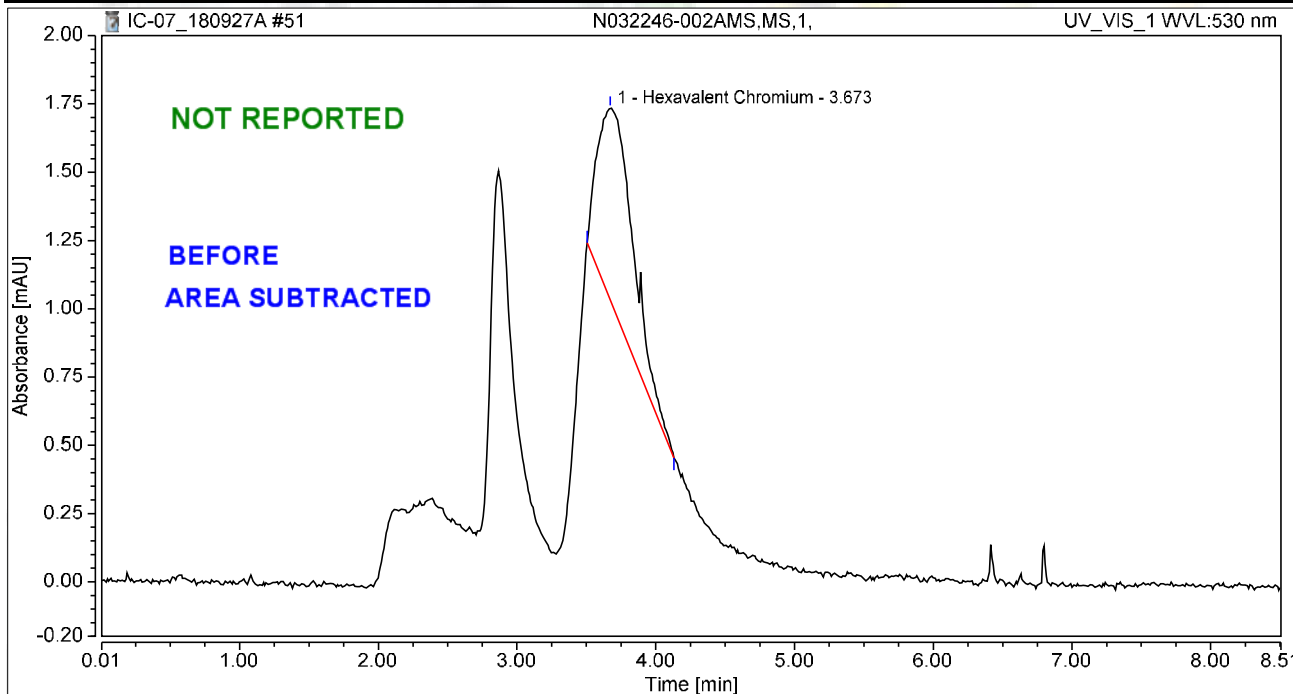
rba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-002AMS,MS,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 16:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.673	0.214	0.702	100.00	100.00	0.8479
<b>Total:</b>			<b>0.214</b>	<b>0.702</b>	<b>100.00</b>	<b>100.00</b>	

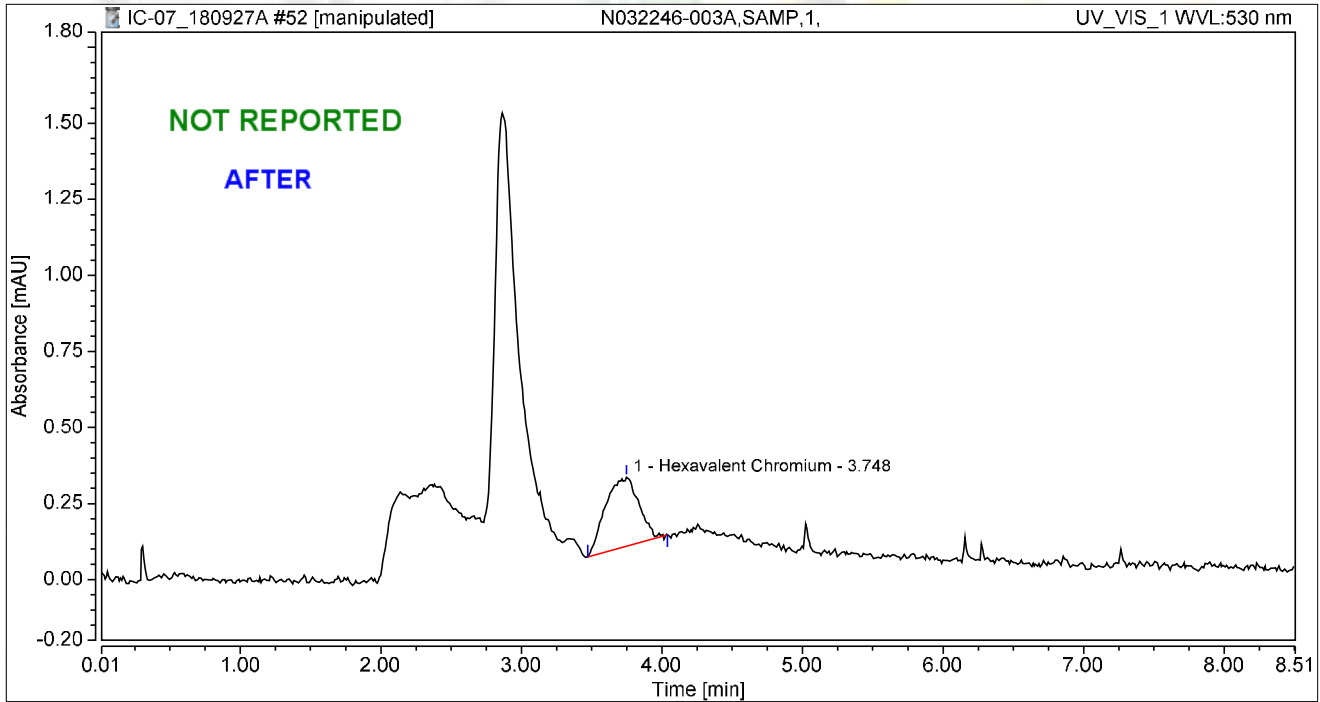
*rba* 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-003A,SAMP,1,	Run Time (min):	8.49
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 16:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.748	0.063	0.227	100.00	100.00	0.2474
<b>Total:</b>			<b>0.063</b>	<b>0.227</b>	<b>100.00</b>	<b>100.00</b>	

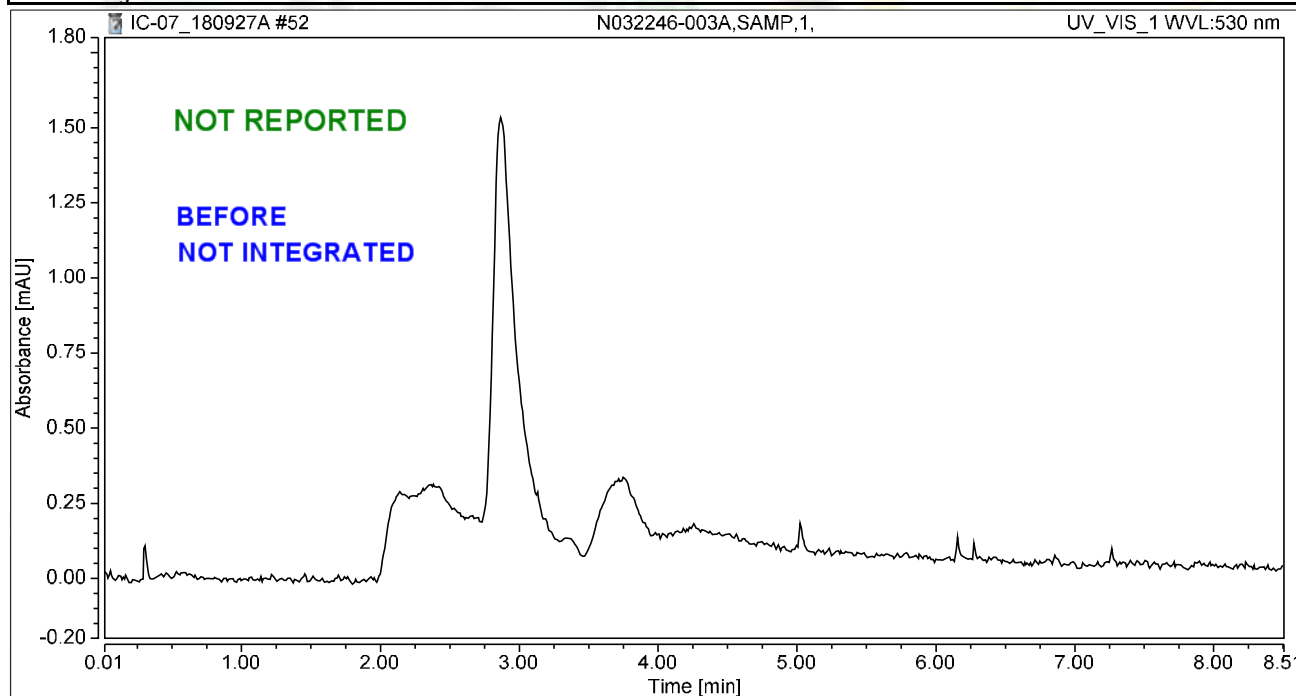
rba 10/7/2018

### Chromatogram and Results

#### Injection Details

Injection Name:	N032246-003A,SAMP,1,	Run Time (min):	8.49
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 16:18	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

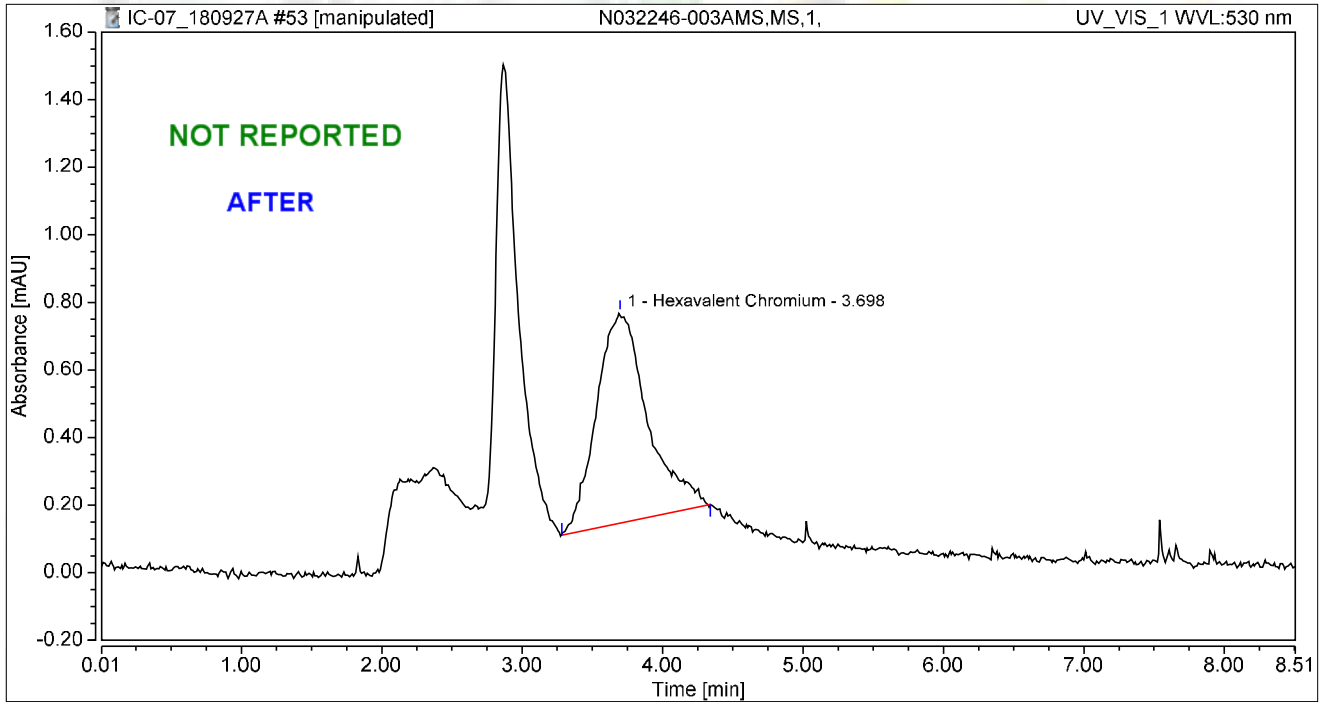
*rba* 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-003AMS,MS,1,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 16:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.698	0.262	0.624	100.00	100.00	1.0384
<b>Total:</b>			<b>0.262</b>	<b>0.624</b>	<b>100.00</b>	<b>100.00</b>	

rba 10/7/2018

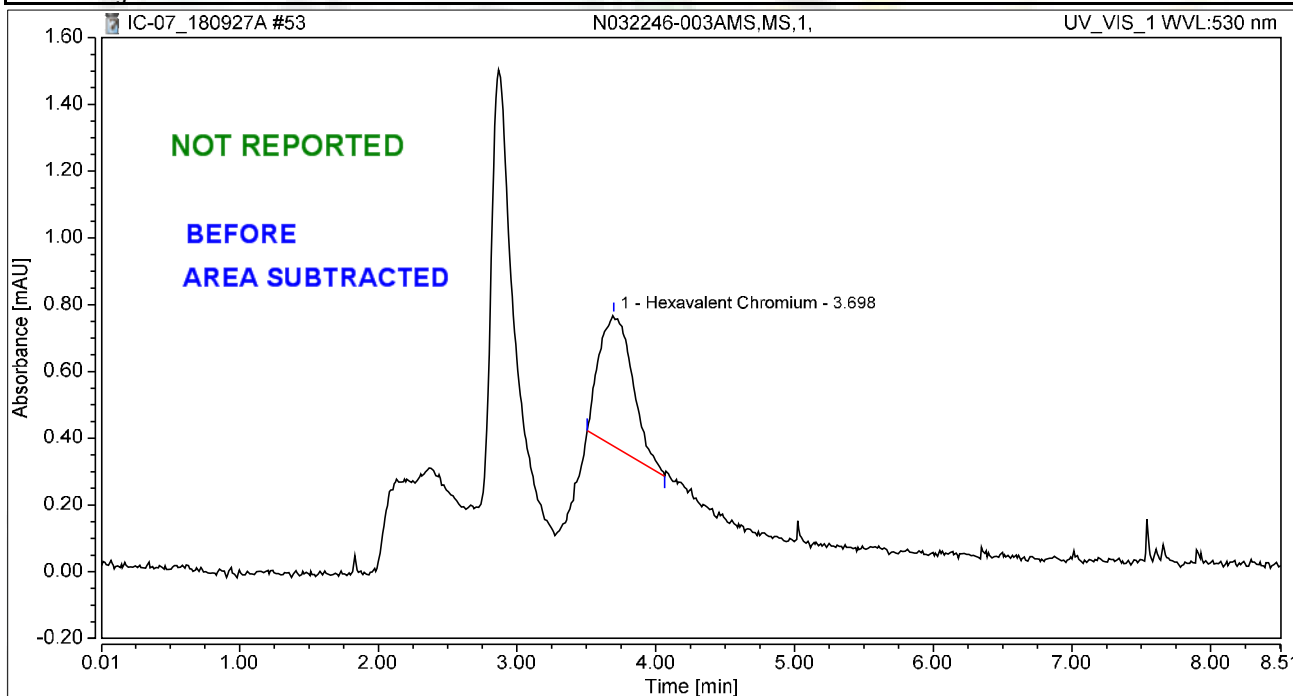


### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-003AMS,MS,1,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 16:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.698	0.111	0.395	100.00	100.00	0.4374
<b>Total:</b>			<b>0.111</b>	<b>0.395</b>	<b>100.00</b>	<b>100.00</b>	

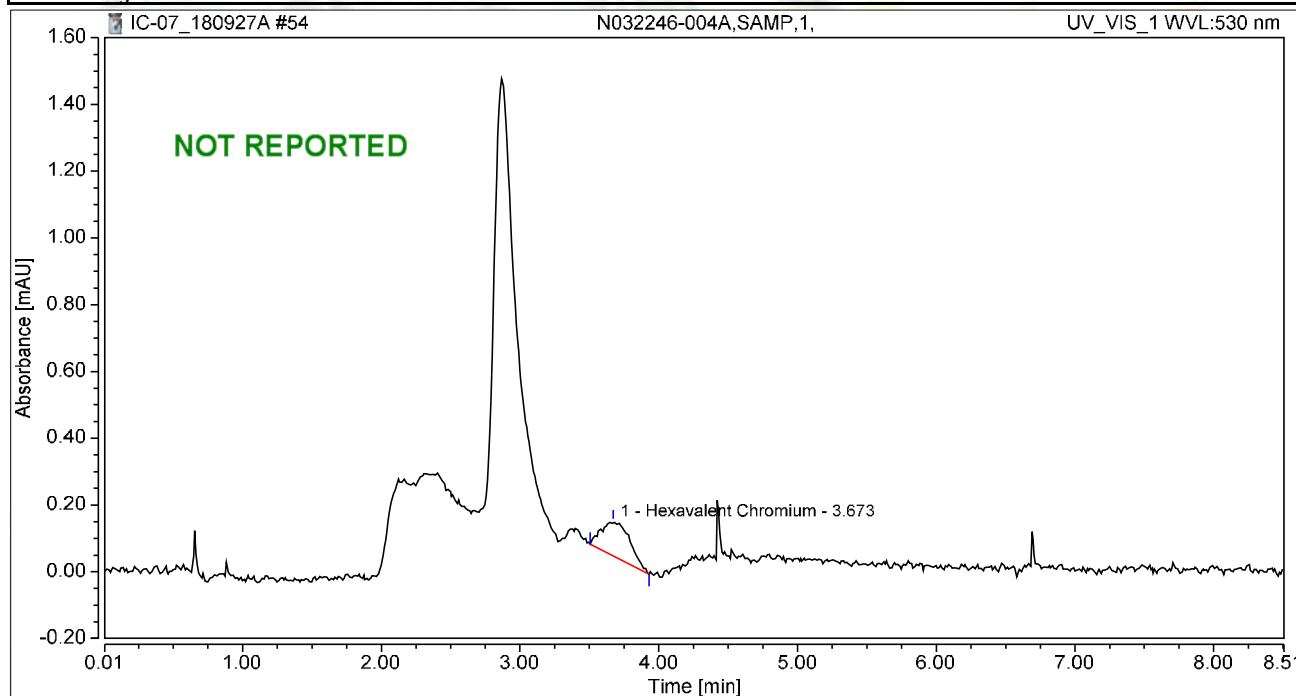
rba 10/7/2018

### Chromatogram and Results

#### Injection Details

Injection Name:	N032246-004A,SAMP,1,	Run Time (min):	8.50
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 16:37	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

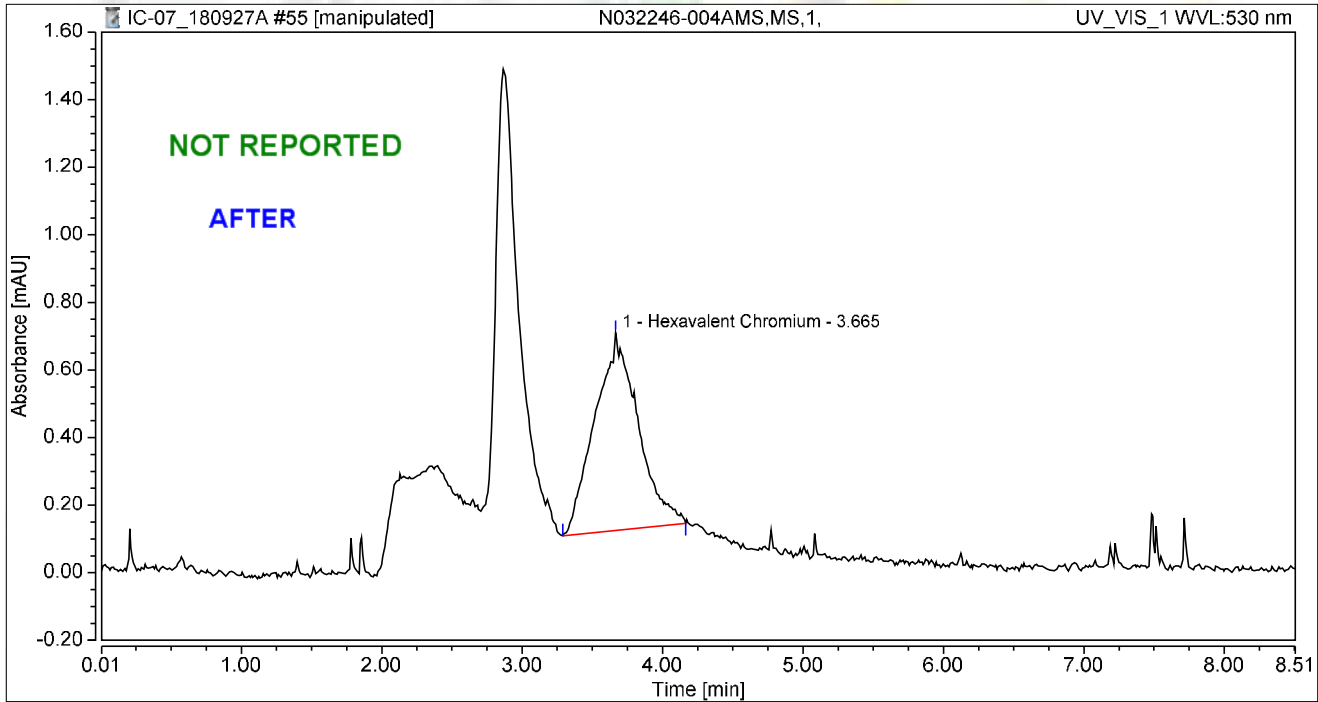
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.673	0.025	0.102	100.00	100.00	0.1005
<b>Total:</b>			<b>0.025</b>	<b>0.102</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-004AMS,MS,1,	Run Time (min):	8.50
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 16:47	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.665	0.208	0.585	100.00	100.00	0.8214
<b>Total:</b>			<b>0.208</b>	<b>0.585</b>	<b>100.00</b>	<b>100.00</b>	

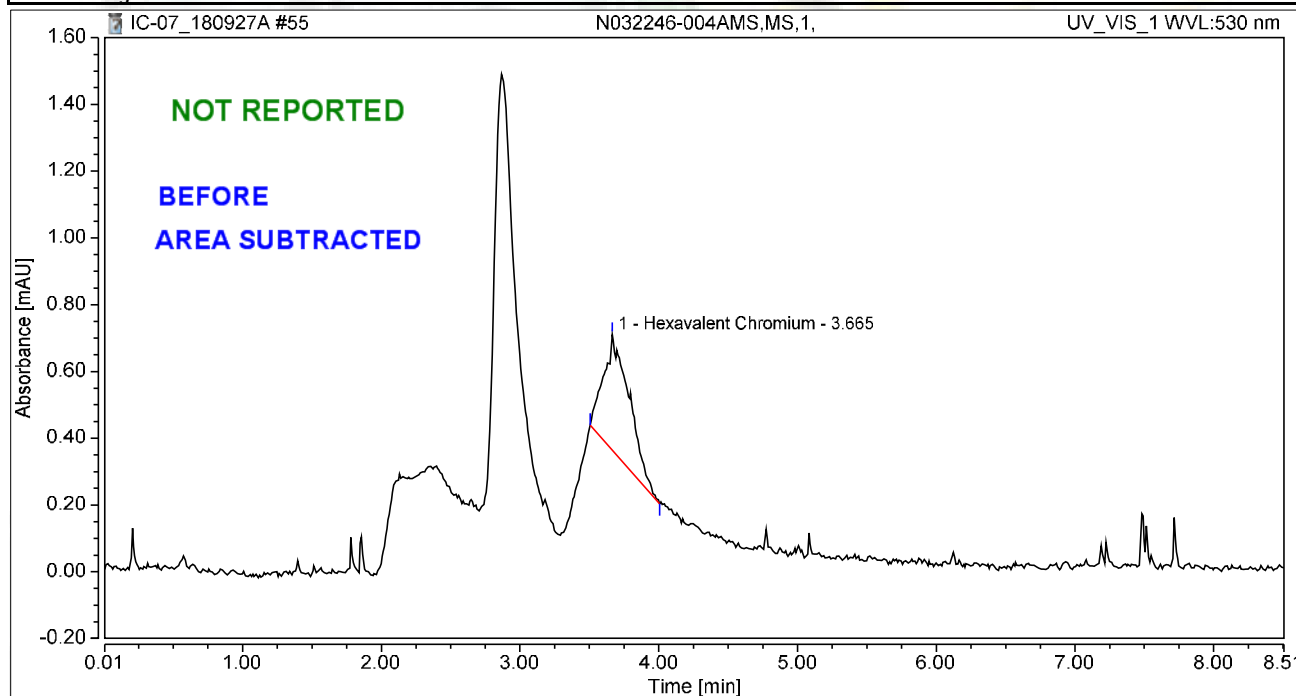
rba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-004AMS,MS,1,	Run Time (min):	8.50
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 16:47	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.665	0.076	0.346	100.00	100.00	0.3009
<b>Total:</b>			<b>0.076</b>	<b>0.346</b>	<b>100.00</b>	<b>100.00</b>	

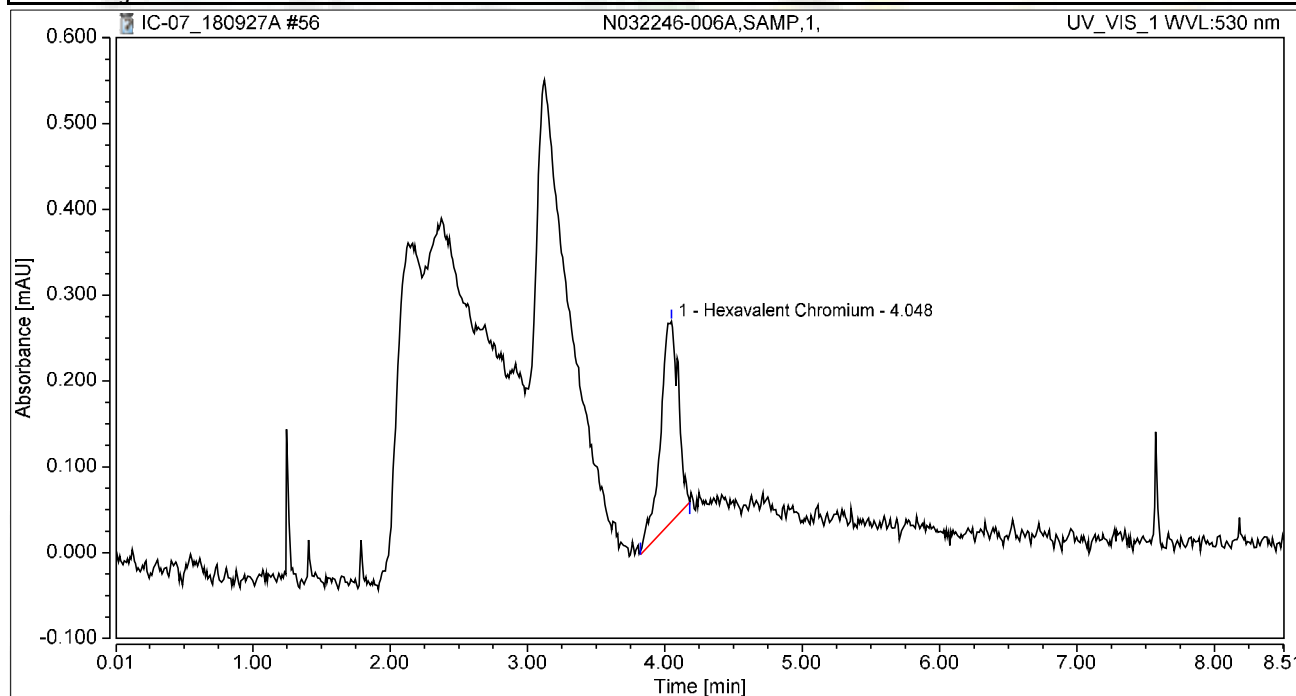
rba 10/7/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032246-006A,SAMP,1,	Run Time (min):	8.50
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 16:56	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

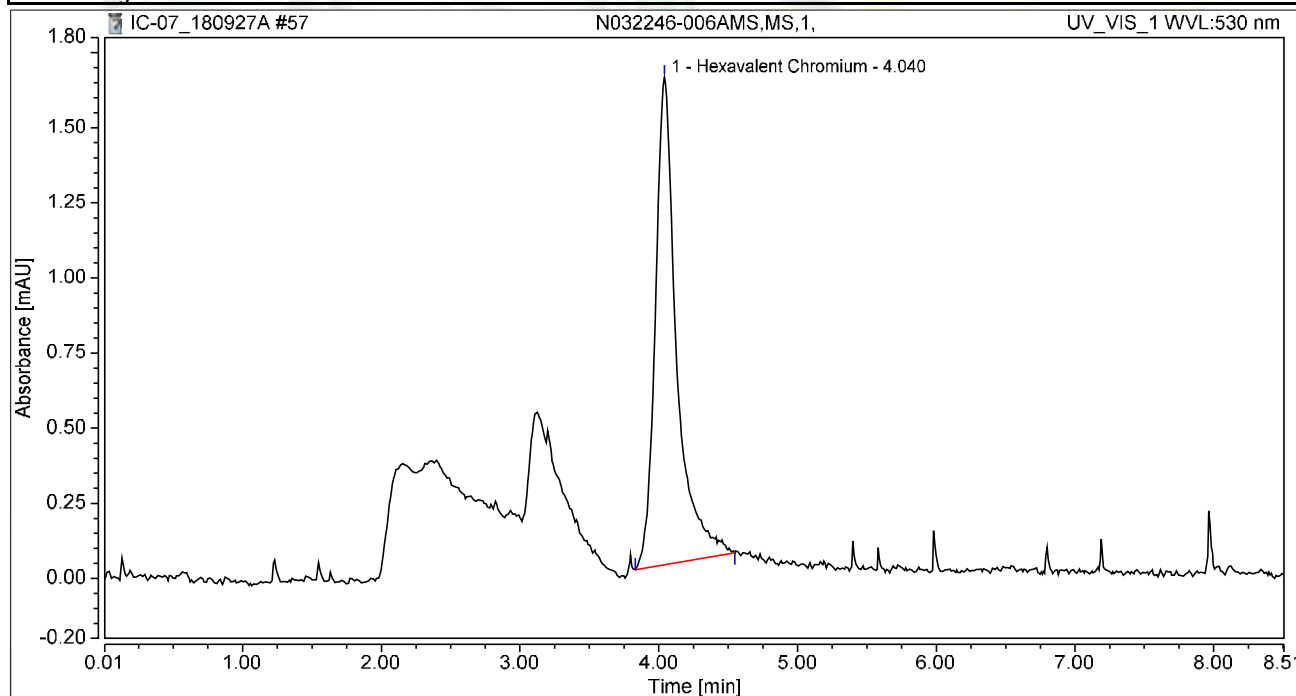
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.048	0.035	0.233	100.00	100.00	0.1402
<b>Total:</b>			<b>0.035</b>	<b>0.233</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032246-006AMS,MS,1,	Run Time (min):	8.50
Vial Number:	18	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 17:06	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

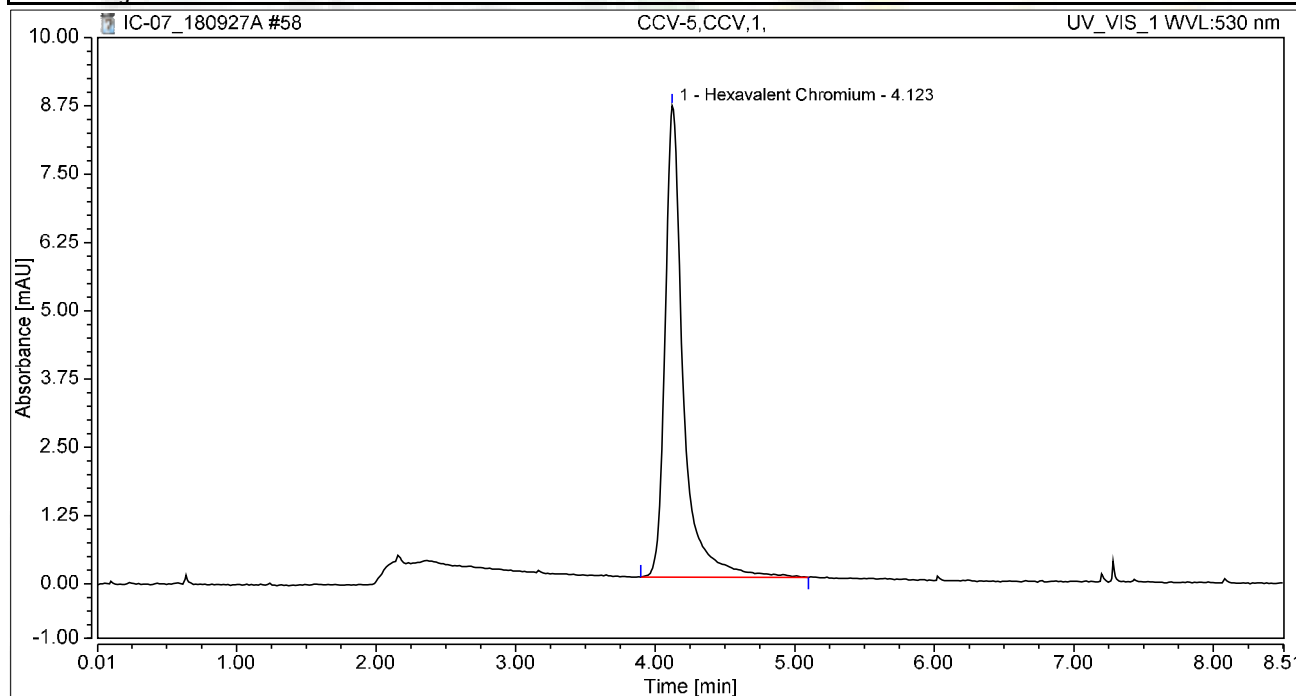
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.040	0.289	1.623	100.00	100.00	1.1421
<b>Total:</b>			<b>0.289</b>	<b>1.623</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-5,CCV,1,	Run Time (min):	8.50
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	27/Sep/18 17:15	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

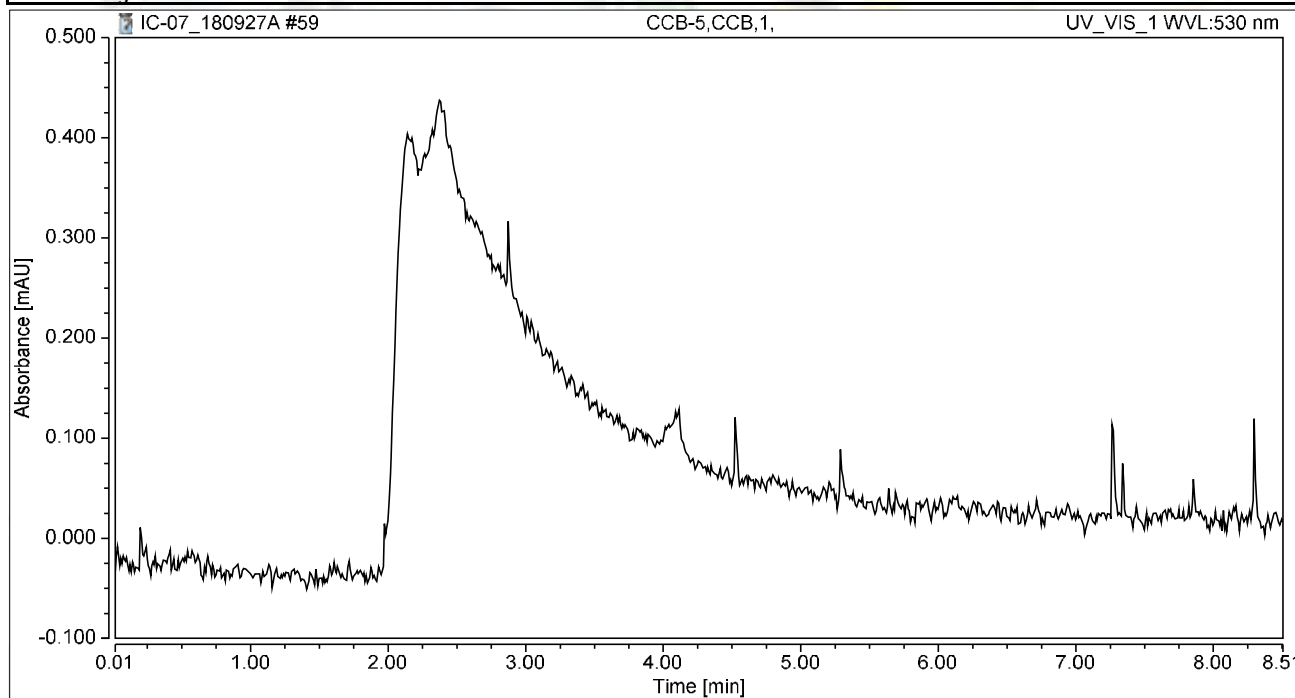
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	1.303	8.624	100.00	100.00	5.1563
<b>Total:</b>			<b>1.303</b>	<b>8.624</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

<b>Injection Name:</b>	<b>CCB-5,CCB,1,</b>	<b>Run Time (min):</b>	<b>8.49</b>
<b>Vial Number:</b>	<b>20</b>	<b>Injection Volume:</b>	<b>1000.00</b>
<b>Injection Type:</b>	<b>Unknown</b>	<b>Channel:</b>	<b>UV_VIS_1</b>
<b>Calibration Level:</b>		<b>Wavelength:</b>	<b>530.0</b>
<b>Instrument Method:</b>	<b>Hex Chrom 4 mm</b>	<b>Bandwidth:</b>	<b>n.a.</b>
<b>Processing Method:</b>	<b>180921_IC-07_Cr6_218_6_HIGH</b>	<b>Dilution Factor:</b>	<b>1.0000</b>
<b>Injection Date/Time:</b>	<b>27/Sep/18 17:25</b>	<b>Sample Weight:</b>	<b>1.0000</b>

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	



# SM 2320B



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"



## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R128943

Analyst: LSR

ASSET #: N032246

Date Analyzed: 28-Sep

Method: EPA 2320

Initial Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
Continuing Calibration						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
Sample Information						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
QC Items						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
Preliminary Report						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed	X		
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer *Lilia Ramit*

Date: 10/2/2018

2nd Level Reviewer *Nancy* 10/11/2018

Date:

# SAMPLE CALCULATION



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Sample ID: **N032246-005B @ pH 7.74**

A. Standardization of Sulfuric Acid (titrant):

$$\text{Normality of acid} = (A) (B) / (53.00) (C)$$

Where:

A, grams weighed for Na<sub>2</sub>CO<sub>3</sub> solution (Na<sub>2</sub>CO<sub>3</sub> Standardization Solution)  
B, mL Na<sub>2</sub>CO<sub>3</sub> solution taken for titration, and  
C, ml of sulfuric acid used to inflection point

Spike Standards

**Na<sub>2</sub>CO<sub>3</sub> Standardization Solution**, ACS Grade (1.00 ml = 2500ug as CaCO<sub>3</sub>):  
Dissolve 2.650 grams of Na<sub>2</sub>CO<sub>3</sub> in distilled water and dilute to 1 liter.

**LCS/MS/MSD Stock NaHCO<sub>3</sub>**, ACS Grade (1.00 ml = 5000 ug as CaCO<sub>3</sub>):  
Dissolve 0.8398 grams of NaHCO<sub>3</sub> in distilled water and dilute to 1 liter.

Therefore,

$$\begin{aligned} \text{Normality of Acid} &= (2.65 \text{ g/L}) (5\text{mL}) / (53.00) (12.025 \text{ mL}) \\ &= \mathbf{0.02079 \text{ N}} \end{aligned}$$

B. CALCULATION OF ALKALINITY (for a 50 ml sample)

$$\text{Total Alkalinity (as CaCO}_3\text{), mg/L} = M_{\text{vol.}} * N \text{ H}_2\text{SO}_4 * \text{DF} * 1000$$

Where:

M<sub>vol.</sub> volume titrant used to reach pH 4.5, ml  
N, Normality of H<sub>2</sub>SO<sub>4</sub>  
DF, Dilution Factor = (50 ml) / (Vol. of Sample used)

Therefore,

$$\begin{aligned} \text{Total Alkalinity (as CaCO}_3\text{), mg/L} &= (7.90) (0.02079 \text{ N}) (1) * 1000 \\ &= 164.2410 \text{ mg/L} \end{aligned}$$

Reporting results in two significant figures,

$$= \mathbf{160 \text{ mg/L as CaCO}_3}$$

*Silia Ramit* 10/2/2018

*Nancy* 10/1/2018  
for

C. SPECIATED ALKALINITY:

Phenolphthalein Alkalinity

$$\begin{aligned} \text{P alkalinity, mg/L as CaCO}_3 &= P_{\text{vol.}} \cdot N \text{ H}_2\text{SO}_4 \cdot \text{DF} \cdot 1000 \\ &= (0) (0.02079 \text{ N}) (1) \cdot 1000 \\ &= \mathbf{0} \end{aligned}$$

Total Alkalinity

$$\begin{aligned} \text{T alkalinity, mg/L as CaCO}_3 &= M_{\text{vol.}} \cdot N \text{ H}_2\text{SO}_4 \cdot \text{DF} \cdot 1000 \\ &= (7.90 \text{ mL}) (0.02079) (1) \cdot 1000 \\ &= \mathbf{164.2410 \text{ mg/L as CaCO}_3} \end{aligned}$$

Where:

- $P_{\text{vol.}}$  - Volume titrant used to reach pH 8.3, ml
- $M_{\text{vol.}}$  - Volume titrant used to reach pH 4.5, ml
- $N$  - Normality of  $\text{H}_2\text{SO}_4$
- $\text{DF}$  - Dilution Factor = (50 ml) / (Vol. of Sample used)

Then OH,  $\text{CO}_3$ ,  $\text{HCO}_3$  alkalinities as  $\text{CaCO}_3$  will be calculated as follows:

Result of Titration	OH Alkalinity as $\text{CaCO}_3$	$\text{CO}_3$ Alkalinity as $\text{CaCO}_3$	$\text{HCO}_3$ Alkalinity as $\text{CaCO}_3$
$P = 0$	0	0	T
$P < \frac{1}{2} T$	0	2P	$T - 2P$
$P = \frac{1}{2} T$	0	2P	0
$P > \frac{1}{2} T$	$2P - T$	$2(T - P)$	0
$P = T$	T	0	0

Therefore,

$$\text{OH Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{CO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{HCO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{164.2410 \text{ mg/L}}$$

Reporting results in two significant figures,

$$\text{OH Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{CO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{HCO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{160 \text{ mg/L}}$$

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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SAMPLE	PH SAMPLE	AMOUNT	V@8.3	VT TO 4.5	Sample Type	Standardization:		
MB-1	5.48	50	0.00	0.050	MBLK	Spike amt:	5	ml
LCS-1	8.33	50	0.00	4.70	LCS	Titrant used:	12.025	ml
N032253-001D	11.52	50	9.20	11.35	SAMP			
N032210-003D	7.85	50	0.00	9.80	SAMP	N H2SO4	0.02079	Normal
N032246-005B	7.74	50	0.00	7.90	SAMP			
N032246-006B	7.77	50	0.00	8.00	SAMP	Date Analyzed:	9/28/18	
N032254-001B	5.36	50	0.00	10.40	SAMP	Time:	9:50 AM	
N032246-005BDUP	7.81	50	0.00	7.75	DUP	Analyzed By:	LSR	
N032246-005BMS	8.04	50	0.00	12.50	MS			
N032246-005BMSD	8.08	50	0.00	12.50	MSD			
						Sodium Carbonate:	CINV-161205A	
						Sodium Bicarbonate:	CINV-180510A	
						Sulfuric Acid:	R180911A	

*Lilia Ramit* 10/2/2018

Sample ID	Sample Vol/Wt.	Sample pH	Std. Code	Spike Amount	Spike Conc.	Normality, Titrant	Vol. Used to pH 8.3, ml.	Vol. Used pH 8.3 to 4.5, ml.	Total Vol. Used, ml.	DF (50ml/Vsamp.)	P Alkalinity	T Alkalinity	Comments
MB-1	50	5.48				0.02079	0.00	0.05	0.05	1	0.00	1.04	
LCS-1	50	8.33				0.02079	0.00	4.70	4.70	1	0.00	97.71	
N032253-001D	50	11.52				0.02079	9.20	2.15	11.35	1	191.27	235.97	
N032210-003D	50	7.85				0.02079	0.00	9.80	9.80	1	0.00	203.74	
N032246-005B	50	7.74				0.02079	0.00	7.90	7.90	1	0.00	164.24	
N032246-006B	50	7.77				0.02079	0.00	8.00	8.00	1	0.00	166.32	
N032254-001B	50	5.36				0.02079	0.00	10.40	10.40	1	0.00	216.22	
N032246-005BDL	50	7.81				0.02079	0.00	7.75	7.75	1	0.00	161.12	
N032246-005BMS	50	8.04				0.02079	0.00	12.50	12.50	1	0.00	259.88	
N032246-005BMS	50	8.08				0.02079	0.00	12.50	12.50	1	0.00	259.88	

*Lilia Ramit*

10/2/2018



# Speciated, Alkalinity as CaCO3

SM 2320B

Date Analyzed:	<u>9/28/18</u>
Time:	<u>9:50 AM</u>
Analyzed By:	<u>LSR</u>

SAMPLE ID	OH	CO3	HCO3	TOTAL	CHECK	COMMENT	REMARKS
MB-1	0.00	0.00	1.04	1.04	1.04		P = 0
LCS-1	0.00	0.00	97.71	97.71	97.71		P = 0
N032253-001D	146.57	89.40	0.00	235.97	235.97		P > 1/2 T
N032210-003D	0.00	0.00	203.74	203.74	203.74		P = 0
N032246-005B	0.00	0.00	164.24	164.24	164.24		P = 0
N032246-006B	0.00	0.00	166.32	166.32	166.32		P = 0
N032254-001B	0.00	0.00	216.22	216.22	216.22		P = 0
N032246-005BDUP	0.00	0.00	161.12	161.12	161.12		P = 0
N032246-005BMS	0.00	0.00	259.88	259.88	259.88		P = 0
N032246-005BMSD	0.00	0.00	259.88	259.88	259.88		P = 0

*Lilia Ramif* 10/2/2018

Alkalinity Preparation and Runlog

Matrix: <u>H<sub>2</sub>O</u>	# meter Calibration: _____
Date Extracted: _____	Reagent Lot # / Reagent ID
Time Extracted: <u>2 9/28/18</u>	Sodium Carbonate: <u>CMV 180518A</u>
Extracted By: <u>LSE</u>	Hydrochloric Acid: _____
Date Analyzed: <u>9/28/18</u>	Sulfuric Acid: <u>R180911A</u>
Time Analyzed: <u>9:50</u>	Sodium Bicarbonate: <u>CMV 180518A</u>
Analyzed By: <u>LSE</u>	

SLOPE: 98.2%

# 7 - 7.02 CMV 180518B  
 # 4 - 4.02 [ R05151A  
 # 10 - 10.02 [ 180131B

Sample ID	Sample Vol./Vol.	Sample pH	Std Code	Spike Amt Added	Spike Conc.	Norm. Titrant	Vol. At pH = 8.3	Vol. At pH = 4.5	Dilution (F/I)	Calculations	Comments
STANDARDIZATION											
#1	50 mL	10.68	INST180928A	5 mL	0.05N	-	-	12.05	50/50	N H <sub>2</sub> SO <sub>4</sub> = (2.65g/L) (5 mL) = 0.020746887 (93)(V titrant)	-0.020833333
#2	1	10.68	1	1	1	-	-	12.0	1		
1) MBLC	50 mL	5.48	-	-	-	0.02079	0	0.05	50/50		Ave: 0.02079011
2) LCS	1	8.33	INST180928B	1 mL	0.05N	-	0	4.70	1		
3) N032253-1D	1	11.52	1	1	1	-	9.20	11.35	1		
4) N032240-3D	1	7.85	1	1	1	-	0	9.80	1		
5) N032246-5B	1	7.74	1	1	1	-	0	7.90	1		
6) 1 CB	1	7.77	1	1	1	-	0	8.00	1		
7) N032254-1B	1	5.36	1	1	1	-	0	10.40	1		
8) N032246-5B DDP	1	7.81	1	1	1	-	0	7.75	1		
9) 1 SBMS	1	8.04	INST180928B	1 mL	0.05N	-	0	12.50	1		
10) 1 SBMSD	1	8.08	1	1	1	-	0	12.50	1		
11)											
12)											
13)											
14)											
15)											
16)											
17)											
18)											
19)											
20)											
MS											
MSD											
LCS											

$$P = (V_{pH\ 8.3}) (N_{H_2SO_4}) (SD_{1000})$$

*V<sub>8.3</sub>*

$$T = (V_{pH\ 4.5}) (N_{H_2SO_4}) (SD_{1000})$$

*V<sub>4.5</sub>*

Julia Ramif 10/2/2018

# EPA 300.0



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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IC Technical Batch Review Checklist (ARCUS02)  
ASSET LABORATORIES - LAS VEGAS

IC ARCUS  
REV 2.0  
011416

QC Batch Number: R128879  
ASSET #: N032246

Instrument ID: IC-08  
Analyst: RBA  
Date Analyzed: 9/27/2018

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)			X			
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?			X			
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?			X			
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)			X			
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)			X			
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X					
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments:

%Rec of CI in CCV-5 failed, high bias. However, samples affected are enclosed by CCV-4/ CCB-4.

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer RBA

Date: 9/30/2018

2nd Level Reviewer Nancy 10/11/2018

Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
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## Sample Calculation

**METHOD:** EPA 300  
**TEST NAME:** INORGANIC ANIONS BY IC  
**MATRIX:** GROUNDWATER

FORMULA:

Calculate the Sulfate concentration, in mg/L, in the original sample as follows:

$$\text{Sulfate, mg/L} = A * DF$$

where:

A = mg/L, IC calculated concentration  
DF = dilution factor

For **N032246-005B** concentration in mg/L is calculated as follows:

$$\begin{aligned}\text{Sulfate, mg/L} &= 6.2356 * 50 \\ &= 311.78\end{aligned}$$

Reporting result in two significant values,

$$\text{Sulfate, mg/L} = \mathbf{310}$$

# ANALYSIS RUN LOG



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NEVADA  
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P: 702.307.2659 F: 702.307.2691

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Sequence: IC-08\_180925A  
Operator: IC-05

Page 1 of 2  
Printed: 9/25/2018 7:48:48 PM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 21

Created: 9/25/2018 9:35:07 AM by IC-05  
Last Update: 9/25/2018 2:38:07 PM by IC-05

No.	Name	Type	Inj. Vol.	Program	Method	Status
1	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
2	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
3	Std - 0	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
4	Std - 1	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
5	Std - 2	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
6	Std - 3	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
7	Std - 4	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
8	Std - 5	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
9	ICV	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
10	ICB	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
11	ICB	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
12	MB-H2O,MBLK,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
13	LCS-H2O,LCS,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
14	N032210-003D,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
15	N032210-003DDUP,DUP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
16	N032210-003DMS,MS,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
17	N032210-003DMSD,MSD,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
18	N032210-003DMS,MS,10	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
19	N032210-003DMSD,MSD,10	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
20	CCV-1,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
21	CCB-1,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished

*rba* 9/30/2018



Sequence: IC-08\_180925A  
Operator: IC-05

Page 2 of 2  
Printed: 9/25/2018 7:48:48 PM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 21

Created: 9/25/2018 9:35:07 AM by IC-05  
Last Update: 9/25/2018 2:38:07 PM by IC-05

No.	Name	Inj. Date/Time	Comment
1	BLANK,BLANK	9/25/2018 9:45:46 AM	BLANK
2	BLANK,BLANK	9/25/2018 10:20:33 AM	BLANK
3	Std - 0	9/25/2018 10:37:21 AM	BLANK
4	Std - 1	9/25/2018 11:02:43 AM	STD-LOW
5	Std - 2	9/25/2018 11:19:31 AM	STD
6	Std - 3	9/25/2018 11:36:19 AM	STD
7	Std - 4	9/25/2018 11:53:07 AM	STD
8	Std - 5	9/25/2018 12:09:56 PM	STD-HIGH
9	ICV	9/25/2018 12:26:44 PM	ICV
10	ICB	9/25/2018 12:43:31 PM	ICB
11	ICB	9/25/2018 1:00:19 PM	METHOD BLANK
12	MB-H2O,MBLK,1	9/25/2018 1:17:07 PM	METHOD BLANK
13	LCS-H2O,LCS,1	9/25/2018 1:33:55 PM	LCS
14	N032210-003D,SAMP,5	9/25/2018 1:56:43 PM	SAMP,2>10mL
15	N032210-003DDUP,DUP,5	9/25/2018 2:13:32 PM	DUP,2>10mL
16	N032210-003DMS,MS,5	9/25/2018 2:37:31 PM	MS,2>10mL
17	N032210-003DMSD,MSD,5	9/25/2018 2:54:20 PM	MSD,2>10mL
18	N032210-003DMS,MS,10	9/25/2018 3:11:08 PM	MS,5>10mL
19	N032210-003DMSD,MSD,10	9/25/2018 3:27:56 PM	MSD,5>10mL
20	CCV-1,CCV,1	9/25/2018 3:44:44 PM	CCV
21	CCB-1,CCB,1	9/25/2018 4:01:32 PM	CCB

Sequence: IC-08\_180927A  
Operator: IC-05

Page 1 of 4  
Printed: 10/7/2018 2:45:27 PM

Title:  
Datatype: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 52  
Created: 9/27/2018 8:38:27 AM by IC-05  
Last Update: 9/27/2018 10:43:40 PM by IC-05

No.	Name	Type	Inj. Vol.	Program	Method	Status
1	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
2	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
3	Std - 0	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
4	Std - 1	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
5	Std - 2	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
6	Std - 3	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
7	Std - 4	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
8	Std - 5	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
9	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
10	CCV-1,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
11	CCB-1,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
12	MB-H2O,MBLK,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
13	LCS-H2O,LCS,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
14	N032238-001A,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
15	N032238-001ADUP,DUP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
16	N032253-001D,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
17	N032253-001DDUP,DUP,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
18	N032253-001DMS,MS,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
19	N032253-001DMSD,MSD,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
20	N032253-001DMS,MS,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
21	N032253-001DMSD,MSD,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
22	CCV-2,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
23	CCB-2,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
24	N032238-001AMS,MS,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
25	N032238-001AMSD,MSD,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
26	N032235-002C,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
27	N032253-001D,SAMP,100	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
28	N032253-001D,SAMP,500	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
29	N032246-005B,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
30	N032246-006B,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
31	N032254-001B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
32	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
33	N032246-006BDUP,DUP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
34	CCV-3,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
35	CCB-3,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
36	N032246-006BMS,MS,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
37	N032246-006BMSD,MSD,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
38	N032246-005B,SAMP,500	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
39	N032246-006B,SAMP,500	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
40	N032246-005BMS,MS,500	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
41	N032246-005BMSD,MSD,500	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
42	N032246-006BDUP,DUP,500	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished

Sequence: IC-08\_180927A  
Operator: IC-05

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Printed: 10/7/2018 2:45:27 PM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 52  
Created: 9/27/2018 8:38:27 AM by IC-05  
Last Update: 9/27/2018 10:43:40 PM by IC-05

No.	Name	Inj. Date/Time	Comment
1	BLANK,BLANK	9/25/2018 9:45:46 AM	BLANK
2	BLANK,BLANK	9/25/2018 10:20:33 AM	BLANK
3	Std - 0	9/25/2018 10:37:21 AM	BLANK
4	Std - 1	9/25/2018 11:02:43 AM	STD-LOW
5	Std - 2	9/25/2018 11:19:31 AM	STD
6	Std - 3	9/25/2018 11:36:19 AM	STD
7	Std - 4	9/25/2018 11:53:07 AM	STD
8	Std - 5	9/25/2018 12:09:56 PM	STD-HIGH
9	BLANK,BLANK	9/27/2018 8:38:50 AM	BLANK
10	CCV-1,CCV,1	9/27/2018 8:55:38 AM	CCV
11	CCB-1,CCB,1	9/27/2018 9:12:26 AM	CCB
12	MB-H2O,MBLK,1	9/27/2018 9:29:13 AM	METHOD BLANK
13	LCS-H2O,LCS,1	9/27/2018 9:46:01 AM	LCS
14	N032238-001A,SAMP,5	9/27/2018 10:02:49 AM	SAMP,2>10mL
15	N032238-001ADUP,DUP,5	9/27/2018 10:19:38 AM	DUP,2>10mL
16	N032253-001D,SAMP,1	9/27/2018 10:45:45 AM	SAMP,10mL
17	N032253-001DDUP,DUP,1	9/27/2018 11:15:06 AM	DUP,10mL
18	N032253-001DMS,MS,1	9/27/2018 11:31:54 AM	MS,10mL
19	N032253-001DMSD,MSD,1	9/27/2018 11:48:42 AM	MSD,10mL
20	N032253-001DMS,MS,5	9/27/2018 12:05:30 PM	MS,2>10mL
21	N032253-001DMSD,MSD,5	9/27/2018 12:22:17 PM	MSD,2>10mL
22	CCV-2,CCV,1	9/27/2018 12:39:05 PM	CCV
23	CCB-2,CCB,1	9/27/2018 12:55:53 PM	CCB
24	N032238-001AMS,MS,5	9/27/2018 1:12:41 PM	MS,2>10mL
25	N032238-001AMSD,MSD,5	9/27/2018 1:29:29 PM	MSD,2>10mL
26	N032235-002C,SAMP,50	9/27/2018 1:46:17 PM	SAMP,0.2>10mL
27	N032253-001D,SAMP,100	9/27/2018 2:03:04 PM	SAMP,0.1>10mL
28	N032253-001D,SAMP,500	9/27/2018 2:19:52 PM	SAMP,0.02>10mL
29	N032246-005B,SAMP,5	9/27/2018 2:44:32 PM	SAMP,2>10mL
30	N032246-006B,SAMP,5	9/27/2018 3:01:21 PM	SAMP,2>10mL
31	N032254-001B,SAMP,200	9/27/2018 3:18:09 PM	SAMP,0.05>10mL
32	BLANK,BLANK	9/27/2018 3:34:56 PM	BLANK
33	N032246-006BDUP,DUP,5	9/27/2018 3:51:44 PM	DUP,2>10mL
34	CCV-3,CCV,1	9/27/2018 4:08:32 PM	CCV
35	CCB-3,CCB,1	9/27/2018 4:25:20 PM	CCB
36	N032246-006BMS,MS,5	9/27/2018 4:42:08 PM	CCB
37	N032246-006BMSD,MSD,5	9/27/2018 4:58:55 PM	CCB
38	N032246-005B,SAMP,500	9/27/2018 5:15:43 PM	SAMP,0.02>10mL
39	N032246-006B,SAMP,500	9/27/2018 5:32:31 PM	SAMP,0.02>10mL
40	N032246-005BMS,MS,500	9/27/2018 5:49:19 PM	MS,0.02>10mL
41	N032246-005BMSD,MSD,500	9/27/2018 6:06:07 PM	MSD,0.02>10mL
42	N032246-006BDUP,DUP,500	9/27/2018 6:22:55 PM	DUP,0.02>10mL

Sequence: IC-08\_180927A  
Operator: IC-05

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Printed: 10/7/2018 2:45:27 PM

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Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 52

Created: 9/27/2018 8:38:27 AM by IC-05  
Last Update: 9/27/2018 10:43:40 PM by IC-05

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No.	Name	Type	Inj. Vol.	Program	Method	Status
43	N032254-001B,SAMP,20000	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
44	N032246-005B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
45	N032246-006B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
46	CCV-4,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
47	CCB-4,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
48	N032246-005BMS,MS,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
49	N032246-005BMSD,MSD,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
50	N032246-006BDUP,DUP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
51	CCV-5,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
52	CCB-5,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished

Sequence: IC-08\_180927A  
Operator: IC-05

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Printed: 10/7/2018 2:45:27 PM

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Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 52

Created: 9/27/2018 8:38:27 AM by IC-05  
Last Update: 9/27/2018 10:43:40 PM by IC-05

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No.	Name	Inj. Date/Time	Comment
43	N032254-001B,SAMP,20000	9/27/2018 6:39:42 PM	SAMP,0.0005>10mL
44	N032246-005B,SAMP,50	9/27/2018 6:56:30 PM	SAMP,0.2>10mL
45	N032246-006B,SAMP,50	9/27/2018 7:13:18 PM	SAMP,0.2>10mL
46	CCV-4,CCV,1	9/27/2018 7:30:06 PM	CCV
47	CCB-4,CCB,1	9/27/2018 7:46:54 PM	CCB
48	N032246-005BMS,MS,50	9/27/2018 8:03:42 PM	MS,0.2>10mL
49	N032246-005BMSD,MSD,50	9/27/2018 8:20:29 PM	MSD,0.2>10mL
50	N032246-006BDUP,DUP,50	9/27/2018 8:37:17 PM	DUP,0.2>10mL
51	CCV-5,CCV,1	9/27/2018 8:54:05 PM	CCV
52	CCB-5,CCB,1	9/27/2018 9:10:53 PM	CCB

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

(EPA 300) - INITIAL CALIBRATION

Instrument ID: IC-08  
Date Calibrated: 9/25/2018

Initial Calibration:

Sulfate	STD0	STD1	STD2	STD3	STD4	STD5	
COMPOUND, in ug/L	0	0.5	2	4	10	20	R <sup>2</sup>
Area,mAU*min	0.0000	0.0554	0.2247	0.4541	1.1672	2.4269	1.000

	Stock
Standard Concentration:	1000000 PPB
Standard ID:	ISST-170814G

Calibration Acceptance Criteria: > 0.995 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

(EPA 300) - INITIAL CALIBRATION

Instrument ID: IC-08  
Date Calibrated: 9/25/2018

Initial Calibration:

Chloride	STD0	STD1	STD2	STD3	STD4	STD5	
COMPOUND, in ug/L	0	0.5	1	2	5	10	R <sup>2</sup>
Area,mAU*min	0.0000	0.0729	0.1481	0.3050	0.7880	1.6743	0.999

	Stock
Standard Concentration:	1000000 PPB
Standard ID:	ISST-170814B

Calibration Acceptance Criteria: > 0.995 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.



(EPA 300) - INITIAL CALIBRATION

Instrument ID: IC-08  
Date Calibrated: 9/25/2018

Initial Calibration:

Bromide	STD0	STD1	STD2	STD3	STD4	STD5	
COMPOUND, in ug/L	0	0.05	0.25	0.5	1.25	2.5	R <sup>2</sup>
Area,mAU*min	0.0000	0.0029	0.0165	0.0325	0.0804	0.1624	0.999

	Stock
Standard Concentration:	1000000 PPB
Standard ID:	ISST-170814D

Calibration Acceptance Criteria: > 0.995 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_BRPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>300_W_BRP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3153751</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide	1.243	0.50	1.250	0	99.4	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_BRP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153753</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide	1.253	0.50	1.250	0	100	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_BRP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153757</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide	1.242	0.50	1.250	0	99.4	90	110				

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_BRP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153762</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide	1.252	0.50	1.250	0	100	90	110				

Sample ID <b>CCV-4</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_BRP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153766</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide	1.248	0.50	1.250	0	99.8	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_BRPGE**

Sample ID <b>CCV-5</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_BRP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153768</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide	1.258	0.50	1.250	0	101	90	110				

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_CLPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3153770</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.186	0.50	2.000	0	109	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153772</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.926	0.50	2.000	0	96.3	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153776</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.928	0.50	2.000	0	96.4	90	110				

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153780</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.988	0.50	2.000	0	99.4	90	110				

Sample ID <b>CCV-4</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153788</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.043	0.50	2.000	0	102	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 300\_W\_CLPGE

Sample ID <b>CCV-5</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153790</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	3.546	0.50	2.000	0	177	90	110				S


Chloride is biased high in CCV-5 however samples were enclosed by CCV4 / CCB4.

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

 10/11/2018 **226**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3153792</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.047	0.50	4.000	0	101	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153794</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.950	0.50	4.000	0	98.8	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153798</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.933	0.50	4.000	0	98.3	90	110				

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153802</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.952	0.50	4.000	0	98.8	90	110				

Sample ID <b>CCV-4</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153806</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.974	0.50	4.000	0	99.4	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 300\_W\_SO4PGE

Sample ID <b>CCV-5</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153811</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.952	0.50	4.000	0	98.8	90	110				

**Qualifiers:**

- |    |   |   |                                      |   |  |
|----|---|---|--------------------------------------|---|--|
| B  | Analyte detected in the associated Method Blank | E | Value above quantitation range       | H | Holding times for preparation or analysis exceeded           |
| ND | Not Detected at the Reporting Limit             | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_BRPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>300_W_BRP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3153752</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Bromide ND 0.50

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_BRP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153754</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Bromide ND 0.50

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_BRP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153758</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Bromide ND 0.50

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_BRP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153763</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Bromide ND 0.50

Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_BRP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153767</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Bromide ND 0.50

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_BRPGE**

Sample ID <b>CCB-5</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_BRP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153769</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromide	ND	0.50									

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_CLPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID: <b>ICB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3153771</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chloride	ND	0.50			
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Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153773</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chloride	0.164	0.50			
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Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153777</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chloride	ND	0.50			
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Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153781</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chloride	ND	0.50			
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Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153789</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chloride	0.226	0.50			
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_CLPGE**

Sample ID <b>CCB-5</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153791</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	0.177	0.50									

**Qualifiers:**

- |    |   |   |                                      |   |  |
|----|---|---|--------------------------------------|---|--|
| B  | Analyte detected in the associated Method Blank | E | Value above quantitation range       | H | Holding times for preparation or analysis exceeded           |
| ND | Not Detected at the Reporting Limit             | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID: <b>ICB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3153793</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate ND 0.50

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153795</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate ND 0.50

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153799</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate ND 0.50

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153803</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate ND 0.50

Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153807</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate ND 0.50

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 300\_W\_SO4PGE

Sample ID <b>CCB-5</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>128879</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128879</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/27/2018</b>	SeqNo: <b>3153812</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.50									

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-08

### Analytical Sequence

Date Analyzed: 9/27/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	Sulfate 12.624	
CCV-1	Sulfate 12.634	
CCV-2	Sulfate 12.620	
CCV-3	Sulfate 12.613	
CCV-4	Sulfate 12.627	
CCV-5	Sulfate 12.627	

**Average** 12.624  
**Applied RT Window** 12.424 - 12.824

MB-R128879_SO4	Sulfate	N.A.	N.A.
LCS-R128879_SO4	Sulfate	12.634	PASS
N032246-005B	Sulfate	12.630	PASS
N032246-006B	Sulfate	12.630	PASS
N032246-005BMS	Sulfate	12.630	PASS
N032246-005BMSD	Sulfate	12.627	PASS
N032246-006BDUP	Sulfate	12.624	PASS

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-08

### Analytical Sequence

Date Analyzed: 9/27/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	Chloride 4.704	
CCV-1	Chloride 4.714	
CCV-2	Chloride 4.710	
CCV-3	Chloride 4.710	
CCV-4	Chloride 4.710	
CCV-5	Chloride 4.710	

**Average** 4.711  
**Applied RT Window** 4.511 - 4.911

MB-R128879_CL	Chloride	N.A.	N.A.
LCS-R128879_CL	Chloride	4.710	PASS
N032246-005B	Chloride	4.710	PASS
N032246-006B	Chloride	4.707	PASS
N032246-005BMS	Chloride	4.707	PASS
N032246-005BMSD	Chloride	4.707	PASS
N032246-006BDUP	Chloride	4.710	PASS

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-08

### Analytical Sequence

Date Analyzed: 9/27/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	Bromide 6.734	
CCV-1	Bromide 6.74	
CCV-2	Bromide 6.73	
CCV-3	Bromide 6.73	
CCV-4	Bromide 6.73	
CCV-5	Bromide 6.73	

**Average** 6.732  
**Applied RT Window** 6.532 - 6.932

MB-R128879_BR	Bromide	N.A.	N.A.
LCS-R128879_BR	Bromide	6.737	PASS
N032246-005B	Bromide	6.740	PASS
N032246-006B	Bromide	6.740	PASS
N032246-006BDUP	Bromide	6.740	PASS
N032246-006BMS	Bromide	6.737	PASS
N032246-006BMSD	Bromide	6.740	PASS

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## METHOD DETECTION LIMIT 2017

Method Name: **INORGANIC IONS by Ion Chromatography**  
 Method Number: EPA 300.0  
 Analysis Date(s): 5/23/2017 ; 5/24/2017; 5/25/2017  
 Analyst/Technician: Ria Abes

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **IC-08**

Acceptance Criteria: MDL < spike < 10XMDL

Datafile	170523A D36	170523A D37	170523A D38	170524A D17	170524A D18	170525A D45	170525A D46					
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	MDL	LOD	PQL
Fluoride	0.020	0.022	0.021	0.020	0.023	0.026	0.024	0.020	0.0021	<b>0.0065</b>	0.020	0.10
Chloride	0.133	0.136	0.136	0.133	0.141	0.133	0.136	0.025	0.0029	<b>0.0091</b>	0.020	0.50
Nitrite	0.030	0.028	0.027	0.028	0.028	0.027	0.027	0.020	0.0010	<b>0.0030</b>	0.010	0.05
Bromide	0.037	0.042	0.043	0.038	0.040	0.032	0.025	0.040	0.0062	<b>0.0196</b>	0.040	0.20
Nitrate	0.035	0.034	0.033	0.033	0.033	0.031	0.030	0.020	0.0016	<b>0.0050</b>	0.010	0.05
Phosphate	0.047	0.051	0.049	0.046	0.052	0.047	0.059	0.040	0.0043	<b>0.0135</b>	0.030	0.10
Sulfate	0.213	0.199	0.208	0.216	0.199	0.201	0.198	0.050	0.0073	<b>0.0229</b>	0.050	0.50



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## MDL/LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Inorganic Ions by Ion Chromatography (Low Level)**  
 Method Number: EPA Method 300.0  
 Analysis Date(s): 3/29-30/2018  
 Analyst: Ria B. Abes

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **IC-08**

Compound	MDL	LOD Spike Conc., mg/L	LOD Actual Conc., mg/L	PQL Spike Conc., mg/L	PQL Actual Conc., mg/L	%Recovery
Fluoride	<b>0.0065</b>	0.020	0.0252	0.10	0.087	<b><u>87</u></b>
Chloride	<b>0.0091</b>	0.020	0.1193	0.50	0.5757	<b><u>115</u></b>
Nitrite	<b>0.0030</b>	0.010	0.0237	0.05	0.0638	<b><u>128</u></b>
Bromide	<b>0.0196</b>	0.040	0.0405	0.20	0.1993	<b><u>100</u></b>
Nitrate	<b>0.0050</b>	0.010	0.0191	0.05	0.0561	<b><u>112</u></b>
Phosphate	<b>0.0135</b>	0.030	0.0415	0.10	0.1216	<b><u>122</u></b>
Sulfate	<b>0.0229</b>	0.050	0.3682	0.50	0.6549	<b><u>131</u></b>



# SM 4500-NO3F



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**Wet Chemistry Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

WC ARCUS  
 REV 1.0  
 071118

**FIRST LEVEL REVIEW:**

QC Batch Number:                     R129025                     Analyst:                     QBM                      
 ASSET #:           N032205, N032216, N032246           Date Analyzed:                     10/4/2018                      
 Method:           4500\_N03          

Initial Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis or every 24 hrs.	X					
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)	X					
3. ICV within ± 15% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.	X					
5. CCV within ± 15% of expected value.	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)	X					
<b>Sample Information</b>						
8. All samples are within linear range.	X					
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits		X				
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented		X				
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

%Rec of Nitrate/Nitrite as N in MSD @5x failed, high bias. Possibly due to matrix interference.

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer                     QBM                     Date:                     10/9/18                      
 2nd Level Reviewer                     *Nancy* 10/9/2018                     Date:                     \_\_\_\_\_



# SAMPLE CALCULATION



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NEVADA  
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## Sample Calculation

**METHOD:** EPA 4500N03F  
**TEST NAME:** Nitrate/Nitrite-N by Automated Cadmium Reduction  
**MATRIX:** Groundwater

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

$$\text{Nitrate/Nitrite-N, mg/L} = A * DF$$

where:

A = mg/L, instrument calculated concentration  
DF = dilution factor

For: **N032246-002C**

The concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{Nitrate/Nitrite-N} &= 0.1352 * 1 \\ &= 0.1352 \text{ mg/L} \end{aligned}$$

Reporting result in two significant figures,

$$\text{Nitrate/Nitrite-N} = 0.14 \text{ mg/L}$$

# INITIAL CALIBRATION DATA SUMMARY



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**EPA 353.2 NO3 as N (NO3CD) - Endpoint**

**General setup**

Measuring unit	ppm
Number of decimals	4
Stabilization time (sec)	26
Measurement time (sec)	3
Sample volume (µl)	450
Filter	546
Reagent prime	No
CD Reduction	Yes

**Limits and dilution**

Low level	-0.2
High level	4
Max linearity	4
Blank min	0
Blank max	0.049
Postdilution factor %	10
Factor Calculations	No

**Washes**

Number of final washes	6
Wash every	R1, R2

**O.D. Corrections**

Carry Over	No
Carry Over value	0.0000
Blank	No
Gain	No

**Reagents**

N.	Volume (µl)	Incubation time (sec)
1	200	102
2	300	663
3	0	0

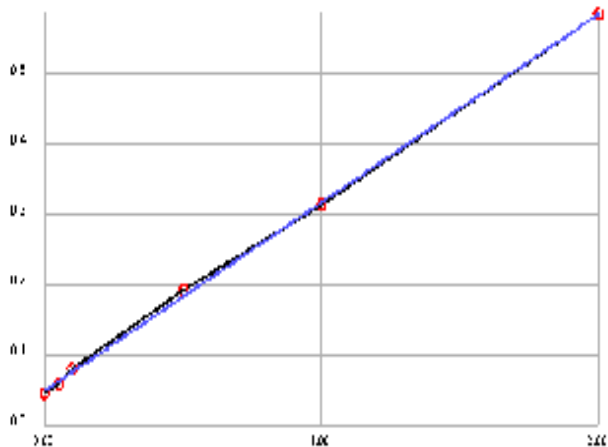
**QC**

N.	Value	Tolerance
1	1	0.1

**Calibration**

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	$y = 0.2678x + 0.0504$
Correlation	.999678



Calibrant	Energy	Set	Conc
1	0.0455	0.0000	-0.0182
2	0.0607	0.0500	0.0385
3	0.0801	0.1000	0.1110
4	0.1935	0.5000	0.5345
5	0.3145	1.0000	0.9863
6	0.5854	2.0000	1.9980

**Notes:**

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



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3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>ICV</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161929</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.495	0.050	0.5000	0	99.0 90 110

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>CCV</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161947</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.495	0.050	0.5000	0	99.0 90 110

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>
Client ID: <b>CCV</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161958</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.473	0.050	0.5000	0	94.6 90 110

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# INITIAL CALIBRATION AND CONTINUING CALIBRATION BLANK SUMMARY



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**“Serving Clients with Passion and Professionalism”**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161930</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161948</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129025</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129025</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/4/2018</b>	SeqNo: <b>3161959</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values



# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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**Advanced Technology Laboratories, Inc.**

3151 W. Post Rd.  
Las Vegas, NV. 89118  
702-307-2659  
702-307-2691  
[www.atl-labs.com](http://www.atl-labs.com)

Time start: 10-04-2018 17:48

Time end: 10-04-2018 20:05

		EPA 353.2 NO3 as N		
		ppm	Flags	OD
1	<BLANK>	19:34:30	-0.0309	0.0421
2	<BLANK>	19:35:25	-0.0209	0.0448
3	<CAL1>	19:36:24	-0.0182 [0]	0.0455
4	<CAL2>	19:37:20	0.0385 [0.05]	0.0607
5	<CAL3>	19:38:21	0.1110 [0.1]	0.0801
6	<CAL4>	19:39:15	0.5345 [0.5]	0.1935
7	<CAL5>	19:40:11	0.9863 [1]	0.3145
8	<CAL6>	19:41:12	1.9980 [2]	0.5854
9	,BLANK,BLANK,1, <b>NOT REPORTED</b>	19:42:08	0.0804	0.0719
10	,ICV,ICV,1,	19:43:02	0.4949	0.1829
11	,ICB,ICB,1,	19:44:03	0.0094	0.0529
12	,MB-H2O,MBLK,1,	19:44:59	-0.0141	0.0466
13	,LCS-H2O,LCS,1,	19:46:00	0.4811	0.1792
14	,N032205-003C,SAMP,1,	19:46:54	0.0169	0.0549
15	,N032205-004C,SAMP,5,	19:47:49	0.5942	0.2095
16	,N032205-004CMS,MS,5,	19:48:45	1.2074	0.3737
17	,N032205-004CMSD,MSD,5,	19:49:33	1.2324	0.3804
18	,N032205-001C,SAMP,1,	19:50:23	1.0281	0.3257
19	,N032205-002C,SAMP,1,	19:51:05	1.1357	0.3545
20	,N032205-002CDUP,DUP,1,	19:51:48	1.1110	0.3479
21	,BLANK, <b>NOT REPORTED</b>	19:52:38	0.0430	0.0619
22	,CCV-1,CCV,1,	19:53:20	0.4952	0.1830
23	,CCB-1,CCB,1,	19:54:03	-0.0029	0.0496
24	,N032246-007C,SAMP,1,	19:54:51	0.0146	0.0543
25	,N032216-001C,SAMP,1,	19:55:34	0.0240	0.0568
26	,N032216-002C,SAMP,1,	19:56:22	0.0169	0.0549

		<b>EPA 353.2 NO3 as N</b>			
			<b>ppm</b>	<b>Flags</b>	<b>OD</b>
27	,N032216-003C,SAMP,1,	19:57:06	0.2140		0.1077
28	,N032246-002C,SAMP,1,	19:57:55	0.1352		0.0866
29	,N032246-003C,SAMP,1,	19:58:37	0.0811		0.0721
30	,N032246-004C,SAMP,1,	19:59:20	0.4445		0.1694
31	,N032246-001C,SAMP,1,	20:00:02	0.6827		0.2332
32	,N032246-008C,SAMP,5,	20:00:52	1.0061		0.3198
33	,BLANK,			<b>NOT REPORTED</b>	0.0558
34	,CCV-2,CCV,1,	20:02:17	0.4728		0.1770
35	,CCB-2,CCB,1,	20:03:05	-0.0026		0.0497

**Nitrate/Nitrite as N by Cadmium Reduction Preparation and Runlog**

<b>Matrix:</b>	
Method: <u>SM 4500-NO3-F/ EPA 353.2</u>	Reagent ID #
Instrument: <u>Easy Chem Analyzer</u>	Ammonium Chloride reagent/Buffer: <u>R180904B</u>
	Color reagent: <u>R180904C</u>
	2% Copper Sulfate: <u>R180904A</u>
Date Analyzed: 10/4/2018	Ammonium Hydroxide: <u>CINV-180703A</u>
Time Analyzed: 5:48 PM	
Analyzed By: QBM	

Sample ID.	Sample Wt./Vol.	Sample pH	Std Code	Spike Amt Added (mL)	Spike Conc.(PPM)	Final Volume (mL)	Dilution (F/I)	Reading & Calculations (mg/L)	Comments
N032205-001C		8.51							
N032205-002C		7.88							
N032205-003C		8.55							
N032205-004C		7.56							
N032216-001C		8.18							
N032216-002C		8.42							
N032216-003C		8.21							
N032246-001C		8.13							
N032246-002C		7.58							
N032246-003C		7.24							
N032246-004C		8.18							
N032246-007C		8.08							
N032246-008C		7.72							

# MDL STUDY



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## METHOD DETECTION LIMIT 2017

Method Name: **Nitrate/Nitrite by Cadmium Reduction**  
 Method Number: SM4500NO3F  
 Analysis Date(s): 10/25,2017, 10/26/2017, 10/27/2017  
 Analyst/Technician: Quennie B. Manimtim

Matrix: **Water**  
 Unit: mg/L  
 Spike Conc: 0.05 mg/L

Analyte	#1	#2	#3	#4	#5	#6	#7	Ave	SD	t <sub>(n-1)</sub> value	MDL	PQL
Nitrate/Nitrite as N	0.0573	0.0562	0.0500	0.0730	0.0698	0.0637	0.0564	0.0609	0.0082	3.143	0.0259	0.05

**Method Blank**

Nitrate/Nitrite as N	0.0160	0.0067	0.0064	0.0204	0.0173	0.0036	0.0083	0.0112	0.0065	3.143	0.0317	0.05
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**MDL:** 0.0317 mg/L



# EPA 6020 Dissolved



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**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70807  
 ASSET #: N032246

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 10/2/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.		X			X	
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X			X		
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?	X			X		
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits		X			X	
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented	X			X		
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

% Rec of Mo in N032205-001D PS / MSD failed, high bias. However, LCS passed criteria.  
 % RSD of Se in N032246-001D / 002D / 003D / 004D failed. For rerun.  
 IS of Se in N032246-001D / 002D failed. For rerun -005

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer *Handwritten Signature* 10/11/2018

Date: 10/11/18  
 Date: \_\_\_\_\_





**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70807  
 ASSET #: N032246

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 10/8/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			<del>X</del>		X
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			<del>X</del>		X
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			<del>X</del>		X
24. LCS compounds within control limits.	X			<del>X</del>		X
25. MS/MSD, RPD's are within control limits	X			<del>X</del>		X
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X			X	
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

For Se rerun. / of N032246-005  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer 10/11/2018

Date: 10/11/18  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## SAMPLE CALCULATION

**METHOD:** EPA 6020  
**TEST NAME:** Heavy Metals by ICP-MS  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Manganese concentration, in ug/L in the original sample as follows:

$$\text{Manganese , ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = Dilution Factor

PF = Final Volume of Digestate, mL / Amount of Sample, mL

For Sample **N032246-001D**, the concentration in ug/L is calculated as follows:

$$\text{Manganese , ug/L} = 44.8092 * 1 * (25/25)$$

$$\text{Manganese , ug/L} = 44.8092$$

Reporting results in two significant figures,

$$\text{Manganese , ug/L} = 45$$

# % RSD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENTAL TECHNOLOGY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.082	7.86	15	PASS	0.093	16.22	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.5	3.24	15	PASS	0.51	4.65	15	PASS
Std3-5/50 ppb	ICAL	1	5.12	2.0019	15	PASS	5.18	1.11	15	PASS
Std4-10/100 ppb	ICAL	1	10.26	1.58	15	PASS	10.24	1.12	15	PASS
Std5-20/200 ppb	ICAL	1	20.57	1.073	15	PASS	20.32	0.21	15	PASS
Std6-40/400 ppb	ICAL	1	40.83	1.18	15	PASS	40.77	1.23	15	PASS
Std7-100/1000 ppb	ICAL	1	101.24	0.25	15	PASS	101.94	0.39	15	PASS
Std8-200/2000 ppb	ICAL	1	199.14	1.25	15	PASS	198.83	1.11	15	PASS
ICV	ICV	1	10.36	1.019	15	PASS	106.15	1.085	15	PASS
ICB	ICB	1	0.0099	52.98	15	<PQL	<0.000	N/A	15	<PQL
LLICV	CCV1	1	1.014	1.2	20	PASS	0.55	1.65	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	21.23	0.89	15	PASS	16.4	0.69	15	PASS
LLICV	CCV1	1	1.049	3.55	20	PASS	0.53	8.74	20	PASS
MB-70807	MBLK	1	<0.000	N/A	15	<PQL	0.043	7.17	15	PASS
LCS-70807	LCS	1	10.55	0.45	15	PASS	106.68	1.23	15	PASS
N032205-001D	SAMP	1	1.42	1.081	15	PASS	0.21	35.79	15	<PQL
N032205-001D	SAMP	5	0.29	7.23	15	PASS	0.11	24.92	15	<PQL
N032205-001D-PS	PS	1	12.087	0.48	15	PASS	113.2	0.43	15	PASS
N032205-001D-MS	MS	1	12.13	0.78	15	PASS	114.51	0.64	15	PASS
N032205-001D-MSD	MSD	1	12.0053	0.85	15	PASS	113.67	0.72	15	PASS
N032205-002D	SAMP	1	1.55	0.79	15	PASS	0.23	15.21	15	<PQL
CCV1	CCV	1	21.25	1.31	15	PASS	20.81	1.17	15	PASS
CCB1	CCB	1	<0.000	N/A	15	<PQL	0.0064	102.18	15	<PQL
N032205-003D	SAMP	1	<0.000	N/A	15	<PQL	920.3	0.72	15	PASS
N032205-004D	SAMP	1	38.75	1.38	15	PASS	23.53	2.66	15	PASS
N032216-001D	SAMP	1	0.4	5.25	15	PASS	26.061	1.038	15	PASS
N032216-002D	SAMP	1	6.22	1.64	15	PASS	25.97	0.66	15	PASS
N032216-003D	SAMP	1	80.7	1.013	15	PASS	10.57	1.64	15	PASS
N032246-001D	SAMP	1	99.86	1.17	15	PASS	44.81	0.51	15	PASS
N032246-002D	SAMP	1	2.91	1.47	15	PASS	15.038	1.72	15	PASS
N032246-003D	SAMP	1	<0.000	N/A	15	<PQL	244.76	0.25	15	PASS
N032246-004D	SAMP	1	0.24	17.24	15	<PQL	56.18	1.16	15	PASS
N032246-005C	SAMP	1	0.28	10.032	15	PASS	86.082	0.95	15	PASS
CCV2	CCV	1	21.26	0.27	15	PASS	20.73	1.72	15	PASS
CCB2	CCB	1	0.0053	204.59	15	<PQL	<0.000	N/A	15	<PQL
N032246-006C	SAMP	1	0.33	2.91	15	PASS	84.15	0.7	15	PASS
N032246-007D	SAMP	1	<0.000	N/A	15	<PQL	166.4	0.96	15	PASS
N032246-008D	SAMP	1	578.87	1.27	15	PASS	0.3	12.65	15	PASS
N032205-003D	SAMP	10	0.072	19.98	15	<PQL	92.46	0.31	15	PASS

PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N032246-003D	SAMP	5	<0.000	N/A	15	<PQL	51.27	1.17	15	PASS
N032246-008D	SAMP	5	114.6	0.96	15	PASS	0.076	89.024	15	<PQL
N032205-002D	SAMP	1	1.63	4.093	15	PASS	0.32	9.66	15	PASS
N032216-001D	SAMP	1	0.4	4.93	15	PASS	25.95	0.32	15	PASS
N032216-002D	SAMP	5	1.34	1.88	15	PASS	5.47	0.061	15	PASS
N032216-003D	SAMP	5	16.84	0.83	15	PASS	2.16	1.77	15	PASS
CCV3	CCV	1	20.63	0.87	15	PASS	20.31	1.015	15	PASS
CCB3	CCB	1	0.0011	451.87	15	<PQL	<0.000	N/A	15	<PQL
N032205-002D	SAMP	1	1.57	5.75	15	PASS	0.33	9.37	15	PASS
N032205-002D	SAMP	1	1.59	2.38	15	PASS	0.31	7.64	15	PASS
N032216-001D	SAMP	5	0.09	11.52	15	PASS	5.46	2.57	15	PASS
N032246-001D	SAMP	5	20.78	1.31	15	PASS	9.27	1.37	15	PASS
N032246-002D	SAMP	5	0.67	2.83	15	PASS	3.16	1.93	15	PASS
N032246-004D	SAMP	5	0.047	43.14	15	<PQL	11.91	0.44	15	PASS
N032246-005C	SAMP	5	0.05	45.38	15	<PQL	17.84	1.5	15	PASS
N032246-007D	SAMP	5	<0.000	N/A	15	<PQL	35.4	0.66	15	PASS
CCV4	CCV	1	20.66	0.8	15	PASS	20.16	1.23	15	PASS
CCB4	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
ICSA2	ICSA	1	0.018	32.82	15	<PQL	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	21.67	1.5	15	PASS	16.059	2.028	15	PASS

PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	75 As [2]				78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.097	20.78	15	<PQL	0.071	18.82	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.5	7.34	15	PASS	0.67	16.36	15	NR!
Std3-5/50 ppb	ICAL	1	5.16	1.39	15	PASS	5.16	10.12	15	PASS
Std4-10/100 ppb	ICAL	1	10.06	1.34	15	PASS	10.65	1.73	15	PASS
Std5-20/200 ppb	ICAL	1	20.28	1.36	15	PASS	19.46	3.44	15	PASS
Std6-40/400 ppb	ICAL	1	40.38	1.14	15	PASS	40.38	5.55	15	PASS
Std7-100/1000 ppb	ICAL	1	100.58	0.45	15	PASS	98.83	1.024	15	PASS
Std8-200/2000 ppb	ICAL	1	199.6	0.96	15	PASS	200.52	0.83	15	PASS
ICV	ICV	1	10.4	1.14	15	PASS	10.38	11.88	15	PASS
ICB	ICB	1	0.026	76.91	15	<PQL	0.1	43.53	15	<PQL
LLICV	CCV1	1	0.15	16.65	20	PASS	0.67	16.25	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	0.035	35.67	15	<PQL
ICSAB1	ICSAB	1	21.29	1.82	15	PASS	19.033	5.44	15	PASS
LLICV	CCV1	1	0.1	18.34	20	PASS	0.53	16.4	20	PASS
MB-70807	MBLK	1	<0.000	N/A	15	<PQL	0.0071	173.21	15	<PQL
LCS-70807	LCS	1	9.99	0.9	15	PASS	10.086	11.95	15	PASS
N032205-001D	SAMP	1	1.56	3.47	15	PASS	1.017	2.25	15	PASS
N032205-001D	SAMP	5	0.29	7.94	15	PASS	0.25	39.26	15	<PQL
N032205-001D-PS	PS	1	12.97	0.53	15	PASS	11.68	2.17	15	PASS
N032205-001D-MS	MS	1	13.11	2.51	15	PASS	11.11	1.2	15	PASS
N032205-001D-MSD	MSD	1	13.25	0.69	15	PASS	10.66	8.85	15	PASS
N032205-002D	SAMP	1	1.48	2.86	15	PASS	0.93	16.31	15	NR!
CCV1	CCV	1	19.87	0.83	15	PASS	20.9	6.71	15	PASS
CCB1	CCB	1	0.006	240.52	15	<PQL	0.037	91.97	15	<PQL
N032205-003D	SAMP	1	3.99	1.039	15	PASS	0.11	55.19	15	<PQL
N032205-004D	SAMP	1	1.44	4.44	15	PASS	3.86	13.76	15	PASS
N032216-001D	SAMP	1	4.65	2.26	15	PASS	2.17	15.16	15	NR!
N032216-002D	SAMP	1	5.3	2.84	15	PASS	2.075	8.63	15	PASS
N032216-003D	SAMP	1	9.1	1.64	15	PASS	2.79	12.86	15	PASS
N032246-001D	SAMP	1	12.35	0.78	15	PASS	1.44	17.53	15	NR!
N032246-002D	SAMP	1	15.77	2.44	15	PASS	0.51	30.79	15	NR!
N032246-003D	SAMP	1	9.97	0.4	15	PASS	0.063	91.48	15	<PQL
N032246-004D	SAMP	1	15.38	2.53	15	PASS	0.16	13.26	15	PASS
N032246-005C	SAMP	1	1.16	4.56	15	PASS	1.22	18.078	15	NR!
CCV2	CCV	1	19.26	1.86	15	PASS	20.1	1.38	15	PASS
CCB2	CCB	1	0.0082	195.85	15	<PQL	0.051	49.75	15	<PQL
N032246-006C	SAMP	1	1.15	11.47	15	PASS	1.32	7.57	15	PASS
N032246-007D	SAMP	1	3.25	5.26	15	PASS	0.075	99.41	15	<PQL
N032246-008D	SAMP	1	1.69	1.31	15	PASS	4.69	9.34	15	PASS
N032205-003D	SAMP	10	0.33	9.88	15	PASS	0.055	50.63	15	<PQL

PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	75 As [2]				78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N032246-003D	SAMP	5	1.94	2.71	15	PASS	0.03	173.21	15	<PQL
N032246-008D	SAMP	5	0.31	12.88	15	PASS	0.86	12.52	15	PASS
N032205-002D	SAMP	1	1.48	2.6	15	PASS	1.17	43.75	15	NR!
N032216-001D	SAMP	1	4.71	1.23	15	PASS	2.0041	16.25	15	NR!
N032216-002D	SAMP	5	1.056	4.64	15	PASS	0.42	25.49	15	<PQL
N032216-003D	SAMP	5	1.77	4.14	15	PASS	0.72	10.6	15	PASS
CCV3	CCV	1	19.83	1.74	15	PASS	20.3	4.55	15	PASS
CCB3	CCB	1	<0.000	N/A	15	<PQL	0.052	49.89	15	<PQL
N032205-002D	SAMP	1	1.44	5.73	15	PASS	1.11	15.23	15	NR!
N032205-002D	SAMP	1	1.6	2.65	15	PASS	1.18	14.96	15	PASS
N032216-001D	SAMP	5	0.93	4.91	15	PASS	0.45	11.97	15	PASS
N032246-001D	SAMP	5	2.52	2.83	15	PASS	0.14	64.065	15	<PQL
N032246-002D	SAMP	5	3.2	4.76	15	PASS	0.062	50.3	15	<PQL
N032246-004D	SAMP	5	3.15	6.12	15	PASS	0.021	86.6	15	<PQL
N032246-005C	SAMP	5	0.2	16.052	15	NR!	0.24	96.14	15	<PQL
N032246-007D	SAMP	5	0.63	3.96	15	PASS	0	N/A	15	<PQL
CCV4	CCV	1	19.61	0.55	15	PASS	21.31	5.69	15	PASS
CCB4	CCB	1	0.0021	1167.37	15	<PQL	0.055	133.12	15	<PQL
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	0.017	86.61	15	<PQL
ICSAB2	ICSAB	1	20.9	0.42	15	PASS	21.0027	4.75	15	PASS



PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.083	18.13	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.46	10.34	15	PASS
Std3-5/50 ppb	ICAL	1	4.78	1.084	15	PASS
Std4-10/100 ppb	ICAL	1	9.77	1.54	15	PASS
Std5-20/200 ppb	ICAL	1	19.72	0.88	15	PASS
Std6-40/400 ppb	ICAL	1	39.87	0.49	15	PASS
Std7-100/1000 ppb	ICAL	1	99.59	0.49	15	PASS
Std8-200/2000 ppb	ICAL	1	200.27	0.52	15	PASS
ICV	ICV	1	10.34	0.91	15	PASS
ICB	ICB	1	0.17	9.66	15	PASS
LLICV	CCV1	1	0.56	7.59	20	PASS
ICSA1	ICSA	1	0.11	5.92	15	PASS
ICSAB1	ICSAB	1	22.29	0.43	15	PASS
LLICV	CCV1	1	0.59	7.73	20	PASS
MB-70807	MBLK	1	0.0085	85.85	15	<PQL
LCS-70807	LCS	1	9.8	1.67	15	PASS
N032205-001D	SAMP	1	16.37	1.69	15	PASS
N032205-001D	SAMP	5	3.19	0.93	15	PASS
N032205-001D-PS	PS	1	28.52	0.7	15	PASS
N032205-001D-MS	MS	1	28.78	0.87	15	PASS
N032205-001D-MSD	MSD	1	28.93	0.63	15	PASS
N032205-002D	SAMP	1	17.23	0.53	15	PASS
CCV1	CCV	1	19.39	0.24	15	PASS
CCB1	CCB	1	0.11	12.36	15	PASS
N032205-003D	SAMP	1	64.83	0.44	15	PASS
N032205-004D	SAMP	1	26.85	0.97	15	PASS
N032216-001D	SAMP	1	56.72	0.93	15	PASS
N032216-002D	SAMP	1	56.91	1.28	15	PASS
N032216-003D	SAMP	1	60.6	1.27	15	PASS
N032246-001D	SAMP	1	82.039	0.6	15	PASS
N032246-002D	SAMP	1	78.12	0.6	15	PASS
N032246-003D	SAMP	1	69.044	0.83	15	PASS
N032246-004D	SAMP	1	81.76	0.87	15	PASS
N032246-005C	SAMP	1	11.54	1.019	15	PASS
CCV2	CCV	1	19.3	0.8	15	PASS
CCB2	CCB	1	0.11	23.7	15	<PQL
N032246-006C	SAMP	1	11.56	0.074	15	PASS
N032246-007D	SAMP	1	58.58	0.81	15	PASS
N032246-008D	SAMP	1	13.14	1.68	15	PASS
N032205-003D	SAMP	10	6.16	0.82	15	PASS

PERCENT RSD SUMMARY: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment
N032246-003D	SAMP	5	13.34	1.049	15	PASS
N032246-008D	SAMP	5	2.59	4.12	15	PASS
N032205-002D	SAMP	1	17.025	2.18	15	PASS
N032216-001D	SAMP	1	56.91	0.32	15	PASS
N032216-002D	SAMP	5	11.12	0.78	15	PASS
N032216-003D	SAMP	5	11.66	0.64	15	PASS
CCV3	CCV	1	19.95	0.86	15	PASS
CCB3	CCB	1	0.087	12.61	15	PASS
N032205-002D	SAMP	1	16.93	1.56	15	PASS
N032205-002D	SAMP	1	17.087	1.53	15	PASS
N032216-001D	SAMP	5	11.14	2.68	15	PASS
N032246-001D	SAMP	5	15.74	0.86	15	PASS
N032246-002D	SAMP	5	15.16	2.045	15	PASS
N032246-004D	SAMP	5	16.3	0.99	15	PASS
N032246-005C	SAMP	5	2.25	3.073	15	PASS
N032246-007D	SAMP	5	11.44	1.21	15	PASS
CCV4	CCV	1	19.49	1.53	15	PASS
CCB4	CCB	1	0.11	16.032	15	<PQL
ICSA2	ICSA	1	0.08	23.8	15	<PQL
ICSAB2	ICSAB	1	22.36	0.2	15	PASS

PERCENT RSD SUMMARY: 181008C

Instrument ID: ICPMS-02

Sample Name	Type	DF	78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.081	36	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.49	2.05	15	PASS
Std3-5/50 ppb	ICAL	1	4.99	7.35	15	PASS
Std4-10/100 ppb	ICAL	1	10.25	3.73	15	PASS
Std5-20/200 ppb	ICAL	1	20.2	2.84	15	PASS
Std6-40/400 ppb	ICAL	1	39.99	4.45	15	PASS
Std7-100/1000 ppb	ICAL	1	101.65	0.95	15	PASS
Std8-200/2000 ppb	ICAL	1	199.15	2.64	15	PASS
ICV	ICV	1	10.12	8.91	15	PASS
ICB	ICB	1	0.017	143.93	15	<PQL
LLICV	CCV1	1	0.55	22.75	20	NR!
ICSA1	ICSA	1	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	19.36	6.73	15	PASS
LLICV	CCV1	1	0.45	9.17	20	PASS
N032246-005C	SAMP	1	1.45	13.41	15	PASS
N032246-005C	SAMP	5	0.35	24.99	15	<PQL
CCV1	CCV	1	21.14	2.57	15	PASS
CCB1	CCB	1	0.021	248.07	15	<PQL
CCV2	CCV	1	19.45	1.75	15	PASS
CCB2	CCB	1	0.032	126.29	15	<PQL
CCV3	CCV	1	20.15	1.35	15	PASS
CCB3	CCB	1	<0.000	N/A	15	<PQL
ICSA2	ICSA	1	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	20.46	4.21	15	PASS

NR

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"

**INJECTION LOG: 181002A**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A1002001.D	RINSE	RINSE	1	10/02/18 10:20 AM
A1002002.D	Cal Blank	IBLK	1	10/02/18 10:25 AM
A1002003.D	Std1-0.1/1 ppb	ICAL	1	10/02/18 10:31 AM
A1002004.D	Std2-0.5/5 ppb	ICAL	1	10/02/18 10:37 AM
A1002005.D	Std3-5/50 ppb	ICAL	1	10/02/18 10:42 AM
A1002006.D	Std4-10/100 ppb	ICAL	1	10/02/18 10:48 AM
A1002007.D	Std5-20/200 ppb	ICAL	1	10/02/18 10:53 AM
A1002008.D	Std6-40/400 ppb	ICAL	1	10/02/18 10:59 AM
A1002009.D	Std7-100/1000 ppb	ICAL	1	10/02/18 11:05 AM
A1002010.D	Std8-200/2000 ppb	ICAL	1	10/02/18 11:10 AM
A1002011.D	ICV	ICV	1	10/02/18 11:16 AM
A1002012.D	ICB	ICB	1	10/02/18 11:21 AM
A1002013.D	LLICV	CCV1	1	10/02/18 11:27 AM
A1002014.D	ICSA1	ICSA	1	10/02/18 11:32 AM
A1002015.D	ICSAB1	ICSAB	1	10/02/18 11:38 AM
A1002016.D	LLICV	CCV1	1	10/02/18 11:44 AM
A1002017.D	N032299-001A	SAMP	1	10/02/18 11:49 AM
A1002018.D	N032299-001A	SAMP	5	10/02/18 11:55 AM
A1002019.D	MB-70807	MBLK	1	10/02/18 12:00 PM
A1002020.D	LCS-70807	LCS	1	10/02/18 12:06 PM
A1002021.D	N032205-001D	SAMP	1	10/02/18 12:11 PM
A1002022.D	N032205-001D	SAMP	5	10/02/18 12:17 PM
A1002023.D	N032205-001D-PS	PS	1	10/02/18 12:23 PM
A1002024.D	N032205-001D-MS	MS	1	10/02/18 12:28 PM
A1002025.D	N032205-001D-MSD	MSD	1	10/02/18 12:34 PM
A1002026.D	N032205-002D	SAMP	1	10/02/18 12:39 PM
A1002027.D	CCV1	CCV	1	10/02/18 12:45 PM
A1002028.D	CCB1	CCB	1	10/02/18 12:50 PM
A1002029.D	N032205-003D	SAMP	1	10/02/18 12:56 PM
A1002030.D	N032205-004D	SAMP	1	10/02/18 1:02 PM
A1002031.D	N032216-001D	SAMP	1	10/02/18 1:07 PM
A1002032.D	N032216-002D	SAMP	1	10/02/18 1:13 PM
A1002033.D	N032216-003D	SAMP	1	10/02/18 1:18 PM
A1002034.D	N032246-001D	SAMP	1	10/02/18 1:24 PM
A1002035.D	N032246-002D	SAMP	1	10/02/18 1:30 PM
A1002036.D	N032246-003D	SAMP	1	10/02/18 1:35 PM
A1002037.D	N032246-004D	SAMP	1	10/02/18 1:41 PM
A1002038.D	N032246-005C	SAMP	1	10/02/18 1:46 PM
A1002039.D	CCV2	CCV	1	10/02/18 1:52 PM
A1002040.D	CCB2	CCB	1	10/02/18 1:58 PM
A1002041.D	N032246-006C	SAMP	1	10/02/18 2:03 PM
A1002042.D	N032246-007D	SAMP	1	10/02/18 2:09 PM

**INJECTION LOG: 181002A**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A1002043.D	N032246-008D	SAMP	1	10/02/18 2:14 PM
A1002044.D	N032205-003D	SAMP	10	10/02/18 2:20 PM
A1002045.D	N032246-003D	SAMP	5	10/02/18 2:25 PM
A1002046.D	N032246-008D	SAMP	5	10/02/18 2:31 PM
A1002047.D	N032205-002D	SAMP	1	10/02/18 2:37 PM
A1002048.D	N032216-001D	SAMP	1	10/02/18 2:42 PM
A1002049.D	N032216-002D	SAMP	5	10/02/18 2:48 PM
A1002050.D	N032216-003D	SAMP	5	10/02/18 2:53 PM
A1002051.D	CCV3	CCV	1	10/02/18 3:06 PM
A1002052.D	CCB3	CCB	1	10/02/18 3:11 PM
A1002053.D	N032205-002D	SAMP	1	10/02/18 3:17 PM
A1002054.D	N032205-002D	SAMP	1	10/02/18 3:22 PM
A1002055.D	N032216-001D	SAMP	5	10/02/18 3:28 PM
A1002056.D	N032246-001D	SAMP	5	10/02/18 3:34 PM
A1002057.D	N032246-002D	SAMP	5	10/02/18 3:39 PM
A1002058.D	N032246-004D	SAMP	5	10/02/18 3:45 PM
A1002059.D	N032246-005C	SAMP	5	10/02/18 3:50 PM
A1002060.D	N032246-007D	SAMP	5	10/02/18 3:56 PM
A1002061.D	CCV4	CCV	1	10/02/18 4:02 PM
A1002062.D	CCB4	CCB	1	10/02/18 4:07 PM
A1002063.D	ICSA2	ICSA	1	10/02/18 4:13 PM
A1002064.D	ICSAB2	ICSAB	1	10/02/18 4:18 PM
A1002065.D	MB-70830	MBLK	1	10/02/18 5:21 PM
A1002066.D	LCS-70830	LCS	1	10/02/18 5:27 PM
A1002067.D	N032289-001A	SAMP	1	10/02/18 5:32 PM
A1002068.D	N032289-001A	SAMP	5	10/02/18 5:38 PM
A1002069.D	N032289-001A-PS	PS	1	10/02/18 5:43 PM
A1002070.D	N032289-001A-MS	MS	1	10/02/18 5:49 PM
A1002071.D	N032289-001A-MSD	MSD	1	10/02/18 5:55 PM
A1002072.D	N032289-002A	SAMP	1	10/02/18 6:00 PM
A1002073.D	N032289-003A	SAMP	1	10/02/18 6:06 PM
A1002074.D	CCV5	CCV	1	10/02/18 6:11 PM
A1002075.D	CCB5	CCB	1	10/02/18 6:17 PM
A1002076.D	ICSA3	ICSA	1	10/02/18 6:22 PM
A1002077.D	ICSAB3	ICSAB	1	10/02/18 6:28 PM

**INJECTION LOG: 181008C**

**Instrument ID: ICPMS-02**

Data File	Sample Name	Type	DF	Acq. Date-Time
C1008001.D	RINSE	RINSE	1	10/08/18 6:32 PM
C1008002.D	Cal Blank	IBLK	1	10/08/18 6:37 PM
C1008003.D	Std1-0.1/1 ppb	ICAL	1	10/08/18 6:43 PM
C1008004.D	Std2-0.5/5 ppb	ICAL	1	10/08/18 6:48 PM
C1008005.D	Std3-5/50 ppb	ICAL	1	10/08/18 6:54 PM
C1008006.D	Std4-10/100 ppb	ICAL	1	10/08/18 6:59 PM
C1008007.D	Std5-20/200 ppb	ICAL	1	10/08/18 7:05 PM
C1008008.D	Std6-40/400 ppb	ICAL	1	10/08/18 7:11 PM
C1008009.D	Std7-100/1000 ppb	ICAL	1	10/08/18 7:16 PM
C1008010.D	Std8-200/2000 ppb	ICAL	1	10/08/18 7:22 PM
C1008011.D	ICV	ICV	1	10/08/18 7:29 PM
C1008012.D	ICB	ICB	1	10/08/18 7:34 PM
C1008013.D	LLICV	CCV1	1	10/08/18 7:40 PM
C1008014.D	ICSA1	ICSA	1	10/08/18 7:46 PM
C1008015.D	ICSAB1	ICSAB	1	10/08/18 7:51 PM
C1008016.D	LLICV	CCV1	1	10/08/18 7:57 PM
C1008017.D	N032246-005C	SAMP	1	10/08/18 8:02 PM
C1008018.D	N032246-005C	SAMP	5	10/08/18 8:08 PM
C1008019.D	N032268-004D	SAMP	1	10/08/18 8:13 PM
C1008020.D	N032268-004D	SAMP	5	10/08/18 8:20 PM
C1008021.D	N032304-001B	SAMP	5	10/08/18 8:25 PM
C1008022.D	N032304-001B	SAMP	25	10/08/18 8:30 PM
C1008023.D	N032304-001B-PS	PS	5	10/08/18 8:36 PM
C1008024.D	N032304-001B-MS	MS	5	10/08/18 8:41 PM
C1008025.D	N032304-001B-MSD	MSD	5	10/08/18 8:47 PM
C1008026.D	MB-70865	MBLK	1	10/08/18 8:53 PM
C1008027.D	CCV1	CCV	1	10/08/18 8:58 PM
C1008028.D	CCB1	CCB	1	10/08/18 9:04 PM
C1008029.D	LCS-70865	LCS	1	10/08/18 9:09 PM
C1008030.D	N032317-001B	SAMP	1	10/08/18 9:15 PM
C1008031.D	N032317-001B	SAMP	5	10/08/18 9:21 PM
C1008032.D	N032317-001B-PS	PS	1	10/08/18 9:26 PM
C1008033.D	N032317-001B-MS	MS	1	10/08/18 9:32 PM
C1008034.D	N032317-001B-MSD	MSD	1	10/08/18 9:37 PM
C1008035.D	N032317-002B	SAMP	1	10/08/18 9:43 PM
C1008036.D	N032317-003B	SAMP	1	10/08/18 9:48 PM
C1008037.D	N032317-004B	SAMP	1	10/08/18 9:54 PM
C1008038.D	N032317-005B	SAMP	1	10/08/18 10:00 PM
C1008039.D	CCV2	CCV	1	10/08/18 10:05 PM
C1008040.D	CCB2	CCB	1	10/08/18 10:11 PM
C1008041.D	N032317-006B	SAMP	1	10/08/18 10:16 PM
C1008042.D	N032317-007B	SAMP	1	10/08/18 10:22 PM

**INJECTION LOG: 181008C**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
C1008043.D	N032317-008B	SAMP	1	10/08/18 10:27 PM
C1008044.D	N032317-009B	SAMP	1	10/08/18 10:33 PM
C1008045.D	N032317-010B	SAMP	1	10/08/18 10:39 PM
C1008046.D	N032317-011B	SAMP	1	10/08/18 10:44 PM
C1008047.D	N032317-012B	SAMP	1	10/08/18 10:50 PM
C1008048.D	N032318-001B	SAMP	1	10/08/18 10:55 PM
C1008049.D	N032318-002B	SAMP	1	10/08/18 11:01 PM
C1008050.D	N032318-003B	SAMP	1	10/08/18 11:06 PM
C1008051.D	CCV3	CCV	1	10/08/18 11:12 PM
C1008052.D	CCB3	CCB	1	10/08/18 11:18 PM
C1008053.D	ICSA2	ICSA	1	10/08/18 11:23 PM
C1008054.D	ICSAB2	ICSAB	1	10/08/18 11:29 PM
C1008055.D	N032318-004B	SAMP	1	10/08/18 11:34 PM
C1008056.D	N032318-007B	SAMP	1	10/08/18 11:40 PM
C1008057.D	N032318-008B	SAMP	1	10/08/18 11:45 PM
C1008058.D	N032318-009B	SAMP	1	10/08/18 11:51 PM
C1008059.D	N032318-011B	SAMP	1	10/08/18 11:57 PM
C1008060.D	MB-70882	MBLK	1	10/09/18 12:02 AM
C1008061.D	LCS-70882	LCS	1	10/09/18 12:08 AM
C1008062.D	N032318-013B	SAMP	1	10/09/18 12:13 AM
C1008063.D	N032318-013B	SAMP	5	10/09/18 12:19 AM
C1008064.D	N032318-013B-PS	PS	1	10/09/18 12:24 AM
C1008065.D	CCV4	CCV	1	10/09/18 12:30 AM
C1008066.D	CCB4	CCB	1	10/09/18 12:36 AM
C1008067.D	N032318-013B-MS	MS	1	10/09/18 12:41 AM
C1008068.D	N032318-013B-MSD	MSD	1	10/09/18 12:47 AM
C1008069.D	N032318-014B	SAMP	1	10/09/18 12:52 AM
C1008070.D	N032328-001D	SAMP	1	10/09/18 12:58 AM
C1008071.D	N032328-002D	SAMP	1	10/09/18 1:04 AM
C1008072.D	N032348-001B	SAMP	1	10/09/18 1:09 AM
C1008073.D	N032348-002B	SAMP	1	10/09/18 1:15 AM
C1008074.D	N032348-006B	SAMP	1	10/09/18 1:20 AM
C1008075.D	N032348-007B	SAMP	1	10/09/18 1:26 AM
C1008076.D	N032348-008B	SAMP	1	10/09/18 1:31 AM
C1008077.D	CCV5	CCV	1	10/09/18 1:37 AM
C1008078.D	CCB5	CCB	1	10/09/18 1:43 AM
C1008079.D	N032348-009B	SAMP	1	10/09/18 1:48 AM
C1008080.D	N032348-010B	SAMP	1	10/09/18 1:54 AM
C1008081.D	N032348-011B	SAMP	1	10/09/18 1:59 AM
C1008082.D	N032348-012B	SAMP	1	10/09/18 2:05 AM
C1008083.D	N032348-013B	SAMP	1	10/09/18 2:10 AM
C1008084.D	N032348-014B	SAMP	1	10/09/18 2:16 AM



**INJECTION LOG: 181008C**

**Instrument ID: ICPMS-02**

<b>Data File</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq. Date-Time</b>
C1008085.D	N032348-015B	SAMP	1	10/09/18 2:22 AM
C1008086.D	N032348-016B	SAMP	1	10/09/18 2:27 AM
C1008087.D	CCV6	CCV	1	10/09/18 2:33 AM
C1008088.D	CCB6	CCB	1	10/09/18 2:38 AM
C1008089.D	ICSA3	ICSA	1	10/09/18 2:44 AM
C1008090.D	ICSAB3	ICSAB	1	10/09/18 2:50 AM

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 9/27/2018 8:43:28

Reviewed/ Date: *Mark* 10/11/2018

Page: 1 of 2

Prep End Date: 9/27/2018 3:00:00

Initials/ Date: *for*

Prep Factor Units  
mL / mL

Temp. (°C):  
95

Location:  
DB-2-47

Prep Batch 70807 Prep Code: 3010\_W\_MSDI

Technician Mark Gesmundo

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70807	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70807	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N032205-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032205-001D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032205-001D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032205-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032205-003D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032205-004D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032216-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032216-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032216-003D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-003D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **9/27/2018 8:43:28**

Reviewed/ Date: *Marky* 10/11/2018

Page: 2 of 2

Prep End Date: **9/27/2018 3:00:00**

Initials/ Date: *for*

Prep Factor Units  
mL / mL

Temp. (°C):  
95

Location:  
DB-2-47

Prep Batch **70807** Prep Code: **3010\_W\_MSDI**

Technician **Mark Gesmundo**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N032246-004D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-005C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-006C	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-007D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032246-008D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

# INSTRUMENT TUNING CHECK



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 2 Oct 2018 09:48:11 am  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	200454.00	0.00	
24 Mg	538509.00	0.00	
25 Mg	69976.20	0.00	
26 Mg	78965.50	0.00	
59 Co	437148.00	0.00	
115 In	602602.00	0.00	
206 Pb	190085.00	0.00	
207 Pb	167626.00	0.00	
208 Pb	408337.00	0.00	

## RSD (%)

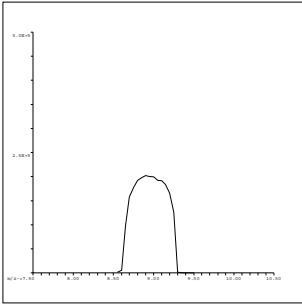
Element	Actual	Required	Flag
9 Be	0.90	5.00	
24 Mg	0.36	5.00	
25 Mg	2.29	5.00	
26 Mg	0.56	5.00	
59 Co	0.71	5.00	
115 In	1.21	5.00	
206 Pb	0.95	5.00	
207 Pb	0.86	5.00	
208 Pb	0.79	5.00	

## Ion Ratio

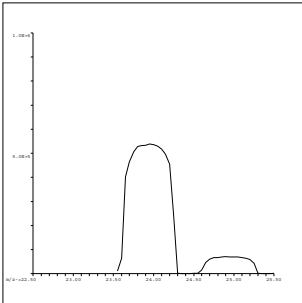
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

## Maximum Bkg. Count (CPS)

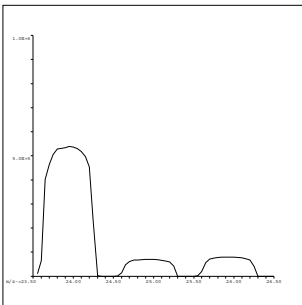
Element	Actual	Required	Flag
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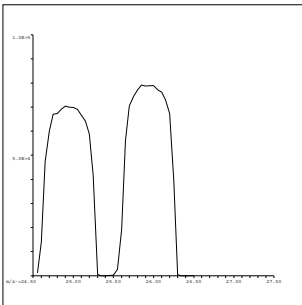
9 Be  
Mass Calib.  
Actual: 8.95  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



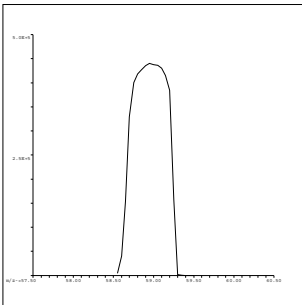
24 Mg  
Mass Calib.  
Actual: 23.95  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



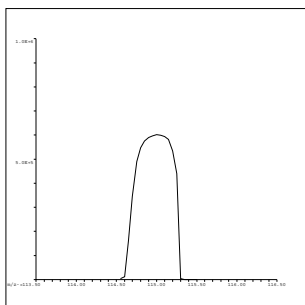
25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



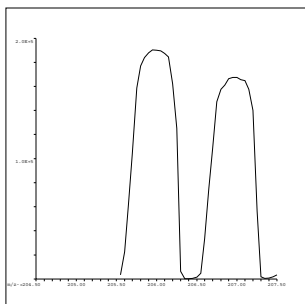
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



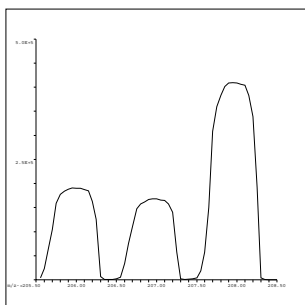
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



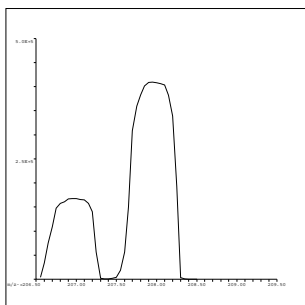
115 In  
Mass Calib.  
Actual: 115.00  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.00  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.00  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 208.00  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

QC Tune Result:Pass



## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 8 Oct 2018 06:08:27 am  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	186995.00	0.00	
24 Mg	558467.00	0.00	
25 Mg	73145.60	0.00	
26 Mg	83642.80	0.00	
59 Co	500963.00	0.00	
115 In	754543.00	0.00	
206 Pb	228866.00	0.00	
207 Pb	200182.00	0.00	
208 Pb	489275.00	0.00	

## RSD (%)

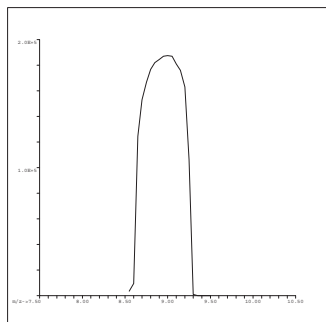
Element	Actual	Required	Flag
9 Be	1.75	5.00	
24 Mg	0.84	5.00	
25 Mg	1.31	5.00	
26 Mg	1.05	5.00	
59 Co	0.34	5.00	
115 In	0.91	5.00	
206 Pb	0.85	5.00	
207 Pb	0.77	5.00	
208 Pb	1.02	5.00	

## Ion Ratio

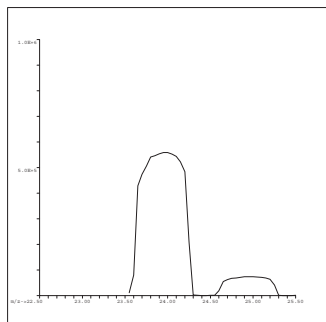
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

## Maximum Bkg. Count (CPS)

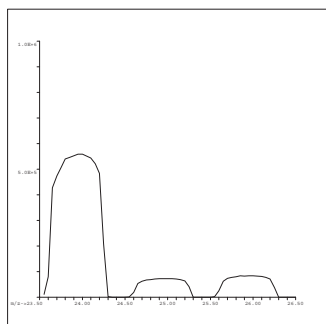
Element	Actual	Required	Flag
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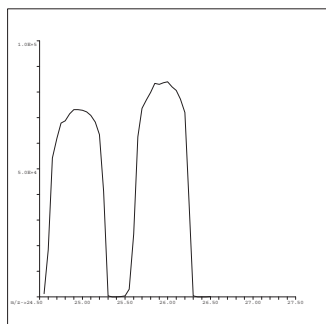
9 Be  
Mass Calib.  
Actual: 8.95  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



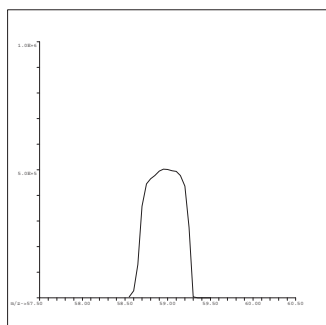
24 Mg  
Mass Calib.  
Actual: 23.95  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



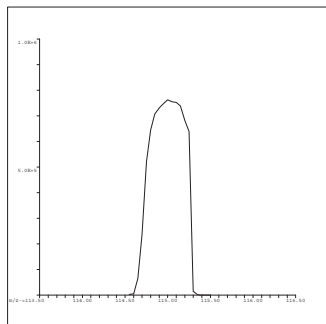
25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



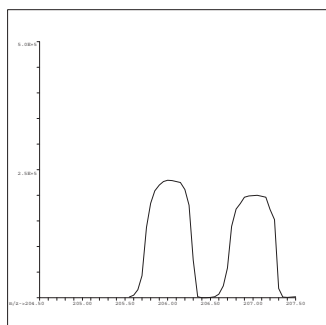
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



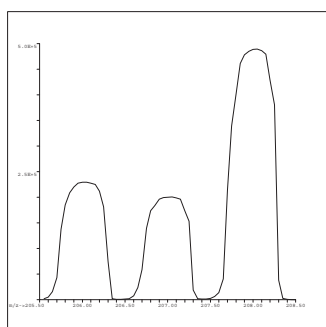
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



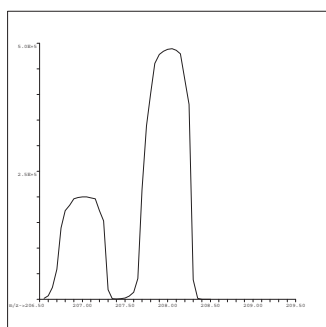
115 In  
Mass Calib.  
Actual: 115.05  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.05  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.05  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 208.05  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

QC Tune Result:Pass

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

INITIAL CALIBRATION SUMMARY: 181002A

Instrument ID: ICPMS-02

Analyte	Data File	A1002002.D	A1002003.D	A1002004.D	A1002005.D	A1002006.D	A1002007.D	A1002008.D	A1002009.D	A1002010.D	R
	Acq. Date-Time	10/02/2018 10:25 AM	10/02/2018 10:31 AM	10/02/2018 10:37 AM	10/02/2018 10:42 AM	10/02/2018 10:48 AM	10/02/2018 10:53 AM	10/02/2018 10:59 AM	10/02/2018 11:05 AM	10/02/2018 11:10 AM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	2	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std1-0.1/1 ppb	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.1/1 ug/L	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L		
45 Sc (ISTD) [ 2 ]	CPS	64982.8		76629.1	77148.2	77172.8	76407.4	76713.1	73269	73568.1	
55 Mn [ 2 ]	CPS	152.1		1493.1	13585.4	26687.5	52250.1	105082.2	250680.4	490730.1	0.9999
52 Cr [ 2 ]	CPS	301.6		3025.7	27867.8	55480.2	109795.8	218404.2	516748.5	1020118.9	1.0000
72 Ge (ISTD) [ 1 ]	CPS	38455.8		45037.1	44846.8	45715.8	44912.4	45150.9	43465.2	42898	
78 Se [ 1 ]	CPS	0		106.7	816.7	1719	3083.7	6433.7	15162	30360.2	1.0000
72 Ge (ISTD) [ 2 ]	CPS	36362.3	42330.2	41729.5	42890.4	42752.2	42129.5	42315.6	40825.1	40764.8	
75 As [ 2 ]	CPS	37.3	96	311.6	2869.2	5537	10953.9	21867.1	52489.8	103962.8	1.0000
103 Rh (ISTD) [ 2 ]	CPS	1014183.3		1188178.8	1196083.9	1195849.2	1177805.2	1191052.6	1130998.4	1121845.4	
95 Mo [ 2 ]	CPS	92.2		1402.3	13561.7	27585.5	54742.8	111810.9	265045.2	528584.6	1.0000

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MSST-180618C

Calibration Acceptance Criteria: > 0.995 Correlation

INITIAL CALIBRATION SUMMARY: 181008C

Instrument ID: ICPMS-02

Analyte	Data File	C1008002.D	C1008004.D	C1008005.D	C1008006.D	C1008007.D	C1008008.D	C1008009.D	C1008010.D	
	Acq. Date-Time	10/08/2018 06:37 PM	10/08/2018 06:48 PM	10/08/2018 06:54 PM	10/08/2018 06:59 PM	10/08/2018 07:05 PM	10/08/2018 07:11 PM	10/08/2018 07:16 PM	10/08/2018 07:22 PM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L	R	
72 Ge ( ISTD ) [ 1 ]	CPS	45692.2	49378.7	49289.6	49551.3	47425.2	49668.5	46863.4	46670.7	
78 Se [ 1 ]	CPS	4.4	82.2	783.4	1613.5	3038.2	6294.8	15093.1	29439.5	1.0000

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MWST-180618C

Calibration Acceptance Criteria: > 0.995 Correlation

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159612</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.396	0.10	10.00	0	104	90	110				
Manganese	106.152	0.50	100.0	0	106	90	110				
Molybdenum	10.342	0.50	10.00	0	103	90	110				
Selenium	10.377	0.50	10.00	0	104	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159617</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.102	0.10	0.1000	0	102	80	120				
Manganese	0.535	0.50	0.5000	0	107	80	120				
Molybdenum	0.586	0.50	0.5000	0	117	80	120				
Selenium	0.530	0.50	0.5000	0	106	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159628</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.873	0.10	20.00	0	99.4	90	110				
Manganese	20.811	0.50	20.00	0	104	90	110				
Molybdenum	19.389	0.50	20.00	0	96.9	90	110				
Selenium	20.898	0.50	20.00	0	104	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159640</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.255	0.10	20.00	0	96.3	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159640</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.734	0.50	20.00	0	104	90	110				
Molybdenum	19.295	0.50	20.00	0	96.5	90	110				
Selenium	20.100	0.50	20.00	0	101	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159652</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.826	0.10	20.00	0	99.1	90	110				
Manganese	20.312	0.50	20.00	0	102	90	110				
Molybdenum	19.952	0.50	20.00	0	99.8	90	110				
Selenium	20.297	0.50	20.00	0	101	90	110				

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159662</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.610	0.10	20.00	0	98.0	90	110				
Manganese	20.159	0.50	20.00	0	101	90	110				
Molybdenum	19.485	0.50	20.00	0	97.4	90	110				
Selenium	21.312	0.50	20.00	0	107	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168781</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.339	0.10	10.00	0	103	90	110				
Manganese	106.637	0.50	100.0	0	107	90	110				
Molybdenum	10.886	0.50	10.00	0	109	90	110				
Selenium	10.115	0.50	10.00	0	101	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168783</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.094	0.10	0.1000	0	94.1	80	120				
Manganese	0.566	0.50	0.5000	0	113	80	120				
Molybdenum	0.487	0.50	0.5000	0	97.3	80	120				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168786</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.445	0.50	0.5000	0	89.1	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168797</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.314	0.10	20.00	0	102	90	110				
Manganese	20.796	0.50	20.00	0	104	90	110				
Molybdenum	19.085	0.50	20.00	0	95.4	90	110				
Selenium	21.143	0.50	20.00	0	106	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

reported Se only in this run

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168809</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.165	0.10	20.00	0	101	90	110				
Manganese	20.894	0.50	20.00	0	104	90	110				
Molybdenum	19.187	0.50	20.00	0	95.9	90	110				
Selenium	19.446	0.50	20.00	0	97.2	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168821</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.052	0.10	20.00	0	100	90	110				
Manganese	21.087	0.50	20.00	0	105	90	110				
Molybdenum	18.970	0.50	20.00	0	94.8	90	110				
Selenium	20.149	0.50	20.00	0	101	90	110				

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168835</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.129	0.10	20.00	0	101	90	110				
Manganese	20.897	0.50	20.00	0	104	90	110				
Molybdenum	19.160	0.50	20.00	0	95.8	90	110				
Selenium	19.751	0.50	20.00	0	98.8	90	110				

Sample ID <b>CCV5</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168847</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.087	0.10	20.00	0	100	90	110				
Manganese	20.718	0.50	20.00	0	104	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCV5</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168847</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	18.975	0.50	20.00	0	94.9	90	110				
Selenium	21.171	0.50	20.00	0	106	90	110				

Sample ID <b>CCV6</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168857</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.234	0.10	20.00	0	101	90	110				
Manganese	20.926	0.50	20.00	0	105	90	110				
Molybdenum	19.093	0.50	20.00	0	95.5	90	110				
Selenium	21.288	0.50	20.00	0	106	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>ICV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159822</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	10.363	1.0	10.00	0	104 90 110

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159827</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	1.049	1.0	1.000	0	105 80 120

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159838</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	21.255	1.0	20.00	0	106 90 110

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159850</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	21.261	1.0	20.00	0	106 90 110

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159862</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	20.634	1.0	20.00	0	103 90 110

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 6020DIS\_CrPGE

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159872</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.661	1.0	20.00	0	103	90	110				

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159613</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159629</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159641</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159653</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159653</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159663</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>ICB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168782</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168798</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168810</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168822</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

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*Nancy* 10/11/2018 **302**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168822</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168836</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB5</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168848</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB6</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168858</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159823</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159839</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159851</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159863</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159873</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159615</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159616</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	21.288	0.10	20.00	0	106	80	120				
Manganese	16.396	0.50	20.00	0	82.0	80	120				
Molybdenum	22.291	0.50	20.00	0	111	80	120				
Selenium	19.033	0.50	20.00	0	95.2	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159664</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159665</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	20.900	0.10	20.00	0	105	80	120				
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICSAB2</b>	SampType: <b>ICSAB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159665</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	16.059	0.50	20.00	0	80.3	80	120				
Molybdenum	22.363	0.50	20.00	0	112	80	120				
Selenium	21.003	0.50	20.00	0	105	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168784</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168785</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	21.191	0.10	20.00	0	106	80	120				
Manganese	20.493	0.50	20.00	0	102	80	120				
Molybdenum	21.682	0.50	20.00	0	108	80	120				
Selenium	19.364	0.50	20.00	0	96.8	80	120				


Sample ID <b>ICSA 2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168823</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	0.218	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168824</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	21.222	0.10	20.00	0	106	80	120				
Manganese	20.891	0.50	20.00	0	104	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

reported Se only in this run

 10/11/2018  
**308**



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICSAB2</b>	SampType: <b>ICSAB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168824</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	21.943	0.50	20.00	0	110	80	120				
Selenium	20.458	0.50	20.00	0	102	80	120				

Sample ID <b>ICSA3</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168859</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSAB3</b>	SampType: <b>ICSAB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168860</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	21.399	0.10	20.00	0	107	80	120				
Manganese	20.603	0.50	20.00	0	103	80	120				
Molybdenum	21.908	0.50	20.00	0	110	80	120				
Selenium	21.559	0.50	20.00	0	108	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159825</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159825</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	21.225	1.0	20.00	0	106	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159874</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128979</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R128979</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3159875</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	21.675	1.0	20.00	0	108	80	120				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## INTERNAL STANDARD: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	64982.8	64982.8	100	PASS	70-125	36362.3	36362.3	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	76859.3	64982.8	118.28	PASS	70-125	42330.2	36362.3	116.41	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	76629.1	64982.8	117.92	PASS	70-125	41729.5	36362.3	114.76	PASS	70-125
Std3-5/50 ppb	ICAL	1	77148.2	64982.8	118.72	PASS	70-125	42890.4	36362.3	117.95	PASS	70-125
Std4-10/100 ppb	ICAL	1	77172.8	64982.8	118.76	PASS	70-125	42752.2	36362.3	117.57	PASS	70-125
Std5-20/200 ppb	ICAL	1	76407.4	64982.8	117.58	PASS	70-125	42129.5	36362.3	115.86	PASS	70-125
Std6-40/400 ppb	ICAL	1	76713.1	64982.8	118.05	PASS	70-125	42315.6	36362.3	116.37	PASS	70-125
Std7-100/1000 ppb	ICAL	1	73269	64982.8	112.75	PASS	70-125	40825.1	36362.3	112.27	PASS	70-125
Std8-200/2000 ppb	ICAL	1	73568.1	64982.8	113.21	PASS	70-125	40764.8	36362.3	112.11	PASS	70-125
ICV	ICV	1	74580	64982.8	114.77	PASS	70-125	41570.3	36362.3	114.32	PASS	70-125
ICB	ICB	1	64254.3	64982.8	98.88	PASS	70-125	35264.4	36362.3	96.98	PASS	70-125
LLICV	CCV1	1	76172.9	64982.8	117.22	PASS	70-125	41884.5	36362.3	115.19	PASS	70-125
ICSA1	ICSA	1	75938.4	64982.8	116.86	PASS	70-125	40656.8	36362.3	111.81	PASS	70-125
ICSAB1	ICSAB	1	74601.3	64982.8	114.8	PASS	70-125	41715.1	36362.3	114.72	PASS	70-125
LLICV	CCV1	1	65561.5	64982.8	100.89	PASS	70-125	36796.6	36362.3	101.19	PASS	70-125
MB-70807	MBLK	1	62217.6	64982.8	95.74	PASS	70-125	35644.1	36362.3	98.025	PASS	70-125
LCS-70807	LCS	1	62241	64982.8	95.78	PASS	70-125	37284.2	36362.3	102.54	PASS	70-125
N032205-001D	SAMP	1	53577.9	64982.8	82.45	PASS	70-125	29662.1	36362.3	81.57	PASS	70-125
N032205-001D	SAMP	5	60923.1	64982.8	93.75	PASS	70-125	34678.7	36362.3	95.37	PASS	70-125
N032205-001D-PS	PS	1	61369.1	64982.8	94.44	PASS	70-125	34175.3	36362.3	93.99	PASS	70-125
N032205-001D-MS	MS	1	64228.4	64982.8	98.84	PASS	70-125	36082.8	36362.3	99.23	PASS	70-125
N032205-001D-MSD	MSD	1	64738.2	64982.8	99.62	PASS	70-125	35791.2	36362.3	98.43	PASS	70-125
N032205-002D	SAMP	1	61469.4	64982.8	94.59	PASS	70-125	34009.5	36362.3	93.53	PASS	70-125
CCV1	CCV	1	59869.1	64982.8	92.13	PASS	70-125	35997.1	36362.3	99	PASS	70-125
CCB1	CCB	1	65108.5	64982.8	100.19	PASS	70-125	37365.6	36362.3	102.76	PASS	70-125
N032205-003D	SAMP	1	54561.1	64982.8	83.96	PASS	70-125	29140.1	36362.3	80.14	PASS	70-125
N032205-004D	SAMP	1	58685.8	64982.8	90.31	PASS	70-125	31553.3	36362.3	86.77	PASS	70-125
N032216-001D	SAMP	1	55227.7	64982.8	84.99	PASS	70-125	29721.1	36362.3	81.74	PASS	70-125
N032216-002D	SAMP	1	53787.5	64982.8	82.77	PASS	70-125	28966.3	36362.3	79.66	PASS	70-125
N032216-003D	SAMP	1	52384.1	64982.8	80.61	PASS	70-125	28611.2	36362.3	78.68	PASS	70-125
N032246-001D	SAMP	1	51442.3	64982.8	79.16	PASS	70-125	27941.2	36362.3	76.84	PASS	70-125
N032246-002D	SAMP	1	52333.9	64982.8	80.54	PASS	70-125	28310.7	36362.3	77.86	PASS	70-125
N032246-003D	SAMP	1	51863.5	64982.8	79.81	PASS	70-125	28232.9	36362.3	77.64	PASS	70-125
N032246-004D	SAMP	1	51826.9	64982.8	79.75	PASS	70-125	28350.8	36362.3	77.97	PASS	70-125
N032246-005C	SAMP	1	59482.2	64982.8	91.54	PASS	70-125	33330.3	36362.3	91.66	PASS	70-125
CCV2	CCV	1	58943.7	64982.8	90.71	PASS	70-125	35763.3	36362.3	98.35	PASS	70-125
CCB2	CCB	1	62673.8	64982.8	96.45	PASS	70-125	37675.4	36362.3	103.61	PASS	70-125
N032246-006C	SAMP	1	59091.1	64982.8	90.93	PASS	70-125	32949.4	36362.3	90.61	PASS	70-125
N032246-007D	SAMP	1	51628.4	64982.8	79.45	PASS	70-125	28673.6	36362.3	78.86	PASS	70-125
N032246-008D	SAMP	1	57665.9	64982.8	88.74	PASS	70-125	32699	36362.3	89.93	PASS	70-125
N032205-003D	SAMP	10	61512.9	64982.8	94.66	PASS	70-125	36062.7	36362.3	99.18	PASS	70-125

INTERNAL STANDARD: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
N032246-003D	SAMP	5	57243.3	64982.8	88.09	PASS	70-125	32896	36362.3	90.47	PASS	70-125
N032246-008D	SAMP	5	59840.3	64982.8	92.086	PASS	70-125	34923.6	36362.3	96.043	PASS	70-125
N032205-002D	SAMP	1	55074.8	64982.8	84.75	PASS	70-125	31291.8	36362.3	86.056	PASS	70-125
N032216-001D	SAMP	1	50684.1	64982.8	78	PASS	70-125	27797.6	36362.3	76.45	PASS	70-125
N032216-002D	SAMP	5	57903.5	64982.8	89.11	PASS	70-125	32972.9	36362.3	90.68	PASS	70-125
N032216-003D	SAMP	5	57292.4	64982.8	88.17	PASS	70-125	32781.3	36362.3	90.15	PASS	70-125
CCV3	CCV	1	74880.4	64982.8	115.23	PASS	70-125	44654	36362.3	122.8	PASS	70-125
CCB3	CCB	1	60589.5	64982.8	93.24	PASS	70-125	36238.6	36362.3	99.66	PASS	70-125
N032205-002D	SAMP	1	52382.8	64982.8	80.61	PASS	70-125	30690.6	36362.3	84.4	PASS	70-125
N032205-002D	SAMP	1	54863	64982.8	84.43	PASS	70-125	31462.2	36362.3	86.52	PASS	70-125
N032216-001D	SAMP	5	58036	64982.8	89.31	PASS	70-125	33088.7	36362.3	91	PASS	70-125
N032246-001D	SAMP	5	57041.5	64982.8	87.78	PASS	70-125	33152	36362.3	91.17	PASS	70-125
N032246-002D	SAMP	5	56949	64982.8	87.64	PASS	70-125	32353.8	36362.3	88.98	PASS	70-125
N032246-004D	SAMP	5	55981.2	64982.8	86.15	PASS	70-125	32237	36362.3	88.66	PASS	70-125
N032246-005C	SAMP	5	59244.8	64982.8	91.17	PASS	70-125	34968.2	36362.3	96.17	PASS	70-125
N032246-007D	SAMP	5	55709.2	64982.8	85.73	PASS	70-125	32887.1	36362.3	90.44	PASS	70-125
CCV4	CCV	1	70561.7	64982.8	108.59	PASS	70-125	41985.8	36362.3	115.47	PASS	70-125
CCB4	CCB	1	57764.1	64982.8	88.89	PASS	70-125	34942.6	36362.3	96.096	PASS	70-125
ICSA2	ICSA	1	67704.6	64982.8	104.19	PASS	70-125	39205.5	36362.3	107.82	PASS	70-125
ICSAB2	ICSAB	1	65574.8	64982.8	100.91	PASS	70-125	38303.4	36362.3	105.34	PASS	70-125
CCV5	CCV	1	54117.3	64982.8	83.28	PASS	70-125	33190	36362.3	91.28	PASS	70-125
CCB5	CCB	1	44777.5	64982.8	68.91	NR!	70-125	27592.8	36362.3	75.88	PASS	70-125
ICSA3	ICSA	1	54124.1	64982.8	83.29	PASS	70-125	31867.4	36362.3	87.64	PASS	70-125
ICSAB3	ICSAB	1	52860	64982.8	81.34	PASS	70-125	31179.4	36362.3	85.75	PASS	70-125

## INTERNAL STANDARD: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]					103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	38455.8	38455.8	100	PASS	70-125	1014183.3	1014183.3	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	44202.7	38455.8	114.94	PASS	70-125	1180325.2	1014183.3	116.38	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	45037.1	38455.8	117.11	PASS	70-125	1188178.8	1014183.3	117.16	PASS	70-125
Std3-5/50 ppb	ICAL	1	44846.8	38455.8	116.62	PASS	70-125	1196083.9	1014183.3	117.94	PASS	70-125
Std4-10/100 ppb	ICAL	1	45715.8	38455.8	118.88	PASS	70-125	1195849.2	1014183.3	117.91	PASS	70-125
Std5-20/200 ppb	ICAL	1	44912.4	38455.8	116.79	PASS	70-125	1177805.2	1014183.3	116.13	PASS	70-125
Std6-40/400 ppb	ICAL	1	45150.9	38455.8	117.41	PASS	70-125	1191052.6	1014183.3	117.44	PASS	70-125
Std7-100/1000 ppb	ICAL	1	43465.2	38455.8	113.03	PASS	70-125	1130998.4	1014183.3	111.52	PASS	70-125
Std8-200/2000 ppb	ICAL	1	42898	38455.8	111.55	PASS	70-125	1121845.4	1014183.3	110.62	PASS	70-125
ICV	ICV	1	43850.7	38455.8	114.03	PASS	70-125	1173966.2	1014183.3	115.75	PASS	70-125
ICB	ICB	1	37628.6	38455.8	97.85	PASS	70-125	1000566.2	1014183.3	98.66	PASS	70-125
LLICV	CCV1	1	45051.8	38455.8	117.15	PASS	70-125	1197941	1014183.3	118.12	PASS	70-125
ICSA1	ICSA	1	45585.4	38455.8	118.54	PASS	70-125	1079306.9	1014183.3	106.42	PASS	70-125
ICSAB1	ICSAB	1	45573.2	38455.8	118.51	PASS	70-125	1080534.3	1014183.3	106.54	PASS	70-125
LLICV	CCV1	1	42834.7	38455.8	111.39	PASS	70-125	1031625.5	1014183.3	101.72	PASS	70-125
MB-70807	MBLK	1	43765.9	38455.8	113.81	PASS	70-125	971871.2	1014183.3	95.83	PASS	70-125
LCS-70807	LCS	1	33600.9	38455.8	87.38	PASS	70-125	1054786.6	1014183.3	104	PASS	70-125
N032205-001D	SAMP	1	33428.2	38455.8	86.93	PASS	70-125	733626.8	1014183.3	72.34	PASS	70-125
N032205-001D	SAMP	5	40086.6	38455.8	104.24	PASS	70-125	886055.9	1014183.3	87.37	PASS	70-125
N032205-001D-PS	PS	1	39503.9	38455.8	102.73	PASS	70-125	840299.8	1014183.3	82.85	PASS	70-125
N032205-001D-MS	MS	1	41291.8	38455.8	107.37	PASS	70-125	881687.5	1014183.3	86.94	PASS	70-125
N032205-001D-MSD	MSD	1	41453.2	38455.8	107.79	PASS	70-125	893906.8	1014183.3	88.14	PASS	70-125
N032205-002D	SAMP	1	38434.8	38455.8	99.95	PASS	70-125	845396.9	1014183.3	83.36	PASS	70-125
CCV1	CCV	1	32283.7	38455.8	83.95	PASS	70-125	1032604.2	1014183.3	101.82	PASS	70-125
CCB1	CCB	1	42532.8	38455.8	110.6	PASS	70-125	1035781.7	1014183.3	102.13	PASS	70-125
N032205-003D	SAMP	1	30268.7	38455.8	78.71	PASS	70-125	732441.6	1014183.3	72.22	PASS	70-125
N032205-004D	SAMP	1	32073.4	38455.8	83.4	PASS	70-125	796732.3	1014183.3	78.56	PASS	70-125
N032216-001D	SAMP	1	27812.1	38455.8	72.32	PASS	70-125	733508.1	1014183.3	72.33	PASS	70-125
N032216-002D	SAMP	1	25786.6	38455.8	67.055	NR!	70-125	712745.8	1014183.3	70.28	PASS	70-125
N032216-003D	SAMP	1	25311.3	38455.8	65.82	NR!	70-125	697477.8	1014183.3	68.77	NR!	70-125
N032246-001D	SAMP	1	24450	38455.8	63.58	NR!	70-125	683489.5	1014183.3	67.39	NR!	70-125
N032246-002D	SAMP	1	25146.7	38455.8	65.39	NR!	70-125	703118.1	1014183.3	69.33	NR!	70-125
N032246-003D	SAMP	1	24912.9	38455.8	64.78	NR!	70-125	699781.4	1014183.3	69	NR!	70-125
N032246-004D	SAMP	1	24810.6	38455.8	64.52	NR!	70-125	703603	1014183.3	69.38	NR!	70-125
N032246-005C	SAMP	1	31147	38455.8	80.99	PASS	70-125	856296.9	1014183.3	84.43	PASS	70-125
CCV2	CCV	1	31861.7	38455.8	82.85	PASS	70-125	1014174	1014183.3	100	PASS	70-125
CCB2	CCB	1	36949.2	38455.8	96.082	PASS	70-125	1041222.3	1014183.3	102.67	PASS	70-125
N032246-006C	SAMP	1	30285.4	38455.8	78.75	PASS	70-125	848791.2	1014183.3	83.69	PASS	70-125
N032246-007D	SAMP	1	25038.6	38455.8	65.11	NR!	70-125	716881.8	1014183.3	70.69	PASS	70-125
N032246-008D	SAMP	1	29881.4	38455.8	77.7	PASS	70-125	830021.1	1014183.3	81.84	PASS	70-125
N032205-003D	SAMP	10	34396.9	38455.8	89.45	PASS	70-125	937131.8	1014183.3	92.4	PASS	70-125

INTERNAL STANDARD: 181002A

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]					103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
N032246-003D	SAMP	5	31222.7	38455.8	81.19	PASS	70-125	855892.4	1014183.3	84.39	PASS	70-125
N032246-008D	SAMP	5	33340.2	38455.8	86.7	PASS	70-125	912912.7	1014183.3	90.015	PASS	70-125
N032205-002D	SAMP	1	27738.7	38455.8	72.13	PASS	70-125	786922.4	1014183.3	77.59	PASS	70-125
N032216-001D	SAMP	1	23752.3	38455.8	61.77	NR!	70-125	685175.8	1014183.3	67.56	NR!	70-125
N032216-002D	SAMP	5	30731.8	38455.8	79.91	PASS	70-125	849598.5	1014183.3	83.77	PASS	70-125
N032216-003D	SAMP	5	30400.1	38455.8	79.052	PASS	70-125	839462.1	1014183.3	82.77	PASS	70-125
CCV3	CCV	1	46230.7	38455.8	120.22	PASS	70-125	1216387.9	1014183.3	119.94	PASS	70-125
CCB3	CCB	1	36258.7	38455.8	94.29	PASS	70-125	1002866.5	1014183.3	98.88	PASS	70-125
N032205-002D	SAMP	1	27472.7	38455.8	71.44	PASS	70-125	765030	1014183.3	75.43	PASS	70-125
N032205-002D	SAMP	1	28418.7	38455.8	73.9	PASS	70-125	794842.7	1014183.3	78.37	PASS	70-125
N032216-001D	SAMP	5	31136.9	38455.8	80.97	PASS	70-125	855157.4	1014183.3	84.32	PASS	70-125
N032246-001D	SAMP	5	30848.7	38455.8	80.22	PASS	70-125	851183.1	1014183.3	83.93	PASS	70-125
N032246-002D	SAMP	5	30626.1	38455.8	79.64	PASS	70-125	841173.1	1014183.3	82.94	PASS	70-125
N032246-004D	SAMP	5	30043.8	38455.8	78.13	PASS	70-125	829293.1	1014183.3	81.77	PASS	70-125
N032246-005C	SAMP	5	33766.7	38455.8	87.81	PASS	70-125	911993.1	1014183.3	89.92	PASS	70-125
N032246-007D	SAMP	5	30957.8	38455.8	80.5	PASS	70-125	845716.3	1014183.3	83.39	PASS	70-125
CCV4	CCV	1	42265.3	38455.8	109.91	PASS	70-125	1161785.7	1014183.3	114.55	PASS	70-125
CCB4	CCB	1	34845.8	38455.8	90.61	PASS	70-125	978458.2	1014183.3	96.48	PASS	70-125
ICSA2	ICSA	1	37710.9	38455.8	98.063	PASS	70-125	1037011	1014183.3	102.25	PASS	70-125
ICSAB2	ICSAB	1	35804.3	38455.8	93.11	PASS	70-125	1001581	1014183.3	98.76	PASS	70-125
CCV5	CCV	1	31077.9	38455.8	80.81	PASS	70-125	951198.6	1014183.3	93.79	PASS	70-125
CCB5	CCB	1	26301.8	38455.8	68.39	NR!	70-125	796336.3	1014183.3	78.52	PASS	70-125
ICSA3	ICSA	1	29565.3	38455.8	76.88	PASS	70-125	858400.8	1014183.3	84.64	PASS	70-125
ICSAB3	ICSAB	1	29652.1	38455.8	77.11	PASS	70-125	839361.4	1014183.3	82.76	PASS	70-125

INTERNAL STANDARD: 181008C

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	45692.2	45692.2	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	53180.7	45692.2	116.39	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	49378.7	45692.2	108.07	PASS	70-125
Std3-5/50 ppb	ICAL	1	49289.6	45692.2	107.87	PASS	70-125
Std4-10/100 ppb	ICAL	1	49551.3	45692.2	108.45	PASS	70-125
Std5-20/200 ppb	ICAL	1	47425.2	45692.2	103.79	PASS	70-125
Std6-40/400 ppb	ICAL	1	49668.5	45692.2	108.7	PASS	70-125
Std7-100/1000 ppb	ICAL	1	46863.4	45692.2	102.56	PASS	70-125
Std8-200/2000 ppb	ICAL	1	46670.7	45692.2	102.14	PASS	70-125
ICV	ICV	1	41589.2	45692.2	91.02	PASS	70-125
ICB	ICB	1	44382.1	45692.2	97.13	PASS	70-125
LLICV	CCV1	1	45146.3	45692.2	98.81	PASS	70-125
ICSA1	ICSA	1	48581.8	45692.2	106.32	PASS	70-125
ICSAB1	ICSAB	1	51646.7	45692.2	113.03	PASS	70-125
LLICV	CCV1	1	50852	45692.2	111.29	PASS	70-125
N032246-005C	SAMP	1	39656.6	45692.2	86.79	PASS	70-125
N032246-005C	SAMP	5	42692.1	45692.2	93.43	PASS	70-125
CCV1	CCV	1	45916.4	45692.2	100.49	PASS	70-125
CCB1	CCB	1	40454.2	45692.2	88.54	PASS	70-125
CCV2	CCV	1	46173.8	45692.2	101.05	PASS	70-125
CCB2	CCB	1	38739.9	45692.2	84.78	PASS	70-125
CCV3	CCV	1	46992.7	45692.2	102.85	PASS	70-125
CCB3	CCB	1	40287.1	45692.2	88.17	PASS	70-125
ICSA2	ICSA	1	42008.1	45692.2	91.94	PASS	70-125
ICSAB2	ICSAB	1	44756.3	45692.2	97.95	PASS	70-125

NR



# SERIAL DILUTION/ POST DIGESTION SPIKE



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N032246  
Test Method: EPA 6020  
Analysis Date: 10/2/2018

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70807

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to several analytes. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032205-001D DT 5X	Arsenic	ug/L	1.447113	NA	1.557951	7.11%	10
N032205-001D DT 5X	Chromium	ug/L	1.437753	NA	1.418583	1.35%	10
N032205-001D DT 5X	Manganese	ug/L	0		0		10
N032205-001D DT 5X	Molybdenum	ug/L	15.96123	PASS	16.37062	2.50%	10
N032205-001D DT 5X	Selenium	ug/L	0	NA	1.017056	100.00%	10

Note: NA - Not applicable

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID	<b>N032205-001D-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>128979</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70807</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/2/2018</b>	SeqNo:	<b>3159624</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic		12.972		0.10	10.00	1.558		114	80	120				
Manganese		113.196		0.50	100.0	0		113	80	120				
Molybdenum		28.524		0.50	10.00	16.37		122	80	120				S
Selenium		11.676		0.50	10.00	1.017		107	80	120				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032246  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 6020DIS\_CrPGE

Sample ID	<b>N032205-001D-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>6020DIS_CrP</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>128979</b>		
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70807</b>	TestNo:	<b>EPA 6020</b>	<b>EPA 3010A</b>		Analysis Date:	<b>10/2/2018</b>	SeqNo:	<b>3159834</b>		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		12.087		1.0	10.00	1.419	107	80	120				

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Amount of Sample:** 25 mL  
**Units:** ug/L

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	LOD	PQL
ANTIMONY	0.50	0.525	0.514	0.473	0.500	0.492	0.486	0.530	0.0210	0.0660	0.100	0.50
ARSENIC	0.10	0.099	0.104	0.087	0.048	0.060	0.069	0.120	0.0259	0.0813	0.080	0.10
BARIUM	1.00	1.041	1.059	1.052	1.011	0.967	0.957	1.023	0.0403	0.1264	0.250	1.00
BERYLLIUM	0.50	0.469	0.476	0.473	0.495	0.480	0.488	0.507	0.0135	0.0424	0.100	0.50
CADMIUM	0.50	0.515	0.513	0.492	0.534	0.499	0.483	0.508	0.0168	0.0527	0.100	0.50
CHROMIUM	1.00	0.979	0.986	0.940	0.990	0.946	0.978	0.977	0.0197	0.0618	0.250	1.00
COBALT	0.50	0.499	0.489	0.486	0.488	0.465	0.502	0.505	0.0135	0.0424	0.100	0.50
COPPER	1.00	1.110	0.667	1.039	1.060	1.006	1.099	1.075	0.1544	0.4850	0.500	1.00
IRON	10.00	10.873	10.802	10.142	9.991	9.846	9.852	10.596	0.4463	1.4014	2.500	10.00
LEAD	1.00	0.928	0.931	0.899	0.996	0.990	0.987	0.997	0.0406	0.1274	0.250	1.00
MANGANESE	0.50	0.577	0.588	0.561	0.566	0.517	0.541	0.520	0.0276	0.0866	0.100	0.50
MOLYBDENUM	0.50	0.514	0.504	0.467	0.478	0.456	0.433	0.527	0.0338	0.1061	0.250	0.50
NICKEL	1.00	0.961	0.965	0.977	0.907	0.914	0.962	1.075	0.0551	0.1731	0.250	1.00
SELENIUM	0.50	0.450	0.478	0.419	0.693	0.707	0.495	0.555	0.1155	0.3628	0.400	0.50
SILVER	0.50	0.558	0.511	0.490	0.542	0.458	0.490	0.684	0.0745	0.2340	0.250	0.50
THALLIUM	0.50	0.437	0.428	0.408	0.538	0.446	0.438	0.525	0.0504	0.1583	0.250	0.50
URANIUM	0.50	0.478	0.467	0.461	0.517	0.510	0.521	0.521	0.0267	0.0838	0.100	0.50
VANADIUM	1.00	0.950	0.969	0.900	0.844	0.829	0.848	1.053	0.0820	0.2574	0.500	1.00
ZINC	10.00	11.259	11.279	10.915	9.620	9.849	9.745	10.241	0.7235	2.2717	2.500	10.00



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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Units:** ug/L

Analyte	MDLs	MDLb	MDL	LOD	PQL
ANTIMONY	0.0660	0.1564	0.1564	0.300	0.50
ARSENIC	0.0813	0.0387	0.0813	0.080	0.10
BARIUM	0.1264	0.1497	0.1497	0.300	1.00
BERYLLIUM	0.0424	0.0153	0.0424	0.100	0.50
CADMIUM	0.0527	0.0060	0.0527	0.100	0.50
CHROMIUM	0.0618	0.1298	0.1298	0.300	1.00
COBALT	0.0424	0.0339	0.0424	0.100	0.50
COPPER	0.4850	0.5459	0.5459	0.600	1.00
IRON	1.4014	4.3484	4.3484	5.000	10.00
LEAD	0.1274	0.1008	0.1274	0.300	1.00
MANGANESE	0.0866	0.2552	0.2552	0.300	0.50
MOLYBDENUM	0.1061	0.2149	0.2149	0.300	0.50
NICKEL	0.1731	0.2606	0.2606	0.300	1.00
SELENIUM	0.3628	0.0953	0.3628	0.400	0.50
SILVER	0.2340	0.2023	0.2340	0.250	0.50
THALLIUM	0.1583	0.1924	0.1924	0.300	0.50
URANIUM	0.0838	0.0020	0.0838	0.100	0.50
VANADIUM	0.2574	0.2768	0.2768	0.600	1.00
ZINC	2.2717	0.4511	2.2717	3.000	10.00



October 11, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032268

RE: PG&E Topock - GMP, RC000753.801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 27, 2018 by ASSET Laboratories .  
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in  
accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Quennie Manimtim*

Quennie Manimtim  
Laboratory Director

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032268

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**CASE NARRATIVE**

**SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

**Analytical Comments for EPA 218.6:**

Dilution was necessary for sample N032268-007 due to matrix interference. Sample was analyzed at lower dilution however matrix spike recovery was not met indicating possible matrix interference. Sample was reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.

**Analytical Comments for EPA 6020\_Dissolved:**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Chromium in QC samples N032268-002D-MS and N032268-002D-MSD since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.



**ASSET Laboratories**

Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032268  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032268-001A	MW-68-180-Q318	Groundwater	9/27/2018 8:57:00 AM	9/27/2018	10/11/2018
N032268-001B	MW-68-180-Q318	Groundwater	9/27/2018 8:57:00 AM	9/27/2018	10/11/2018
N032268-001C	MW-68-180-Q318	Groundwater	9/27/2018 8:57:00 AM	9/27/2018	10/11/2018
N032268-001D	MW-68-180-Q318	Groundwater	9/27/2018 8:57:00 AM	9/27/2018	10/11/2018
N032268-002A	MW-69-195-Q318	Groundwater	9/27/2018 9:54:00 AM	9/27/2018	10/11/2018
N032268-002B	MW-69-195-Q318	Groundwater	9/27/2018 9:54:00 AM	9/27/2018	10/11/2018
N032268-002C	MW-69-195-Q318	Groundwater	9/27/2018 9:54:00 AM	9/27/2018	10/11/2018
N032268-002D	MW-69-195-Q318	Groundwater	9/27/2018 9:54:00 AM	9/27/2018	10/11/2018
N032268-003A	MW-913-Q318	Groundwater	9/27/2018 11:01:00 AM	9/27/2018	10/11/2018
N032268-003B	MW-913-Q318	Groundwater	9/27/2018 11:01:00 AM	9/27/2018	10/11/2018
N032268-003C	MW-913-Q318	Groundwater	9/27/2018 11:01:00 AM	9/27/2018	10/11/2018
N032268-003D	MW-913-Q318	Groundwater	9/27/2018 11:01:00 AM	9/27/2018	10/11/2018
N032268-004A	MW-65-225-Q318	Groundwater	9/27/2018 10:51:00 AM	9/27/2018	10/11/2018
N032268-004B	MW-65-225-Q318	Groundwater	9/27/2018 10:51:00 AM	9/27/2018	10/11/2018
N032268-004C	MW-65-225-Q318	Groundwater	9/27/2018 10:51:00 AM	9/27/2018	10/11/2018
N032268-004D	MW-65-225-Q318	Groundwater	9/27/2018 10:51:00 AM	9/27/2018	10/11/2018
N032268-005A	MW-38S-SMT-Q318	Groundwater	9/27/2018 1:26:00 PM	9/27/2018	10/11/2018
N032268-005B	MW-38S-SMT-Q318	Groundwater	9/27/2018 1:26:00 PM	9/27/2018	10/11/2018
N032268-005C	MW-38S-SMT-Q318	Groundwater	9/27/2018 1:26:00 PM	9/27/2018	10/11/2018
N032268-005D	MW-38S-SMT-Q318	Groundwater	9/27/2018 1:26:00 PM	9/27/2018	10/11/2018
N032268-006A	MW-38S-Q318	Groundwater	9/27/2018 1:47:00 PM	9/27/2018	10/11/2018
N032268-006B	MW-38S-Q318	Groundwater	9/27/2018 1:47:00 PM	9/27/2018	10/11/2018
N032268-006C	MW-38S-Q318	Groundwater	9/27/2018 1:47:00 PM	9/27/2018	10/11/2018
N032268-006D	MW-38S-Q318	Groundwater	9/27/2018 1:47:00 PM	9/27/2018	10/11/2018
N032268-007A	MW-58BR-Q318	Groundwater	9/27/2018 3:00:00 PM	9/27/2018	10/11/2018
N032268-007B	MW-58BR-Q318	Groundwater	9/27/2018 3:00:00 PM	9/27/2018	10/11/2018
N032268-007C	MW-58BR-Q318	Groundwater	9/27/2018 3:00:00 PM	9/27/2018	10/11/2018
N032268-007D	MW-58BR-Q318	Groundwater	9/27/2018 3:00:00 PM	9/27/2018	10/11/2018
N032268-008A	MW-703-Q318	Groundwater	9/27/2018 3:15:00 PM	9/27/2018	10/11/2018



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032268  
**Contract No:**

## Work Order Sample Summary

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Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032268-009A	MW-65-160-Q318	Groundwater	9/27/2018 11:52:00 AM	9/27/2018	10/11/2018
N032268-009B	MW-65-160-Q318	Groundwater	9/27/2018 11:52:00 AM	9/27/2018	10/11/2018
N032268-009C	MW-65-160-Q318	Groundwater	9/27/2018 11:52:00 AM	9/27/2018	10/11/2018
N032268-009D	MW-65-160-Q318	Groundwater	9/27/2018 11:52:00 AM	9/27/2018	10/11/2018



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-001

**Client Sample ID:** MW-68-180-Q318  
**Collection Date:** 9/27/2018 8:57:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180928A</b>	QC Batch: <b>R128895</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	3300	0.10	0.10		umhos/cm	1	9/28/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-002

**Client Sample ID:** MW-69-195-Q318  
**Collection Date:** 9/27/2018 9:54:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180928A</b>	QC Batch: <b>R128895</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	3200	0.10	0.10		umhos/cm	1	9/28/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-003

**Client Sample ID:** MW-913-Q318  
**Collection Date:** 9/27/2018 11:01:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180928A</b>	QC Batch: <b>R128895</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/28/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank E Value above quantitation range  
H Holding times for preparation or analysis exceeded ND Not Detected at the Reporting Limit  
S Spike/Surrogate outside of limits due to matrix interference Results are wet unless otherwise specified  
DO Surrogate Diluted Out



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-004

**Client Sample ID:** MW-65-225-Q318  
**Collection Date:** 9/27/2018 10:51:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180928A</b>	QC Batch: <b>R128895</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/28/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-005

**Client Sample ID:** MW-38S-SMT-Q318  
**Collection Date:** 9/27/2018 1:26:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180928A</b>	QC Batch: <b>R128895</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	1700	0.10	0.10		umhos/cm	1	9/28/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-006

**Client Sample ID:** MW-38S-Q318  
**Collection Date:** 9/27/2018 1:47:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180928A</b>	QC Batch: <b>R128895</b>						Analyst: <b>LR</b>
Specific Conductance	1700	0.10	0.10		umhos/cm	1	9/28/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-007

**Client Sample ID:** MW-58BR-Q318  
**Collection Date:** 9/27/2018 3:00:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180928A</b>	QC Batch: <b>R128895</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	8200	0.10	0.10		umhos/cm	1	9/28/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-009

**Client Sample ID:** MW-65-160-Q318  
**Collection Date:** 9/27/2018 11:52:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180928A</b>	QC Batch: <b>R128895</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	3600	0.10	0.10		umhos/cm	1	9/28/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID	<b>N032268-003BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>120.1_WPGE</b>	Units:	<b>umhos/cm</b>	Prep Date:		RunNo:	<b>128895</b>											
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R128895</b>	TestNo:	<b>EPA 120.1</b>			Analysis Date:	<b>9/28/2018</b>	SeqNo:	<b>3154383</b>											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual
Specific Conductance		14770.000		0.10										14750				0.136			2	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-001

**Client Sample ID:** MW-68-180-Q318  
**Collection Date:** 9/27/2018 8:57:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_181001A	QC Batch: R128962				PrepDate		Analyst: RAB
Hexavalent Chromium	8500	33	200		µg/L	1000	10/1/2018 11:45 AM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181003A	QC Batch: 70851				PrepDate	10/2/2018	Analyst: CEI
Chromium	8900	13	100		µg/L	100	10/3/2018 05:47 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-002

**Client Sample ID:** MW-69-195-Q318  
**Collection Date:** 9/27/2018 9:54:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_181001A	QC Batch: R128962				PrepDate		Analyst: RAB
Hexavalent Chromium	460	1.7	10		µg/L	50	10/1/2018 02:38 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181003A	QC Batch: 70851				PrepDate	10/2/2018	Analyst: CEI
Chromium	450	0.65	5.0		µg/L	5	10/3/2018 03:50 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-003

**Client Sample ID:** MW-913-Q318  
**Collection Date:** 9/27/2018 11:01:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_181001A	QC Batch: R128962				PrepDate		Analyst: RAB
Hexavalent Chromium	180	0.66	4.0		µg/L	20	10/1/2018 12:44 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
				<b>EPA 3010A</b>			
				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181003A	QC Batch: 70851				PrepDate	10/2/2018	Analyst: CEI
Chromium	170	0.13	1.0		µg/L	1	10/3/2018 04:13 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-004

**Client Sample ID:** MW-65-225-Q318  
**Collection Date:** 9/27/2018 10:51:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181001A</b>	QC Batch: <b>R128962</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	180	0.66	4.0		µg/L	20	10/1/2018 02:19 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181003A</b>	QC Batch: <b>70851</b>				PrepDate	<b>10/2/2018</b>	Analyst: <b>CEI</b>
Chromium	170	0.13	1.0		µg/L	1	10/3/2018 04:18 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-005

**Client Sample ID:** MW-38S-SMT-Q318  
**Collection Date:** 9/27/2018 1:26:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181001A</b>	QC Batch: <b>R128962</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	3.0	0.033	0.20		µg/L	1	10/1/2018 01:03 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181003A</b>	QC Batch: <b>70851</b>				PrepDate	<b>10/2/2018</b>	Analyst: <b>CEI</b>
Chromium	3.3	0.13	1.0		µg/L	1	10/3/2018 04:35 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-006

**Client Sample ID:** MW-38S-Q318  
**Collection Date:** 9/27/2018 1:47:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181001A</b>	QC Batch: <b>R128962</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	2.7	0.033	0.20		µg/L	1	10/1/2018 01:41 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181003A</b>	QC Batch: <b>70851</b>				PrepDate	<b>10/2/2018</b>	Analyst: <b>CEI</b>
Chromium	2.8	0.13	1.0		µg/L	1	10/3/2018 04:40 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-007

**Client Sample ID:** MW-58BR-Q318  
**Collection Date:** 9/27/2018 3:00:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181001A</b>	QC Batch: <b>R128962</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	9.7	0.066	0.40		µg/L	2	10/1/2018 04:12 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181003A</b>	QC Batch: <b>70851</b>				PrepDate	<b>10/2/2018</b>	Analyst: <b>CEI</b>
Chromium	9.6	0.13	1.0		µg/L	1	10/3/2018 04:46 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-008

**Client Sample ID:** MW-703-Q318  
**Collection Date:** 9/27/2018 3:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181001A</b>	QC Batch: <b>R128962</b>			PrepDate			Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20	µg/L	1		10/1/2018 03:44 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-009

**Client Sample ID:** MW-65-160-Q318  
**Collection Date:** 9/27/2018 11:52:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_181001A	QC Batch: R128962				PrepDate		Analyst: RAB
Hexavalent Chromium	170	0.66	4.0		µg/L	20	10/1/2018 03:25 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181003A	QC Batch: 70851				PrepDate	10/2/2018	Analyst: CEI
Chromium	170	0.13	1.0		µg/L	1	10/3/2018 04:51 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>MB-R128962</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>
Client ID: <b>PBW</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157360</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>LCS-R128962</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157361</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.193	0.20	5.000	0	104 90 110

Sample ID <b>N032268-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157363</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	13912.100	200	5000	8513	108 90 110

Sample ID <b>N032268-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157364</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	13908.400	200	5000	8513	108 90 110 13910 0.0266 20

Sample ID <b>N032268-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157366</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	278.150	4.0	100.0	175.9	102 90 110

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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 3151 W. Post Rd., Las Vegas, NV 89118  
 ELAP Cert 2676 | NV Cert NVO0922  
 ORELAP/NELAP Cert 4046

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032268-005AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157370</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.094	0.20	1.000	3.045	105	90	110				

Sample ID <b>N032268-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157373</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	278.464	4.0	100.0	175.6	103	90	110				

Sample ID <b>N032268-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157375</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	711.345	10	250.0	455.1	102	90	110				

Sample ID <b>N032268-005ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157376</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	3.097	0.20						3.045	1.68	20	

Sample ID <b>N032268-009AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157380</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	270.804	4.0	100.0	167.0	104	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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 3151 W. Post Rd., Las Vegas, NV 89118  
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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>N032268-008AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157382</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.100	0.20	1.000	0.07260	103	90	110				

Sample ID <b>N032268-006AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157383</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	3.730	0.20	1.000	2.684	105	90	110				

Sample ID <b>N032268-007AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157385</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	19.710	0.40	10.00	9.661	100	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>MB-70851</b>	SampType: <b>MBLK</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165567</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>LCS-70851</b>	SampType: <b>LCS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165568</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	9.668	1.0	10.00	0	96.7	85	115				
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Sample ID <b>N032268-002D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165595</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	466.015	5.0	10.00	446.2	199	75	125				S
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Sample ID <b>N032268-002D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165596</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	463.944	5.0	10.00	446.2	178	75	125	466.0	0.445	20	S
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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EPA ID CA01638

**NEVADA** | P: 702.307.2659 F: 702.307.2691  
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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-001

**Client Sample ID:** MW-68-180-Q318  
**Collection Date:** 9/27/2018 8:57:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181008A</b>	QC Batch: <b>R129094</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	11	0.63	1.0		mg/L	20	10/8/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 ELAP Cert 2921  
 EPA ID CA01638

**NEVADA** | P:702.307.2659 F:702.307.2691  
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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-002

**Client Sample ID:** MW-69-195-Q318  
**Collection Date:** 9/27/2018 9:54:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181008A</b>	QC Batch: <b>R129094</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	21	0.63	1.0		mg/L	20	10/8/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-003

**Client Sample ID:** MW-913-Q318  
**Collection Date:** 9/27/2018 11:01:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181008A</b>	QC Batch: <b>R129094</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	2.5	0.16	0.25		mg/L	5	10/8/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-004

**Client Sample ID:** MW-65-225-Q318  
**Collection Date:** 9/27/2018 10:51:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181008A</b>	QC Batch: <b>R129094</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	2.9	0.16	0.25		mg/L	5	10/8/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-005

**Client Sample ID:** MW-38S-SMT-Q318  
**Collection Date:** 9/27/2018 1:26:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181008A</b>	QC Batch: <b>R129094</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	4.8	0.16	0.25		mg/L	5	10/8/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-006

**Client Sample ID:** MW-38S-Q318  
**Collection Date:** 9/27/2018 1:47:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181008A</b>	QC Batch: <b>R129094</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	5.0	0.16	0.25		mg/L	5	10/8/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-007

**Client Sample ID:** MW-58BR-Q318  
**Collection Date:** 9/27/2018 3:00:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181008A</b>	QC Batch: <b>R129094</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.94	0.032	0.050		mg/L	1	10/8/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-009

**Client Sample ID:** MW-65-160-Q318  
**Collection Date:** 9/27/2018 11:52:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181008A</b>	QC Batch: <b>R129094</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	14	0.63	1.0		mg/L	20	10/8/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R129094</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129094</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129094</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3165612</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R129094</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129094</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129094</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3165613</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.983	0.050	1.000	0	98.3 85 115

Sample ID <b>N032326-001DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129094</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129094</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3165617</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	3.212	0.25			2.628 20.0 20

Sample ID <b>N032326-002DMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129094</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129094</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3165619</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	5.504	0.25	2.500	2.812	108 75 125

Sample ID <b>N032326-002DMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129094</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129094</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3165620</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	5.282	0.25	2.500	2.812	98.8 75 125 5.504 4.12 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



**ASSET LABORATORIES**  
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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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EPA ID CA01638

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3151 W. Post Rd., Las Vegas, NV 89118  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-001

**Client Sample ID:** MW-68-180-Q318  
**Collection Date:** 9/27/2018 8:57:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	3.2	0.081	0.10	µg/L	1	10/3/2018 03:40 PM
Manganese	3.1	0.26	0.50	µg/L	1	10/3/2018 03:40 PM
Molybdenum	33	0.21	0.50	µg/L	1	10/3/2018 03:40 PM
Selenium	9.5	0.36	0.50	µg/L	1	10/3/2018 03:40 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-002

**Client Sample ID:** MW-69-195-Q318  
**Collection Date:** 9/27/2018 9:54:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	2.1	0.081	0.10	µg/L	1	10/3/2018 03:45 PM
Manganese	ND	0.26	0.50	µg/L	1	10/3/2018 03:45 PM
Molybdenum	65	0.21	0.50	µg/L	1	10/3/2018 03:45 PM
Selenium	12	0.36	0.50	µg/L	1	10/3/2018 03:45 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-003

**Client Sample ID:** MW-913-Q318  
**Collection Date:** 9/27/2018 11:01:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	2.9	0.081	0.10	µg/L	1	10/3/2018 04:13 PM
Manganese	26	0.26	0.50	µg/L	1	10/3/2018 04:13 PM
Molybdenum	47	0.21	0.50	µg/L	1	10/3/2018 04:13 PM
Selenium	2.0	0.36	0.50	µg/L	1	10/3/2018 04:13 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-004

**Client Sample ID:** MW-65-225-Q318  
**Collection Date:** 9/27/2018 10:51:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	3.1	0.081	0.10	µg/L	1	10/3/2018 04:18 PM
Manganese	27	0.26	0.50	µg/L	1	10/3/2018 04:18 PM
Molybdenum	47	0.21	0.50	µg/L	1	10/3/2018 04:18 PM
Selenium	2.5	0.36	0.50	µg/L	1	10/3/2018 06:34 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-005

**Client Sample ID:** MW-38S-SMT-Q318  
**Collection Date:** 9/27/2018 1:26:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	5.8	0.081	0.10	µg/L	1	10/3/2018 04:35 PM
Manganese	47	0.26	0.50	µg/L	1	10/3/2018 04:35 PM
Molybdenum	29	0.21	0.50	µg/L	1	10/3/2018 04:35 PM
Selenium	3.4	0.36	0.50	µg/L	1	10/3/2018 04:35 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-006

**Client Sample ID:** MW-38S-Q318  
**Collection Date:** 9/27/2018 1:47:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	6.2	0.081	0.10	µg/L	1	10/3/2018 04:40 PM
Manganese	50	0.26	0.50	µg/L	1	10/3/2018 04:40 PM
Molybdenum	30	0.21	0.50	µg/L	1	10/3/2018 04:40 PM
Selenium	3.2	0.36	0.50	µg/L	1	10/3/2018 04:40 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-007

**Client Sample ID:** MW-58BR-Q318  
**Collection Date:** 9/27/2018 3:00:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	1.8	0.081	0.10	µg/L	1	10/3/2018 04:46 PM
Manganese	300	1.3	2.5	µg/L	5	10/3/2018 06:29 PM
Molybdenum	24	0.21	0.50	µg/L	1	10/3/2018 04:46 PM
Selenium	1.8	0.36	0.50	µg/L	1	10/3/2018 06:23 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-009

**Client Sample ID:** MW-65-160-Q318  
**Collection Date:** 9/27/2018 11:52:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	0.75	0.081	0.10	µg/L	1	10/3/2018 04:51 PM
Manganese	47	0.26	0.50	µg/L	1	10/3/2018 04:51 PM
Molybdenum	54	0.21	0.50	µg/L	1	10/3/2018 04:51 PM
Selenium	8.9	0.36	0.50	µg/L	1	10/3/2018 04:51 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**NEVADA** | P:702.307.2659 F:702.307.2691  
 3151 W. Post Rd., Las Vegas, NV 89118  
 ELAP Cert 2676 | NV Cert NV00922  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>MB-70851</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>
Client ID: <b>PBW</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165524</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>LCS-70851</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165525</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	9.851	0.10	10.00	0	98.5 85 115
Manganese	104.806	0.50	100.0	0	105 85 115
Molybdenum	9.850	0.50	10.00	0	98.5 85 115
Selenium	9.178	0.50	10.00	0	91.8 85 115

Sample ID <b>N032268-002D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165530</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	12.420	0.10	10.00	2.086	103 75 125
Manganese	98.768	0.50	100.0	0.4020	98.4 75 125
Molybdenum	77.378	0.50	10.00	65.37	120 75 125
Selenium	20.950	0.50	10.00	12.19	87.6 75 125

Sample ID <b>N032268-002D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165531</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	12.083	0.10	10.00	2.086	100 75 125 12.42 2.75 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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ORELAP/NELAP Cert 4046

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	<b>N032268-002D-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>10/2/2018</b>	RunNo:	<b>129092</b>		
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70851</b>	TestNo:	<b>EPA 6020</b>	<b>EPA 3010A</b>		Analysis Date:	<b>10/3/2018</b>	SeqNo:	<b>3165531</b>		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		98.819		0.50	100.0	0.4020	98.4	75	125	98.77	0.0516	20	
Molybdenum		76.638		0.50	10.00	65.37	113	75	125	77.38	0.961	20	
Selenium		22.007		0.50	10.00	12.19	98.1	75	125	20.95	4.92	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



**ASSET LABORATORIES**  
ANALYTICAL SERVICES AND CONSULTING FOR ENVIRONMENTAL AND GEOLOGICAL

[CALIFORNIA](#) | P:562.219.7435 F:562.219.7436  
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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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P: 702.307.2659 F: 702.307.2691  
California: 11060 Artesia Blvd., Ste C, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436  
[www.assetlaboratories.com](http://www.assetlaboratories.com)

Client: Arcadis		Report to: Dan Bush		Bill to: Marty Bloes		EDD Requirement		QA/QC		Sample Receipt Condition									
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis		Address:		Excel EDD		RTNE		Y N									
Address: Roseville, CA 95681		Email: <a href="mailto:dan.bush@arcadis.com">dan.bush@arcadis.com</a> <a href="mailto:daniel.moore@crfit.com">daniel.moore@crfit.com</a>		Address:		Geotracker		RWQCB		1. Chilled									
Phone: 916-786-3302		Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661		Email to: <a href="mailto:mbloes@pivox.com">mbloes@pivox.com</a>		Labspec		CalTrans		2. Headspace									
Submitted By: Genit Jeffers		Phone: 949-727-1400, ext 200		Fax:		Others		LEVEL III		3. Container Intact									
Title: Geologist II		Phone: 916-786-3302		Fax:		Specify:		LEVEL IV		4. Seal Present									
Signature:		Date: 9/27/2018		Sampled By: Jordon Teramae		Global ID:		Regulatory		5. IR number									
Project Name: PG&E Topock - GMP		Signature:		Date: 9/27/2018		Specify State:				6. Method of Cooling:									
Project Number: RC000753.801D		I attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraudulent and may be grounds for legal action.								Sample Temp: 2.2 / 0.10									
		Matrix								Courier:									
		Ground x Sediment		250 mL poly		1 liter poly		1 liter poly		Tracking No.:									
		Potable Soil																	
		NPDES Other Solid																	
		Surface																	
				Alkalinity, Total as CaCO3 (SM2320B)		Bromide, Sulfate, Chloride (EPA 300.0)		Specific Conductance (EPA 120.1)											
				Total Dissolved Solids (SM2540C)		Nitrate/Nitrite (SM4500NO3 F) Nitrate: H2SO4		Metals Dissolved (SW6020A FF) (As, Cr, Mn, Mo, Se); HNO3											
				Cr(VI) FF (E218.6) (NH4)2 SO4, NH4, OH		Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3		Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3											
Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	Cr(VI) FF (E218.6) (NH4)2 SO4, NH4, OH	Alkalinity, Total as CaCO3 (SM2320B)	Bromide, Sulfate, Chloride (EPA 300.0)	Specific Conductance (EPA 120.1)	Total Dissolved Solids (SM2540C)	Nitrate/Nitrite (SM4500NO3 F) Nitrate: H2SO4	Metals Dissolved (SW6020A FF) (As, Cr, Mn, Mo, Se); HNO3	Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3	Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3	Turn Around Time	No. of Container	Container Type	PRESERVATION	Remarks
1	N032268-01	MW-68-180-Q318	9/27/2018	8:57	X	X	X	X	X	X	X	X	X	X	E 4	P	BNS		
2	-02	MW-69-195-Q318	9/27/2018	9:54	X	X	X	X	X	X	X	X	X	X	E 4	P	BNS		
3	-03	MW-913-Q318	9/27/2018	11:01	X	X	X	X	X	X	X	X	X	X	E 4	P	BNS		
4	-04	MW-65-225-Q318	9/27/2018	10:51	X	X	X	X	X	X	X	X	X	X	E 4	P	BNS		
5	-05	MW-38S-SMT-Q318	9/27/2018	13:26	X	X	X	X	X	X	X	X	X	X	E 4	P	BNS		
6	-06	MW-38S-Q318	9/27/2018	13:47	X	X	X	X	X	X	X	X	X	X	E 4	P	BNS		
7	-07	MW-58BR-Q318	9/27/2018	15:00	X	X	X	X	X	X	X	X	X	X	E 4	P	BNS		
8	-08	MW-703-Q318	9/27/2018	15:15	X										E 1	P	B		
9	-09	MW-65-160-Q318	9/27/2018	11:52	X	X	X	X	X	X	X	X	X	X	E 4	P	BNS		
10																			
Relinquished by (Signature and Printed Name):			Date/Time: 9/27/18 1610			Relinquished by (Signature and Printed Name):			Date/Time: 9/27/18 1610			Turn Around Time (TAT)			Special Instruction: Title 22 Metals - Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na				
Relinquished by (Signature and Printed Name):			Date/Time: 9/27/18 1820			Relinquished by (Signature and Printed Name):			Date/Time: 9/27/18 1820			<input type="checkbox"/> A < 24 Hrs or Same Day TAT <input type="checkbox"/> B = Next Workday <input type="checkbox"/> C = 2 Workdays <input type="checkbox"/> D = 3 Workdays <input checked="" type="checkbox"/> E = Routine 5-7 Workdays							
Relinquished by (Signature and Printed Name):			Date/Time: 9/27/18 1820			Relinquished by (Signature and Printed Name):			Date/Time: 9/27/18 1820			TAT Starts at 8 AM the following day if samples received after 3:00PM.							
Terms: 1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report. 2. Regular: TAT is 5-7 business days, surcharges will apply for rush analysis Less than 24 Hrs=200% Next Day=100% 2 Workdays=50% 3 Workdays=35% 4 Workdays=20% 3. Custom EDD formats will be an additional 3% of the total project price. 4. Add 10% surcharge for Level II Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.						5. Trip Blanks and Equipment Blanks are billable sample. 6. Asset Laboratories is not responsible for samples collected using incorrect methodology. 7. Terms are net 30 days. 8. All reports are submitted in electronic format. Please Inform ASSET Laboratories if hard copy of report is needed. 9. For subcontract analysis, TAT and Surcharges will vary.						Preservatives: H=HCL N=HNO3 S=H2SO4 C=4°C Z=Zn(AC)2 O=NaOH T=Na2S2O3 Others/Specify: B (NH4)2SO4/NH4OH			Container Type: T=Tube V=VOA P=Pin J=Jar B=Tedlar G=Glass M=Metal M=Metal C=Can				

White=Laboratory Copy

Yellow=Customer's Copy

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 9/27/2018 Workorder: N032268  
 Rep sample Temp (Deg C): 3.1/4.1 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |  |  |  |
|---|--|--|--|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>   |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                                  |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                                  |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 11. All samples received within holding time?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>   |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input type="checkbox"/><br>Yes <input type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input checked="" type="checkbox"/><br>NA <input checked="" type="checkbox"/> |

Comments:

Checklist Completed By: YR  10/1/2018

Reviewed By:  LG 100418

# ASSET Laboratories

## WORK ORDER Summary

28-Sep-18

**WorkOrder:** N032268

**Client ID:** ARCUS02

**Project:** PG&E Topock - GMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 9/27/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032268-001A	MW-68-180-Q318	9/27/2018 8:57:00 AM	10/11/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-001B			10/11/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-001C			10/11/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-001D			10/11/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-002A	MW-69-195-Q318	9/27/2018 9:54:00 AM	10/11/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-002B			10/11/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-002C			10/11/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-002D			10/11/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-003A	MW-913-Q318	9/27/2018 11:01:00 AM	10/11/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-003B			10/11/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-003C			10/11/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-003D			10/11/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-004A	MW-65-225-Q318	9/27/2018 10:51:00 AM	10/11/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-004B			10/11/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-004C			10/11/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

28-Sep-18

**WorkOrder:** N032268

**Client ID:** ARCUS02

**Project:** PG&E Topock - GMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 9/27/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032268-004D	MW-65-225-Q318	9/27/2018 10:51:00 AM	10/11/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-005A	MW-38S-SMT-Q318	9/27/2018 1:26:00 PM	10/11/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
10/11/2018			EPA 120.1		SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
10/11/2018			SM4500-NO3F		NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032268-005D			10/11/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-006A	MW-38S-Q318	9/27/2018 1:47:00 PM	10/11/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
10/11/2018			EPA 120.1		SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
10/11/2018			SM4500-NO3F		NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032268-006D			10/11/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-007A	MW-58BR-Q318	9/27/2018 3:00:00 PM	10/11/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
10/11/2018			EPA 120.1		SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
10/11/2018			SM4500-NO3F		NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032268-007D			10/11/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW



# ASSET Laboratories

## WORK ORDER Summary

28-Sep-18

**WorkOrder:** N032268

**Client ID:** ARCUS02

**Project:** PG&E Topock - GMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 9/27/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032268-008A	MW-703-Q318	9/27/2018 3:15:00 PM	10/11/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-009A	MW-65-160-Q318	9/27/2018 11:52:00 AM	10/11/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-009B			10/11/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-009C			10/11/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-009D			10/11/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-010A	FOLDER	10/11/2018	10/11/2018		EDD	RWQCB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/11/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/11/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

# ***ARCADIS***

Project: PG&E Topock - GMP

Project No.: RC000753.801D

ASSET Laboratories Work Order:  
N032268

## ***ANALYTICAL and QC RESULTS SAMPLE RECEIVING ITEMS***

***PRIVILEGED AND CONFIDENTIAL***



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

## Table of Contents

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October 11, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032268

RE: PG&E Topock - GMP, RC000753.801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on September 27, 2018 by ASSET Laboratories .  
The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in  
accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,



Quennie Manimtim  
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories - Las Vegas.



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3151 W. Post Rd., Las Vegas, NV 89118  
ELAP Cert 2676 | NV Cert NV00922  
ORELAP/NELAP Cert 4046

---

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032268

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**CASE NARRATIVE**

**SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

**Analytical Comments for EPA 218.6:**

Dilution was necessary for sample N032268-007 due to matrix interference. Sample was analyzed at lower dilution however matrix spike recovery was not met indicating possible matrix interference. Sample was reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.

**Analytical Comments for EPA 6020\_Dissolved:**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Chromium in QC samples N032268-002D-MS and N032268-002D-MSD since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.



**ASSET Laboratories**

Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032268  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032268-001A	MW-68-180-Q318	Groundwater	9/27/2018 8:57:00 AM	9/27/2018	10/11/2018
N032268-001B	MW-68-180-Q318	Groundwater	9/27/2018 8:57:00 AM	9/27/2018	10/11/2018
N032268-001C	MW-68-180-Q318	Groundwater	9/27/2018 8:57:00 AM	9/27/2018	10/11/2018
N032268-001D	MW-68-180-Q318	Groundwater	9/27/2018 8:57:00 AM	9/27/2018	10/11/2018
N032268-002A	MW-69-195-Q318	Groundwater	9/27/2018 9:54:00 AM	9/27/2018	10/11/2018
N032268-002B	MW-69-195-Q318	Groundwater	9/27/2018 9:54:00 AM	9/27/2018	10/11/2018
N032268-002C	MW-69-195-Q318	Groundwater	9/27/2018 9:54:00 AM	9/27/2018	10/11/2018
N032268-002D	MW-69-195-Q318	Groundwater	9/27/2018 9:54:00 AM	9/27/2018	10/11/2018
N032268-003A	MW-913-Q318	Groundwater	9/27/2018 11:01:00 AM	9/27/2018	10/11/2018
N032268-003B	MW-913-Q318	Groundwater	9/27/2018 11:01:00 AM	9/27/2018	10/11/2018
N032268-003C	MW-913-Q318	Groundwater	9/27/2018 11:01:00 AM	9/27/2018	10/11/2018
N032268-003D	MW-913-Q318	Groundwater	9/27/2018 11:01:00 AM	9/27/2018	10/11/2018
N032268-004A	MW-65-225-Q318	Groundwater	9/27/2018 10:51:00 AM	9/27/2018	10/11/2018
N032268-004B	MW-65-225-Q318	Groundwater	9/27/2018 10:51:00 AM	9/27/2018	10/11/2018
N032268-004C	MW-65-225-Q318	Groundwater	9/27/2018 10:51:00 AM	9/27/2018	10/11/2018
N032268-004D	MW-65-225-Q318	Groundwater	9/27/2018 10:51:00 AM	9/27/2018	10/11/2018
N032268-005A	MW-38S-SMT-Q318	Groundwater	9/27/2018 1:26:00 PM	9/27/2018	10/11/2018
N032268-005B	MW-38S-SMT-Q318	Groundwater	9/27/2018 1:26:00 PM	9/27/2018	10/11/2018
N032268-005C	MW-38S-SMT-Q318	Groundwater	9/27/2018 1:26:00 PM	9/27/2018	10/11/2018
N032268-005D	MW-38S-SMT-Q318	Groundwater	9/27/2018 1:26:00 PM	9/27/2018	10/11/2018
N032268-006A	MW-38S-Q318	Groundwater	9/27/2018 1:47:00 PM	9/27/2018	10/11/2018
N032268-006B	MW-38S-Q318	Groundwater	9/27/2018 1:47:00 PM	9/27/2018	10/11/2018
N032268-006C	MW-38S-Q318	Groundwater	9/27/2018 1:47:00 PM	9/27/2018	10/11/2018
N032268-006D	MW-38S-Q318	Groundwater	9/27/2018 1:47:00 PM	9/27/2018	10/11/2018
N032268-007A	MW-58BR-Q318	Groundwater	9/27/2018 3:00:00 PM	9/27/2018	10/11/2018
N032268-007B	MW-58BR-Q318	Groundwater	9/27/2018 3:00:00 PM	9/27/2018	10/11/2018
N032268-007C	MW-58BR-Q318	Groundwater	9/27/2018 3:00:00 PM	9/27/2018	10/11/2018
N032268-007D	MW-58BR-Q318	Groundwater	9/27/2018 3:00:00 PM	9/27/2018	10/11/2018
N032268-008A	MW-703-Q318	Groundwater	9/27/2018 3:15:00 PM	9/27/2018	10/11/2018



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032268  
**Contract No:**

## Work Order Sample Summary

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Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032268-009A	MW-65-160-Q318	Groundwater	9/27/2018 11:52:00 AM	9/27/2018	10/11/2018
N032268-009B	MW-65-160-Q318	Groundwater	9/27/2018 11:52:00 AM	9/27/2018	10/11/2018
N032268-009C	MW-65-160-Q318	Groundwater	9/27/2018 11:52:00 AM	9/27/2018	10/11/2018
N032268-009D	MW-65-160-Q318	Groundwater	9/27/2018 11:52:00 AM	9/27/2018	10/11/2018



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-001

**Client Sample ID:** MW-68-180-Q318  
**Collection Date:** 9/27/2018 8:57:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180928A</b>	QC Batch: <b>R128895</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	3300	0.10	0.10		umhos/cm	1	9/28/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-002

**Client Sample ID:** MW-69-195-Q318  
**Collection Date:** 9/27/2018 9:54:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180928A</b>	QC Batch: <b>R128895</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	3200	0.10	0.10		umhos/cm	1	9/28/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-003

**Client Sample ID:** MW-913-Q318  
**Collection Date:** 9/27/2018 11:01:00 AM  
**Matrix:** GROUNDWATER

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Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180928A</b>	QC Batch: <b>R128895</b>						Analyst: <b>LR</b>
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/28/2018 11:20 AM

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**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-004

**Client Sample ID:** MW-65-225-Q318  
**Collection Date:** 9/27/2018 10:51:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180928A</b>	QC Batch: <b>R128895</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	15000	0.10	0.10		umhos/cm	1	9/28/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-005

**Client Sample ID:** MW-38S-SMT-Q318  
**Collection Date:** 9/27/2018 1:26:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180928A</b>	QC Batch: <b>R128895</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	1700	0.10	0.10		umhos/cm	1	9/28/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-006

**Client Sample ID:** MW-38S-Q318  
**Collection Date:** 9/27/2018 1:47:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180928A</b>	QC Batch: <b>R128895</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	1700	0.10	0.10		umhos/cm	1	9/28/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-007

**Client Sample ID:** MW-58BR-Q318  
**Collection Date:** 9/27/2018 3:00:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180928A</b>	QC Batch: <b>R128895</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	8200	0.10	0.10		umhos/cm	1	9/28/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-009

**Client Sample ID:** MW-65-160-Q318  
**Collection Date:** 9/27/2018 11:52:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_180928A</b>	QC Batch: <b>R128895</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	3600	0.10	0.10		umhos/cm	1	9/28/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID <b>N032268-003BDUP</b>	SampType: <b>DUP</b>	TestCode: <b>120.1_WPGE</b>	Units: <b>umhos/cm</b>	Prep Date:	RunNo: <b>128895</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128895</b>	TestNo: <b>EPA 120.1</b>	Analysis Date: <b>9/28/2018</b>	SeqNo: <b>3154383</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	14770.000	0.10						14750	0.136	2	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-001

**Client Sample ID:** MW-68-180-Q318  
**Collection Date:** 9/27/2018 8:57:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181001A</b>	QC Batch: <b>R128962</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	8500	33	200		µg/L	1000	10/1/2018 11:45 AM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181003A</b>	QC Batch: <b>70851</b>				PrepDate	<b>10/2/2018</b>	Analyst: <b>CEI</b>
Chromium	8900	13	100		µg/L	100	10/3/2018 05:47 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-002

**Client Sample ID:** MW-69-195-Q318  
**Collection Date:** 9/27/2018 9:54:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_181001A	QC Batch: R128962				PrepDate		Analyst: RAB
Hexavalent Chromium	460	1.7	10		µg/L	50	10/1/2018 02:38 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181003A	QC Batch: 70851				PrepDate	10/2/2018	Analyst: CEI
Chromium	450	0.65	5.0		µg/L	5	10/3/2018 03:50 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-003

**Client Sample ID:** MW-913-Q318  
**Collection Date:** 9/27/2018 11:01:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_181001A	QC Batch: R128962			PrepDate	Analyst: RAB		
Hexavalent Chromium	180	0.66	4.0	µg/L	20	10/1/2018 12:44 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI	
Chromium	170	0.13	1.0	µg/L	1	10/3/2018 04:13 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-004

**Client Sample ID:** MW-65-225-Q318  
**Collection Date:** 9/27/2018 10:51:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_181001A	QC Batch: R128962			PrepDate	Analyst: RAB		
Hexavalent Chromium	180	0.66	4.0	µg/L	20	10/1/2018 02:19 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI	
Chromium	170	0.13	1.0	µg/L	1	10/3/2018 04:18 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-005

**Client Sample ID:** MW-38S-SMT-Q318  
**Collection Date:** 9/27/2018 1:26:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
<b>EPA 218.6</b>							
RunID: NV00922-IC7_181001A	QC Batch: R128962				PrepDate		Analyst: RAB
Hexavalent Chromium	3.0	0.033	0.20		µg/L	1	10/1/2018 01:03 PM
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181003A	QC Batch: 70851				PrepDate	10/2/2018	Analyst: CEI
Chromium	3.3	0.13	1.0		µg/L	1	10/3/2018 04:35 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-006

**Client Sample ID:** MW-38S-Q318  
**Collection Date:** 9/27/2018 1:47:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181001A</b>	QC Batch: <b>R128962</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	2.7	0.033	0.20		µg/L	1	10/1/2018 01:41 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181003A</b>	QC Batch: <b>70851</b>				PrepDate	<b>10/2/2018</b>	Analyst: <b>CEI</b>
Chromium	2.8	0.13	1.0		µg/L	1	10/3/2018 04:40 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-007

**Client Sample ID:** MW-58BR-Q318  
**Collection Date:** 9/27/2018 3:00:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181001A</b>	QC Batch: <b>R128962</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	9.7	0.066	0.40		µg/L	2	10/1/2018 04:12 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181003A</b>	QC Batch: <b>70851</b>				PrepDate	<b>10/2/2018</b>	Analyst: <b>CEI</b>
Chromium	9.6	0.13	1.0		µg/L	1	10/3/2018 04:46 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-008

**Client Sample ID:** MW-703-Q318  
**Collection Date:** 9/27/2018 3:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181001A</b>	QC Batch: <b>R128962</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20		µg/L	1	10/1/2018 03:44 PM

- Qualifiers:**
- B Analyte detected in the associated Method Blank
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
  - DO Surrogate Diluted Out
  - E Value above quantitation range
  - ND Not Detected at the Reporting Limit
  - Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-009

**Client Sample ID:** MW-65-160-Q318  
**Collection Date:** 9/27/2018 11:52:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181001A</b>	QC Batch: <b>R128962</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	170	0.66	4.0		µg/L	20	10/1/2018 03:25 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181003A</b>	QC Batch: <b>70851</b>				PrepDate	<b>10/2/2018</b>	Analyst: <b>CEI</b>
Chromium	170	0.13	1.0		µg/L	1	10/3/2018 04:51 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>MB-R128962</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>
Client ID: <b>PBW</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157360</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>LCS-R128962</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157361</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.193	0.20	5.000	0	104 90 110

Sample ID <b>N032268-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157363</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	13912.100	200	5000	8513	108 90 110

Sample ID <b>N032268-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157364</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	13908.400	200	5000	8513	108 90 110 13910 0.0266 20

Sample ID <b>N032268-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157366</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	278.150	4.0	100.0	175.9	102 90 110

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032268-005AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157370</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.094	0.20	1.000	3.045	105	90	110				

Sample ID <b>N032268-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157373</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	278.464	4.0	100.0	175.6	103	90	110				

Sample ID <b>N032268-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157375</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	711.345	10	250.0	455.1	102	90	110				

Sample ID <b>N032268-005ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157376</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	3.097	0.20						3.045	1.68	20	

Sample ID <b>N032268-009AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157380</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	270.804	4.0	100.0	167.0	104	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032268-008AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157382</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.100	0.20	1.000	0.07260	103	90	110				

Sample ID <b>N032268-006AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157383</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	3.730	0.20	1.000	2.684	105	90	110				

Sample ID <b>N032268-007AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157385</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	19.710	0.40	10.00	9.661	100	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



**ASSET LABORATORIES**  
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ORELAP/NELAP Cert 4046

"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>MB-70851</b>	SampType: <b>MBLK</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165567</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>LCS-70851</b>	SampType: <b>LCS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165568</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	9.668	1.0	10.00	0	96.7	85	115				
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Sample ID <b>N032268-002D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165595</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	466.015	5.0	10.00	446.2	199	75	125				S
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Sample ID <b>N032268-002D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165596</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	463.944	5.0	10.00	446.2	178	75	125	466.0	0.445	20	S
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-001

**Client Sample ID:** MW-68-180-Q318  
**Collection Date:** 9/27/2018 8:57:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181008A</b>	QC Batch: <b>R129094</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	11	0.63	1.0		mg/L	20	10/8/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-002

**Client Sample ID:** MW-69-195-Q318  
**Collection Date:** 9/27/2018 9:54:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181008A</b>	QC Batch: <b>R129094</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	21	0.63	1.0		mg/L	20	10/8/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-003

**Client Sample ID:** MW-913-Q318  
**Collection Date:** 9/27/2018 11:01:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181008A</b>	QC Batch: <b>R129094</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	2.5	0.16	0.25		mg/L	5	10/8/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-004

**Client Sample ID:** MW-65-225-Q318  
**Collection Date:** 9/27/2018 10:51:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181008A</b>	QC Batch: <b>R129094</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	2.9	0.16	0.25		mg/L	5	10/8/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-005

**Client Sample ID:** MW-38S-SMT-Q318  
**Collection Date:** 9/27/2018 1:26:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181008A</b>	QC Batch: <b>R129094</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	4.8	0.16	0.25		mg/L	5	10/8/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-006

**Client Sample ID:** MW-38S-Q318  
**Collection Date:** 9/27/2018 1:47:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181008A</b>	QC Batch: <b>R129094</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	5.0	0.16	0.25		mg/L	5	10/8/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-007

**Client Sample ID:** MW-58BR-Q318  
**Collection Date:** 9/27/2018 3:00:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181008A</b>	QC Batch: <b>R129094</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.94	0.032	0.050		mg/L	1	10/8/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-009

**Client Sample ID:** MW-65-160-Q318  
**Collection Date:** 9/27/2018 11:52:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181008A</b>	QC Batch: <b>R129094</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	14	0.63	1.0		mg/L	20	10/8/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R129094</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129094</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129094</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3165612</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R129094</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129094</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129094</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3165613</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.983	0.050	1.000	0	98.3 85 115

Sample ID <b>N032326-001DDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129094</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129094</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3165617</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	3.212	0.25			2.628 20.0 20

Sample ID <b>N032326-002DMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129094</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129094</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3165619</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	5.504	0.25	2.500	2.812	108 75 125

Sample ID <b>N032326-002DMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129094</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129094</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3165620</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	5.282	0.25	2.500	2.812	98.8 75 125 5.504 4.12 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values



**ASSET LABORATORIES**  
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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-001

**Client Sample ID:** MW-68-180-Q318  
**Collection Date:** 9/27/2018 8:57:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	3.2	0.081	0.10	µg/L	1	10/3/2018 03:40 PM
Manganese	3.1	0.26	0.50	µg/L	1	10/3/2018 03:40 PM
Molybdenum	33	0.21	0.50	µg/L	1	10/3/2018 03:40 PM
Selenium	9.5	0.36	0.50	µg/L	1	10/3/2018 03:40 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-002

**Client Sample ID:** MW-69-195-Q318  
**Collection Date:** 9/27/2018 9:54:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	2.1	0.081	0.10	µg/L	1	10/3/2018 03:45 PM
Manganese	ND	0.26	0.50	µg/L	1	10/3/2018 03:45 PM
Molybdenum	65	0.21	0.50	µg/L	1	10/3/2018 03:45 PM
Selenium	12	0.36	0.50	µg/L	1	10/3/2018 03:45 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-003

**Client Sample ID:** MW-913-Q318  
**Collection Date:** 9/27/2018 11:01:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	2.9	0.081	0.10	µg/L	1	10/3/2018 04:13 PM
Manganese	26	0.26	0.50	µg/L	1	10/3/2018 04:13 PM
Molybdenum	47	0.21	0.50	µg/L	1	10/3/2018 04:13 PM
Selenium	2.0	0.36	0.50	µg/L	1	10/3/2018 04:13 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-004

**Client Sample ID:** MW-65-225-Q318  
**Collection Date:** 9/27/2018 10:51:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	3.1	0.081	0.10	µg/L	1	10/3/2018 04:18 PM
Manganese	27	0.26	0.50	µg/L	1	10/3/2018 04:18 PM
Molybdenum	47	0.21	0.50	µg/L	1	10/3/2018 04:18 PM
Selenium	2.5	0.36	0.50	µg/L	1	10/3/2018 06:34 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-005

**Client Sample ID:** MW-38S-SMT-Q318  
**Collection Date:** 9/27/2018 1:26:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	5.8	0.081	0.10	µg/L	1	10/3/2018 04:35 PM
Manganese	47	0.26	0.50	µg/L	1	10/3/2018 04:35 PM
Molybdenum	29	0.21	0.50	µg/L	1	10/3/2018 04:35 PM
Selenium	3.4	0.36	0.50	µg/L	1	10/3/2018 04:35 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-006

**Client Sample ID:** MW-38S-Q318  
**Collection Date:** 9/27/2018 1:47:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	6.2	0.081	0.10	µg/L	1	10/3/2018 04:40 PM
Manganese	50	0.26	0.50	µg/L	1	10/3/2018 04:40 PM
Molybdenum	30	0.21	0.50	µg/L	1	10/3/2018 04:40 PM
Selenium	3.2	0.36	0.50	µg/L	1	10/3/2018 04:40 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-007

**Client Sample ID:** MW-58BR-Q318  
**Collection Date:** 9/27/2018 3:00:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	1.8	0.081	0.10	µg/L	1	10/3/2018 04:46 PM
Manganese	300	1.3	2.5	µg/L	5	10/3/2018 06:29 PM
Molybdenum	24	0.21	0.50	µg/L	1	10/3/2018 04:46 PM
Selenium	1.8	0.36	0.50	µg/L	1	10/3/2018 06:23 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 11-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032268-009

**Client Sample ID:** MW-65-160-Q318  
**Collection Date:** 9/27/2018 11:52:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	0.75	0.081	0.10	µg/L	1	10/3/2018 04:51 PM
Manganese	47	0.26	0.50	µg/L	1	10/3/2018 04:51 PM
Molybdenum	54	0.21	0.50	µg/L	1	10/3/2018 04:51 PM
Selenium	8.9	0.36	0.50	µg/L	1	10/3/2018 04:51 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>MB-70851</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>
Client ID: <b>PBW</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165524</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>LCS-70851</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165525</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	9.851	0.10	10.00	0	98.5 85 115
Manganese	104.806	0.50	100.0	0	105 85 115
Molybdenum	9.850	0.50	10.00	0	98.5 85 115
Selenium	9.178	0.50	10.00	0	91.8 85 115

Sample ID <b>N032268-002D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165530</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	12.420	0.10	10.00	2.086	103 75 125
Manganese	98.768	0.50	100.0	0.4020	98.4 75 125
Molybdenum	77.378	0.50	10.00	65.37	120 75 125
Selenium	20.950	0.50	10.00	12.19	87.6 75 125

Sample ID <b>N032268-002D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165531</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	12.083	0.10	10.00	2.086	100 75 125 12.42 2.75 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	<b>N032268-002D-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>10/2/2018</b>	RunNo:	<b>129092</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70851</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/3/2018</b>	SeqNo:	<b>3165531</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		98.819		0.50	100.0	0.4020		98.4	75	125	98.77	0.0516	20	
Molybdenum		76.638		0.50	10.00	65.37		113	75	125	77.38	0.961	20	
Selenium		22.007		0.50	10.00	12.19		98.1	75	125	20.95	4.92	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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# SAMPLE RECEIVING ITEMS



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www.assetlaboratories.com

Page **1** of **1**

Client: Arcadis		Report to: Dan Bush		Bill to: Marty Bloes		EDD Requirement		QA/QC		Sample Receipt Condition	
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis		Address:		Excel EDD		RTNE		Y N	
Address: Roseville, CA 95681		Email: dan.bush@arcadis.com daniel.moore@craftclean.com		Address:		Geotracker		RWQCB		<input checked="" type="checkbox"/>	
Phone: 916-786-3302		Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661		Email to: mbloes@pivox.com		Labspec		CalTrans		<input type="checkbox"/>	
Submitted By: Gantt Jeffers		Phone: 949-727-1400, ext 200		Fax:		Others		LEVEL III		<input type="checkbox"/>	
Title: Geologist II		Phone: 916-786-3302		Fax:		Specify:		LEVEL IV		<input type="checkbox"/>	
Signature: <i>[Signature]</i> Date: 9/27/2018		Sampled By: Jordan Teramae		P.O.#		RWQCB		Regulatory		<input type="checkbox"/>	
Project Name: PG&E Topock - GMP		Signature: <i>[Signature]</i> Date: 9/27/2018		Matrix		Global ID:		Specify State:		6. Method of Cooling: <i>10</i>	
Project Number: RC000753.801D		I attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraudulent and may be grounds for legal action.		Ground x Sediment		250 mL poly		1 liter poly		1 liter poly	
		Potable Soil		NPDES Other Solid		1 liter poly		1 liter poly		Sample Temp: <i>2.2 e/d/a/se</i>	
		Surface		C(VI) FF (E218.6) (NH4)2 SO4, NH4, OH		125 mL poly		500 mL poly		Courier:	
				Alkalinity, Total as CaCO3 (SM2320B)		500 mL poly		500 mL poly		Tracking No.:	
				Bromide, Sulfate, Chloride (EPA 300.0)		Total Dissolved Solids (SM2540C)		Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3		Remarks:	
				Specific Conductance (EPA 120.1)		Nitrate/Nitrite (SM4500NO3 F) Nitrate: H2SO4		Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3			
				Turn Around Time (TAT)		Metals Dissolved (SW6020A FF) (As, Cr, Mn, Mo, Se); HNO3		Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3			
				Special Instruction:		Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3		Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3			
				Title 22 Metals - Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na							
				TAT Starts at 8 AM the following day if samples received after 3:00PM.							
				Preservatives:							
				H=HCL		N=HNO3		S=H2SO4		C=4°C	
				Z=Zn(AC)2		O=NaOH		T=Na2S2O3		J=Jar	
				Others/Specify: B		(NH4)2SO4/NH4OH		M=Metal		V=VOA	
										P=Pin	
										B=Tedlar	
										G=Glass	
										C=Can	

Terms:  
1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report.  
2. Regular: TAT is 5-7 business days, surcharges will apply for rush analysis  
Less than 24 Hrs=200% Next Day=100% 2 Workdays=50% 3 Workdays=35% 4 Workdays=20%  
3. Custom EDD formats will be an additional 3% of the total project price.  
4. Add 10% surcharge for Level III Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.

5. Trip Blanks and Equipment Blanks are billable sample.  
6. Asset Laboratories is not responsible for samples collected using incorrect methodology.  
7. Terms are not 30 days.  
8. All reports are submitted in electronic format. Please Inform ASSET Laboratories if hard copy of report is needed.  
9. For subcontract analysis, TAT and Surcharges will vary.

Container Type:  
T=Tube V=VOA P=Pin  
J=Jar B=Tedlar G=Glass  
M=Metal M=Metal C=Can

White=Laboratory Copy

Yellow=Customer's Copy

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 9/27/2018 Workorder: N032268  
 Rep sample Temp (Deg C): 3.1/4.1 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |  |  |  |
|---|--|--|--|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>   |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                                  |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                                  |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 11. All samples received within holding time?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>   |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input type="checkbox"/><br>Yes <input type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input checked="" type="checkbox"/><br>NA <input checked="" type="checkbox"/> |

Comments:

Checklist Completed By: YR  10/1/2018

Reviewed By:  LG 100418

# ASSET Laboratories

## WORK ORDER Summary

28-Sep-18

WorkOrder: N032268

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801D

QC Level: Level IV

Date Received: 9/27/2018

Comments: Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032268-001A	MW-68-180-Q318	9/27/2018 8:57:00 AM	10/11/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-001B			10/11/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-001C			10/11/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-001D			10/11/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-002A	MW-69-195-Q318	9/27/2018 9:54:00 AM	10/11/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-002B			10/11/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-002C			10/11/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-002D			10/11/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-003A	MW-913-Q318	9/27/2018 11:01:00 AM	10/11/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-003B			10/11/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-003C			10/11/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-003D			10/11/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-004A	MW-65-225-Q318	9/27/2018 10:51:00 AM	10/11/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-004B			10/11/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-004C			10/11/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

28-Sep-18

**WorkOrder:** N032268

**Client ID:** ARCUS02

**Project:** PG&E Topock - GMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 9/27/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032268-004D	MW-65-225-Q318	9/27/2018 10:51:00 AM	10/11/2018	Groundwater	EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-005A	MW-38S-SMT-Q318	9/27/2018 1:26:00 PM	10/11/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
10/11/2018			EPA 120.1		SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
10/11/2018			SM4500-NO3F		NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032268-005D			10/11/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-006A	MW-38S-Q318	9/27/2018 1:47:00 PM	10/11/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
10/11/2018			EPA 120.1		SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
10/11/2018			SM4500-NO3F		NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032268-006D			10/11/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-007A	MW-58BR-Q318	9/27/2018 3:00:00 PM	10/11/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
10/11/2018			EPA 120.1		SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
10/11/2018			SM4500-NO3F		NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW	
N032268-007D			10/11/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

28-Sep-18

**WorkOrder:** N032268

**Client ID:** ARCUS02

**Project:** PG&E Topock - GMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 9/27/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032268-008A	MW-703-Q318	9/27/2018 3:15:00 PM	10/11/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-009A	MW-65-160-Q318	9/27/2018 11:52:00 AM	10/11/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-009B			10/11/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-009C			10/11/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-009D			10/11/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/11/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032268-010A	FOLDER	10/11/2018	10/11/2018		EDD	RWQCB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/11/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/11/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

## List of Analysts

### ASSET Laboratories Work Order: N032268

NAME	TEST METHOD
Quennie Manimtim	SM 4500-NO3F
Claire Ignacio	EPA 6020_Dissolved
Ria Abes	EPA 218.6
Lilia Ramit	EPA 120.1



# EPA 120.1



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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NEVADA  
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P: 702.307.2659 F: 702.307.2691

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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R128895

Analyst: LSR

ASSET #: N032268

Date Analyzed: 28-Sep

Method: EPA 120.1

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
<b>Sample Information</b>						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.			X			
11. LCS compounds within control limits.			X			
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Julia Ramit

Date: 10/4/2018

2nd Level Reviewer Murphy 10/11/2018

Date:

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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# Conductivity Logbook

Date: 9/28/18 120

Analyst: LR

Standard	Std ID	Reading	Comments
9.91 $\mu\text{S}/\text{cm}$	CMV-1807316	9.96 @ 23.0C	% Rec: (90-110%)
1413	180515C	1427 @ 22.6C	
9988	1807314	10190 @ 22.8C	
99922	180914B	99600 @ 23.0C	

Sample ID	Matrix	Reading	Comments
1 N032268-001B	HW	3330 @ 22.6C	
2 2B		8230 @ 22.5C	
3 3B		14750 @ 22.7C	
4 3B Dup		14770 @ 22.5C	
5 4B		14760 @ 22.7C	
6 5B		1712 @ 22.6C	
7 6B		1709 @ 22.5C	Julia Ramit
8 7B		8250 @ 22.5C	10/4/2018
9 9B		3560 @ 21.7C	
10 14B $\mu\text{S}/\text{cm}$	CMV-180417B	1413 @ 23.0C	22.9 $\mu\text{S}/\text{cm}$ LR
Dup 10000	180516A	10020 @ 23.4C	Accept: 10% water, 20% soil
Std Chk: 94601	180521B	99500 @ 23.4C	% Rec: (90-110%)

Date: 10/2/18 120

Analyst: LR

Standard	Std ID	Reading	Comments
9.91 $\mu\text{S}/\text{cm}$	CMV-1807316	9.73 @ 24.3C	% Rec: (90-110%)
1413	180515C	1408 @ 24.4C	
9988	1807314	10040 @ 24.4C	
99922	180914B	99700 @ 24.3C	

Sample ID	Matrix	Reading	Comments
1 N032305-001B	HW	10470 @ 23.9C	
2 1B Dup		10510 @ 23.7C	
3 2B		10900 @ 23.9C	
4			
5			
6			
7 1413 $\mu\text{S}/\text{cm}$	CMV-180417B	1444 @ 23.9C	
8 10000	180516A	10120 @ 24.0C	
9			
10			
Dup			Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Logbook # 6

# EPA 218.6



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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# IC Technical Batch Review Checklist (ARCUS02)

IC ARCUS  
REV 2.0  
011416

## ASSET LABORATORIES - LAS VEGAS

QC Batch Number: R128962  
ASSET #: N032268

Instrument ID: IC-07  
Analyst: RBA  
Date Analyzed: 10/1/2018

Method:

- EPA 300.0
- EPA 7199

- EPA 218.6/EPA 218.7
- EPA 218.6/EPA 218.7 LL
- Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ?( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)	X					
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?	X					
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?	X					
12. Duplicate sample injections for every sample. (7199 only)			X			/
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)	X			/		
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			/
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X			/		
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?	X			/		
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			/
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)	X			/		
19. EPA 3060A digestion performed on solid samples (7199 only)			X			/
20. Are all peaks within RT window, ± 0.2 min?	X			/		
21. Are all samples analyzed within hold time?	X			/		
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			/
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X			/		
24. LCS compounds are within control limits.	X			/		
25. MS/MSD, RPD's are within control limits.	X			/		
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			/
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X			/		
28. Extraction log complete and included in package (if applicable)			X			/
29. All manual integrations initialed, date and reasons included.	X			/		
30. Before and after manual integration chromatogram included in the package	X			/		
31. All samples and QC raw data present in package.	X			/		
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X			/		
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			/		
34. Is the QC summary report present and complete?	X			/		

Comments:

### SECOND LEVEL REVIEW:

	Y	N	N/A
1. All assigned sample(s) analyzed	/		
2. Matrix / units correct	/		
3. Is QC present and complete?	/		
4. Are analytical results correct? (dilutions, calculations)	/		
5. Is first level review correct and complete?	/		

1st Level Reviewer RBA

Date: 10/10/2018

2nd Level Reviewer Thomy 10/11/2018

Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 218.6  
**TEST NAME:** HEXAVALENT CHROMIUM BY IC  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Hexavalent Chromium concentration, in  $\mu\text{g/L}$ , in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

A =  $\mu\text{g/L}$ , IC Cr+6 calculated concentration  
DF = dilution factor

For Sample **N032268-001A**, the concentration in  $\mu\text{g/L}$  is calculated as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = 8.5134 * 1000$$

$$\text{Cr}^{+6}, \mu\text{g/L} = 8513.4000$$

Reporting results in two significant figures,

$$\text{Cr}^{+6}, \mu\text{g/L} = \mathbf{8500}$$

*rba* 10/10/2018

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INJECTION LOG: 180921A**

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	ICV	ICV	1	Hexavalent Chromium	09/21/18 4:09 PM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/21/18 4:18 PM	Reported
11	ICB	ICB	1	Hexavalent Chromium	09/21/18 4:28 PM	Reported

## Injection Log Summary

### Sequence Details

Name:	IC-07_180921A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	25/Sep/18 09:28:56
No. of Injections:	14	Updated By:	ics 5000

### Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	ICV.ICV,1,	10	1000	Unknown		09/21/2018 16:09	Finished	ICV @5ppb, IWST-180622B
10	PQL@0.2ppb.CCV2,	11	1000	Unknown		09/21/2018 16:18	Finished	PQL @ 0.2ppb
11	ICB.ICB,1,	12	1000	Unknown		09/21/2018 16:28	Finished	ICB R180919A
12	SHUTDOWN	14	1000	Unknown		09/21/2018 16:45	Finished	
13	Eluent: R180917A	14	1000	Unknown		n.a.	Finished	Eluent
14	PCR: R180921A	15	1000	Unknown		n.a.	Finished	Post-Column Reagent

**INJECTION LOG: 181001A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	10/01/18 9:30 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	10/01/18 9:40 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	10/01/18 9:50 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	10/01/18 9:59 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	10/01/18 10:09 AM	Reported
14	MB-R128962	MBLK	1	Hexavalent Chromium	10/01/18 10:18 AM	Reported
15	LCS-R128962	LCS	1	Hexavalent Chromium	10/01/18 10:28 AM	Reported
16	N032268-001A	SAMP	1000	Hexavalent Chromium	10/01/18 11:45 AM	Reported
17	N032268-001AMS	MS	1000	Hexavalent Chromium	10/01/18 11:56 AM	Reported
18	N032268-001AMSD	MSD	1000	Hexavalent Chromium	10/01/18 12:06 PM	Reported
19	N032268-002A	SAMP	20	Hexavalent Chromium	10/01/18 12:23 PM	Not Reported
20	N032268-002AMS	MS	20	Hexavalent Chromium	10/01/18 12:35 PM	Not Reported
21	N032268-003A	SAMP	20	Hexavalent Chromium	10/01/18 12:44 PM	Reported
22	N032268-003AMS	MS	20	Hexavalent Chromium	10/01/18 12:54 PM	Reported
23	N032268-005A	SAMP	1	Hexavalent Chromium	10/01/18 1:03 PM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	10/01/18 1:13 PM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	10/01/18 1:22 PM	Reported
26	N032268-005AMS	MS	1	Hexavalent Chromium	10/01/18 1:32 PM	Reported
27	N032268-006A	SAMP	1	Hexavalent Chromium	10/01/18 1:41 PM	Reported
28	N032268-006AMS	MS	1	Hexavalent Chromium	10/01/18 1:50 PM	Not Reported
29	N032268-007A	SAMP	1	Hexavalent Chromium	10/01/18 2:00 PM	Not Reported
30	N032268-007AMS	MS	1	Hexavalent Chromium	10/01/18 2:09 PM	Not Reported
31	N032268-004A	SAMP	20	Hexavalent Chromium	10/01/18 2:19 PM	Reported
32	N032268-004AMS	MS	20	Hexavalent Chromium	10/01/18 2:28 PM	Reported
33	N032268-002A	SAMP	50	Hexavalent Chromium	10/01/18 2:38 PM	Reported
34	N032268-002AMS	MS	50	Hexavalent Chromium	10/01/18 2:47 PM	Reported
35	N032268-005ADUP	DUP	1	Hexavalent Chromium	10/01/18 2:57 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	10/01/18 3:06 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	10/01/18 3:16 PM	Reported
38	N032268-009A	SAMP	20	Hexavalent Chromium	10/01/18 3:25 PM	Reported
39	N032268-009AMS	MS	20	Hexavalent Chromium	10/01/18 3:35 PM	Reported
40	N032268-008A	SAMP	1	Hexavalent Chromium	10/01/18 3:44 PM	Reported
41	N032268-008AMS	MS	1	Hexavalent Chromium	10/01/18 3:53 PM	Reported
42	N032268-006AMS	MS	1	Hexavalent Chromium	10/01/18 4:03 PM	Reported

**INJECTION LOG: 181001A**

**Instrument ID: IC-07**

<b>Sample No</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Peak Name</b>	<b>Injection Date/Time</b>	<b>Comments</b>
43	N032268-007A	SAMP	2	Hexavalent Chromium	10/01/18 4:12 PM	Reported
44	N032268-007AMS	MS	2	Hexavalent Chromium	10/01/18 4:22 PM	Reported
45	CCV-4	CCV1	1	Hexavalent Chromium	10/01/18 4:31 PM	Reported
46	CCB-4	CCB	1	Hexavalent Chromium	10/01/18 4:41 PM	Reported

### Injection Log Summary

**Sequence Details**

Name:	IC-07_181001A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	02/Oct/18 19:45:39
No. of Injections:	49	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	BLANK	1	1000	Unknown		10/01/2018 09:30	Finished	BLANK
10	BLANK	2	1000	Unknown		10/01/2018 09:40	Finished	BLANK
11	CCV-1.CCV,1,	3	1000	Unknown		10/01/2018 09:50	Finished	CCV @5ppb, IWST-180622A
12	PQL@0.2ppb,CCV2,	4	1000	Unknown		10/01/2018 09:59	Finished	PQL @ 0.2ppb
13	CCB-1.CCB,1,	5	1000	Unknown		10/01/2018 10:09	Finished	CCB R180919A
14	MB-H2O,MBLK,1,	6	1000	Unknown		10/01/2018 10:18	Finished	MB R180919A
15	LCS-H2O,LCS,1,	7	1000	Unknown		10/01/2018 10:28	Finished	LCS @5ppb, IWST-180622B
16	N032268-001A,SAMP	9	1000	Unknown		10/01/2018 11:45	Finished	SAMP,10.01>10mL
17	N032268-001AMS,MS	10	1000	Unknown		10/01/2018 11:56	Finished	MS (5ppb), IWST-180622B,0.0
18	N032268-001AMSD,N	11	1000	Unknown		10/01/2018 12:06	Finished	MSD (5ppb), IWST-180622B,0
19	N032268-002A,SAMP	13	1000	Unknown		10/01/2018 12:23	Finished	SAMP,0.5>10mL
20	N032268-002AMS,MS	14	1000	Unknown		10/01/2018 12:35	Finished	MS (5ppb), IWST-180622B,0.5
21	N032268-003A,SAMP	15	1000	Unknown		10/01/2018 12:44	Finished	SAMP,0.5>10mL
22	N032268-003AMS,MS	16	1000	Unknown		10/01/2018 12:54	Finished	MS (5ppb), IWST-180622B,0.5
23	N032268-005A,SAMP	17	1000	Unknown		10/01/2018 13:03	Finished	SAMP,10mL
24	CCV-2.CCV1,1,	18	1000	Unknown		10/01/2018 13:13	Finished	CCV @10ppb, IWST-180622A
25	CCB-2.CCB,1,	19	1000	Unknown		10/01/2018 13:22	Finished	CCB R180919A
26	N032268-005AMS,MS	20	1000	Unknown		10/01/2018 13:32	Finished	MS (1ppb), IWST-180622B,10
27	N032268-006A,SAMP	21	1000	Unknown		10/01/2018 13:41	Finished	SAMP,10mL
28	N032268-006AMS,MS	22	1000	Unknown		10/01/2018 13:50	Finished	MS (1ppb), IWST-180622B,10
29	N032268-007A,SAMP	23	1000	Unknown		10/01/2018 14:00	Finished	SAMP,10mL
30	N032268-007AMS,MS	24	1000	Unknown		10/01/2018 14:09	Finished	MS (5ppb), IWST-180622B,10
31	N032268-004A,SAMP	25	1000	Unknown		10/01/2018 14:19	Finished	SAMP,0.5>10mL
32	N032268-004AMS,MS	26	1000	Unknown		10/01/2018 14:28	Finished	MS (5ppb), IWST-180622B,0.5
33	N032268-002A,SAMP	27	1000	Unknown		10/01/2018 14:38	Finished	SAMP,0.2>10mL
34	N032268-002AMS,MS	28	1000	Unknown		10/01/2018 14:47	Finished	MS (5ppb), IWST-180622B,0.2
35	N032268-005ADUP,D	29	1000	Unknown		10/01/2018 14:57	Finished	DUP,10mL
36	CCV-3.CCV,1,	30	1000	Unknown		10/01/2018 15:06	Finished	CCV @5ppb, IWST-180622A
37	CCB-3.CCB,1,	31	1000	Unknown		10/01/2018 15:16	Finished	CCB R180919A
38	N032268-009A,SAMP	32	1000	Unknown		10/01/2018 15:25	Finished	SAMP,0.5>10mL
39	N032268-009AMS,MS	33	1000	Unknown		10/01/2018 15:35	Finished	MS (5ppb), IWST-180622B,0.5
40	N032268-008A,SAMP	34	1000	Unknown		10/01/2018 15:44	Finished	SAMP,10mL
41	N032268-008AMS,MS	35	1000	Unknown		10/01/2018 15:53	Finished	MS (1ppb), IWST-180622B,10
42	N032268-006AMS,MS	36	1000	Unknown		10/01/2018 16:03	Finished	MS (1ppb), IWST-180622B,10
43	N032268-007A,SAMP	37	1000	Unknown		10/01/2018 16:12	Finished	SAMP,2>10mL
44	N032268-007AMS,MS	38	1000	Unknown		10/01/2018 16:22	Finished	MS (5ppb), IWST-180622B,2>
45	CCV-4.CCV1,1,	39	1000	Unknown		10/01/2018 16:31	Finished	CCV @10ppb, IWST-180622A
46	CCB-4.CCB,1,	40	1000	Unknown		10/01/2018 16:41	Finished	CCB R180919A
47	SHUTDOWN	41	1000	Unknown		10/01/2018 16:50	Finished	
48	Eluent: R181001A	42	1000	Unknown		n.a.	Finished	Eluent
49	PCR: R181001B	43	1000	Unknown		n.a.	Finished	Post-Column Reagent

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

### Hexavalent Chromium Preparation and Runlog

#### Sample Preparation

Date Prepared: 9/28/18  
 Time Prepared: 1530  
 Prepared By: VR

SLOPE: 92.2%  
 7 : 7.02  
 4 : 4.03  
 16 : 16.02  
 WS 2018 V-02

Reagent ID:  
 Sulfuric Acid: 10704  
 Diphenylcarbazide: CIN-18051605  
 NH4OH + NH4SO4 eluent: M80927A  
 NH4OH + NH4SO4 buffer: M80918A

GW NAME:  
M80911C

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N032268-001A	9.08	9.40	~250 ml	~250 ml	+4 GW NaOH	
2)	2A	9.09	9.34			+4 drops	
3)	3A	9.22	9.35			+2	
4)	4A	9.23	9.39			+2	
5)	5A	9.30	-			0	
6)	6A	9.26	9.30			+1 drop GW NaOH	
7)	7A	9.25	9.33			+1	
8)	8A	9.43	-			-	
9)	9A	8.98	9.32			+5 drops GW NaOH	
10)							
11)							
12)							
13)							
14)							
15)							

#### Sample Preparation

Date Prepared: 10/2/18  
 Time Prepared: 1610 H  
 Prepared By: NBA

SLOPE:  
 pH:  
 7:  
 10:  
 WS

Reagent ID:  
 Sulfuric Acid: 10704  
 Diphenylcarbazide: CIN-18051605  
 NH4OH + NH4SO4 eluent: M80927A  
 NH4OH + NH4SO4 buffer: M80918A

GW NAME:  
M80911C

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N032307-1A	9.00	9.32	~250 ml	~200 ml	+4 drops NaOH	
2)	2A	8.78	9.33			+7 " "	
3)	3A	9.00	9.31			+4 " "	
4)	4A	9.40	-				
5)	5A	9.06	9.40			+3 " "	
6)	6A	9.57	-				
7)	7A	9.48	-				
8)	8A	9.49	-				
9)	N032307-1A	9.40	-				
10)	2A	9.06	9.45			+4 drops NaOH	
11)	3A	9.21	9.40			+3 drops NaOH	
12)	4A	9.24	9.44			+3 " "	
13)	5A	8.90	9.34			+5 " "	
14)	6A	9.06	9.34			+4 " "	
15)	7A	8.91	9.38			+5 " "	
	8A	9.15	9.41			+3 " "	

Logbook No. 15

**rba** 10/10/2018



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL SCIENCE LOGS

"Serving Clients with Passion and Professionalism"

CALIFORNIA | P: 562.219.7435 F: 562.219.7436  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 ELAP Cert 2921

11 of 100 ID CA01638

NEVADA | P: 702.307.2659 F: 702.307.2691  
 3151 W. Post Rd., Las Vegas, NV 89118  
 ELAP Cert 2676 | NV Cert N 1922  
 ORELAP/NELAP Cert 4046

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07  
Date Calibrated: 9/21/2018

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R <sup>2</sup>
Area,mAU*min	0.0462	0.2400	1.2761	2.5253	3.8020	5.0460	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST-170814H	IWST-180622A

Calibration Acceptance Criteria: > 0.999 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3157354</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.047	0.20	5.000	0	101	90	110				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3157355</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.187	0.20	0.2000	0	93.2	80	120				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157357</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	4.971	0.20	5.000	0	99.4	95	105				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157358</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.195	0.20	0.2000	0	97.7	80	120				

Sample ID <b>CCV-2</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157368</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.061	0.20	10.00	0	101	95	105				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157377</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.145	0.20	5.000	0	103	95	105				

Sample ID <b>CCV-4</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157386</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	9.983	0.20	10.00	0	99.8	95	105				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>
Client ID: <b>ICB</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3157356</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157359</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157369</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157378</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>128962</b>
Client ID: <b>CCB</b>	Batch ID: <b>R128962</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/1/2018</b>	SeqNo: <b>3157387</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENT

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 10/1/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.115	
CCV-1	4.131	
CCV-2	4.131	
CCV-3	4.131	
CCV-4	4.131	

**Average** 4.131

**Actual RT Window** 4.051 - 4.211

**Applied RT Window** 3.931 - 4.331

MB-R128962	N.A.	N.A.
LCS-R128962	4.131	PASS
N032268-001A	4.131	PASS
N032268-001AMS	4.131	PASS
N032268-001AMSD	4.131	PASS
N032268-002A	4.123	PASS
N032268-002AMS	4.131	PASS
N032268-003A	4.123	PASS
N032268-003AMS	4.115	PASS
N032268-005A	4.106	PASS
N032268-005AMS	4.106	PASS
N032268-006A	4.106	PASS
N032268-006AMS	4.106	PASS
N032268-007A	3.940	PASS
N032268-007AMS	3.940	PASS
N032268-004A	4.115	PASS
N032268-004AMS	4.098	PASS
N032268-002A	4.131	PASS
N032268-002AMS	4.131	PASS
N032268-005ADUP	4.106	PASS
N032268-009A	4.131	PASS
N032268-009AMS	4.131	PASS
N032268-008A	4.115	PASS



## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 10/1/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.115	
CCV-1	4.131	
CCV-2	4.131	
CCV-3	4.131	
CCV-4	4.131	

**Average** 4.131

**Actual RT Window** 4.051 - 4.211

**Applied RT Window** 3.931 - 4.331

N032268-008AMS	4.131	PASS
N032268-006AMS	4.106	PASS
N032268-007A	4.040	PASS
N032268-007AMS	4.048	PASS

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**  
 Method Number: EPA 218.6  
 Analysis Date(s): 5/5/2017, 5/8/2017, 5/9/2017, 5/10/2017, 5/11/2017, 5/12/2017, 5/15/2017  
 Analyst: Ria Abes

Matrix: **WATER**  
 Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

	Datafile	170505	170508	170509	170510	170511	170512	170515						
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	t <sub>(n-1)</sub> value	MDL	PQL	Remarks	
Hexavalent Chromium	0.1949	0.2135	0.1840	0.1828	0.2011	0.1936	0.1911	0.20	0.0105	3.143	<b>0.0331</b>	<b>0.20</b>	OK,meets criteria	

Students' t Values at 99% CL

#	t <sub>(n-1)</sub>
10	2.821
9	2.896
8	2.998
7	3.143



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL AND INDUSTRIAL APPLICATIONS

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

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## LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Hexavalent Chromium by IC** Matrix: **WATER**  
 Method Number: EPA Method 218.6/7199 Unit:  $\mu\text{g/L}$   
 Analysis Date(s): 3/21/2018  
 Analyst: Ria Abes  
  
 Instrument Name: **IC-07**

Compound	MDL	LOD Spike Conc., $\mu\text{g/L}$	LOD actual Conc., $\mu\text{g/L}$
Hexavalent Chromium	0.0331	0.100	0.116

Compound	PQL	PQL Spike Conc., $\mu\text{g/L}$	PQL actual Conc., $\mu\text{g/L}$	% Recovery
Hexavalent Chromium	0.200	0.200	0.201	<u>100</u>



# RAW DATA



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE LABORATORY TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436



NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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# INITIAL CALIBRATION



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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INJECTION LOG: 180921A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	ICV	ICV	1	Hexavalent Chromium	09/21/18 4:09 PM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/21/18 4:18 PM	Reported
11	ICB	ICB	1	Hexavalent Chromium	09/21/18 4:28 PM	Reported

*rba* 9/30/2018

*Nancy* 10/8/2018

IC7 RBA 9/26/2018 8:55 AM

## Injection Log Summary

## Sequence Details

Name:	IC-07_180921A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	25/Sep/18 09:28:56
No. of Injections:	14	Updated By:	ics 5000

## Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	ICV,ICV,1,	10	1000	Unknown		09/21/2018 16:09	Finished	ICV @5ppb, IWST-180622B
10	PQL@0.2ppb,CCV2,	11	1000	Unknown		09/21/2018 16:18	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	12	1000	Unknown		09/21/2018 16:28	Finished	ICB R180919A
12	SHUTDOWN	14	1000	Unknown		09/21/2018 16:45	Finished	
13	Eluent: R180917A	14	1000	Unknown		n.a.	Finished	Eluent
14	PCR: R180921A	15	1000	Unknown		n.a.	Finished	Post-Column Reagent

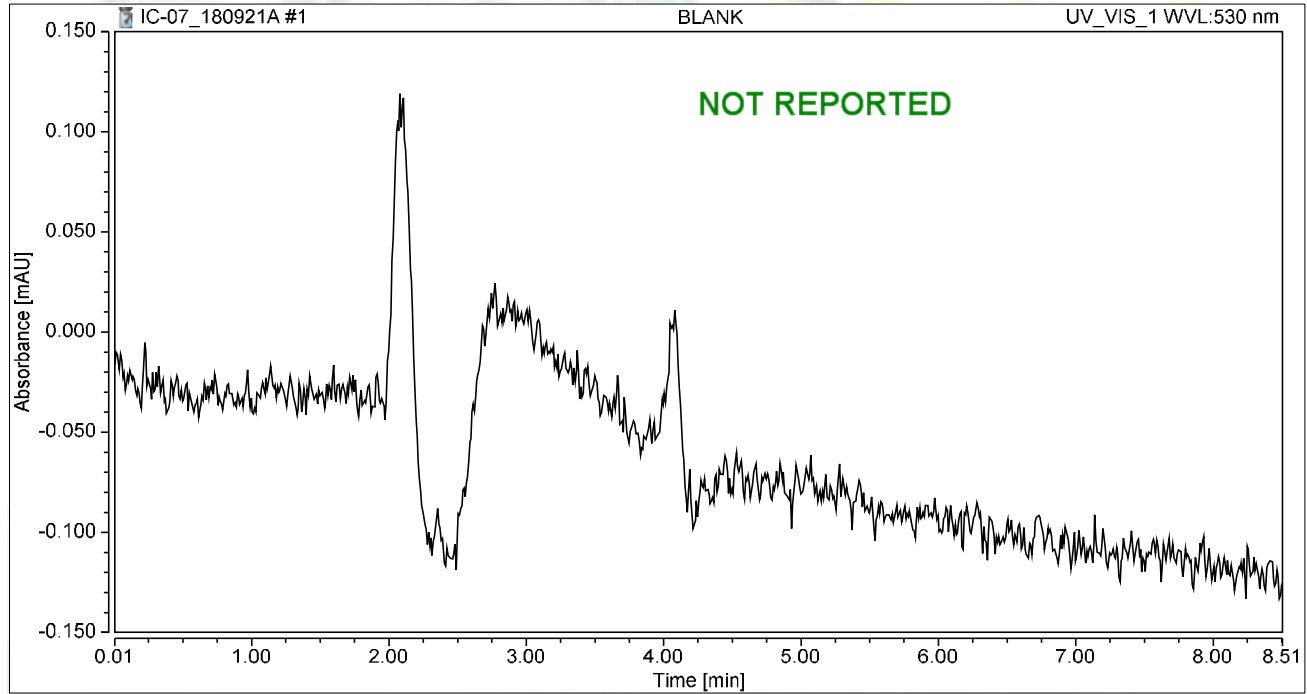


### Chromatogram and Results

**Injection Details**

Injection Name:	<b>BLANK</b>	Run Time (min):	<b>8.50</b>
Vial Number:	<b>1</b>	Injection Volume:	<b>1000.00</b>
Injection Type:	<b>Unknown</b>	Channel:	<b>UV_VIS_1</b>
Calibration Level:		Wavelength:	<b>530.0</b>
Instrument Method:	<b>Hex Chrom 4 mm</b>	Bandwidth:	<b>n.a.</b>
Processing Method:	<b>180921_IC-07_Cr6_218_6_HIGH</b>	Dilution Factor:	<b>1.0000</b>
Injection Date/Time:	<b>21/Sep/18 14:18</b>	Sample Weight:	<b>1.0000</b>

**Chromatogram**



**Integration Results**

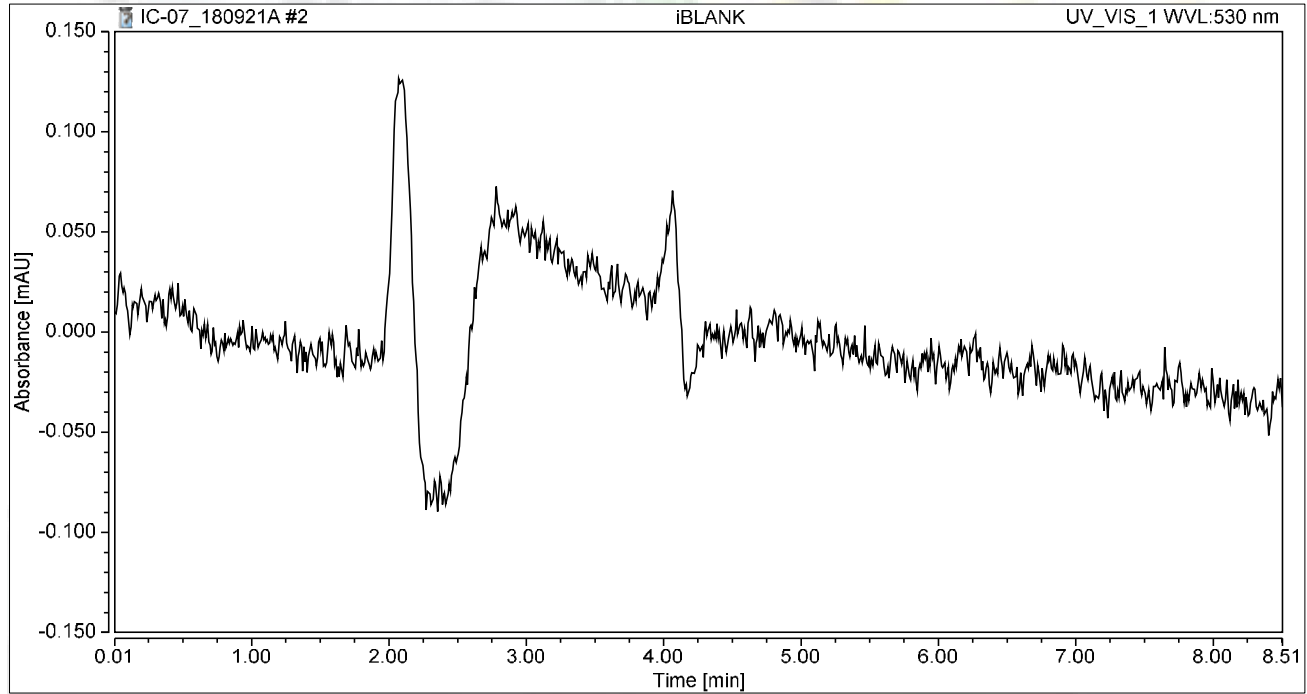
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	iBLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

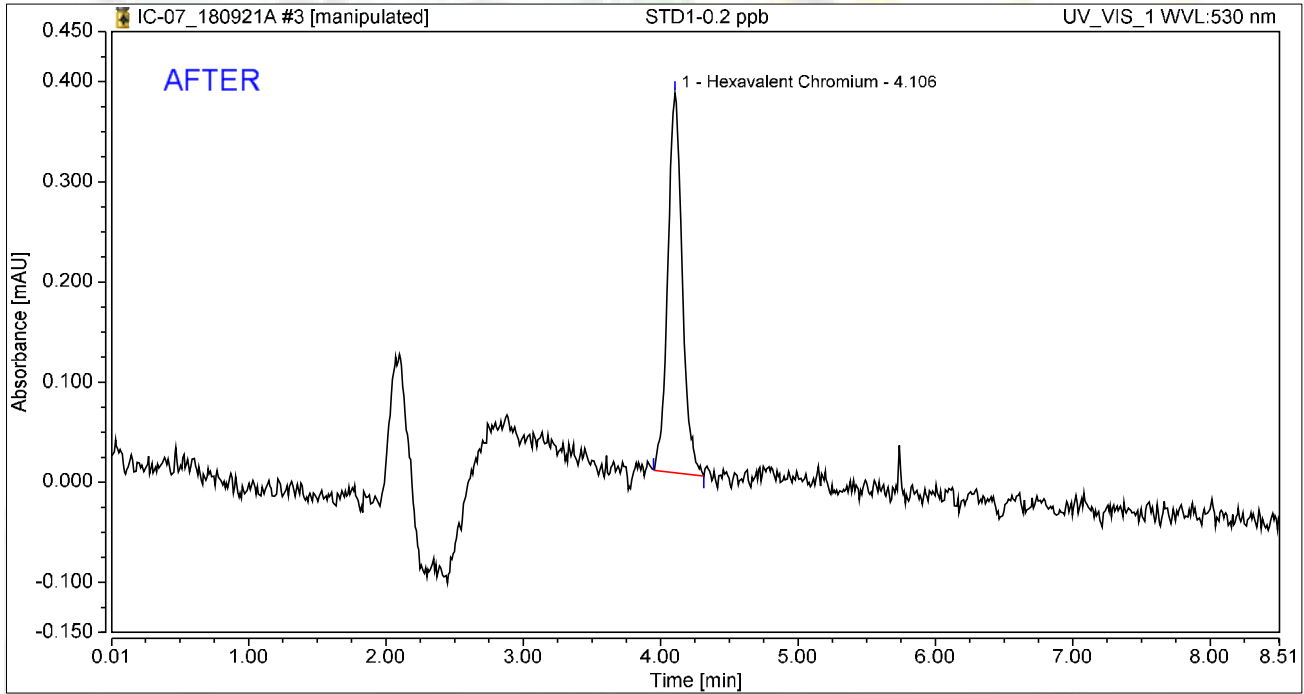
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.046	0.379	100.00	100.00	0.1830
<b>Total:</b>			<b>0.046</b>	<b>0.379</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/30/2018

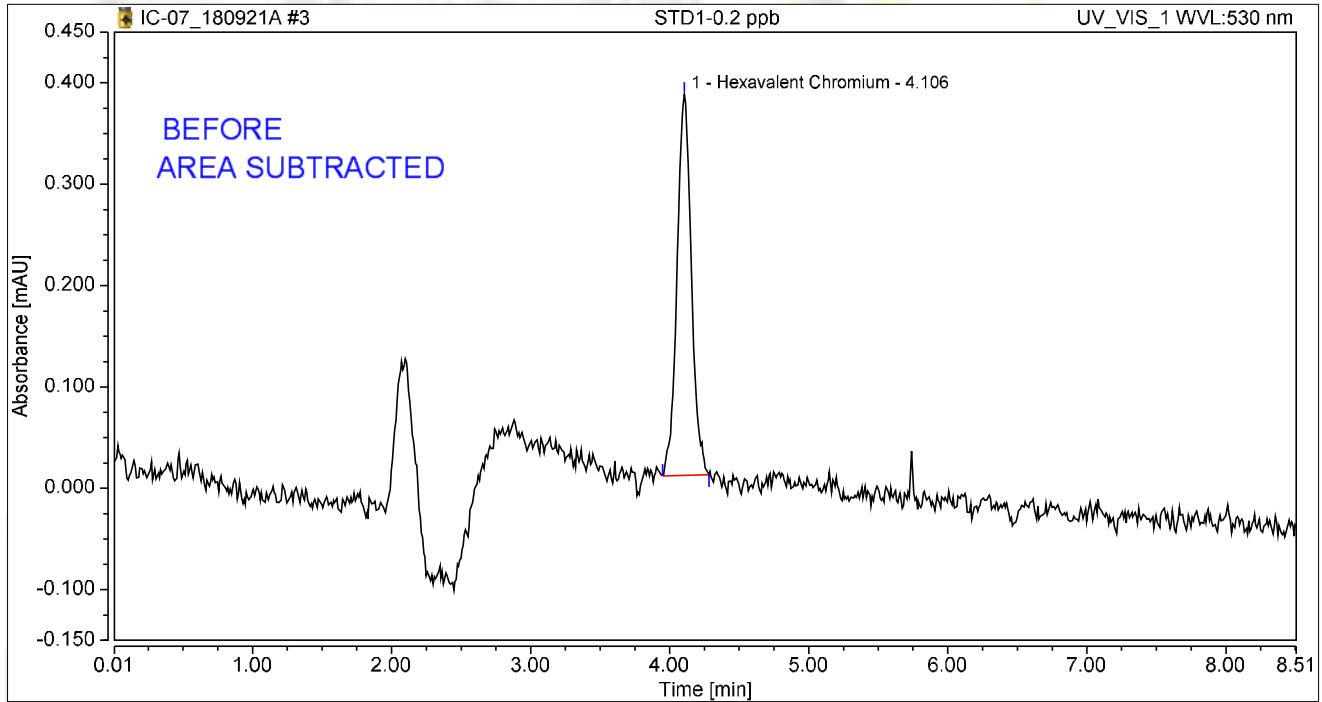
Reviewed by:  
*Murray* 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.045	0.376	100.00	100.00	0.1723
<b>Total:</b>			<b>0.045</b>	<b>0.376</b>	<b>100.00</b>	<b>100.00</b>	

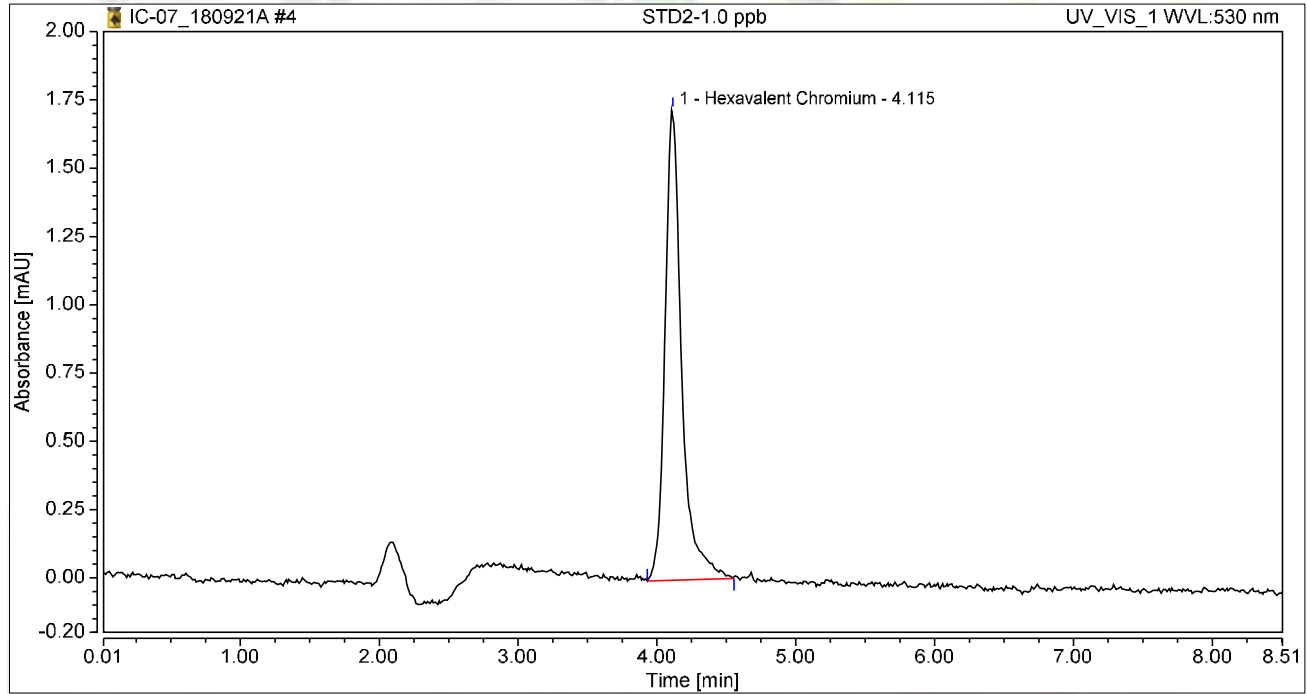
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD2-1.0 ppb	Run Time (min):	8.49
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	02	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:47	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

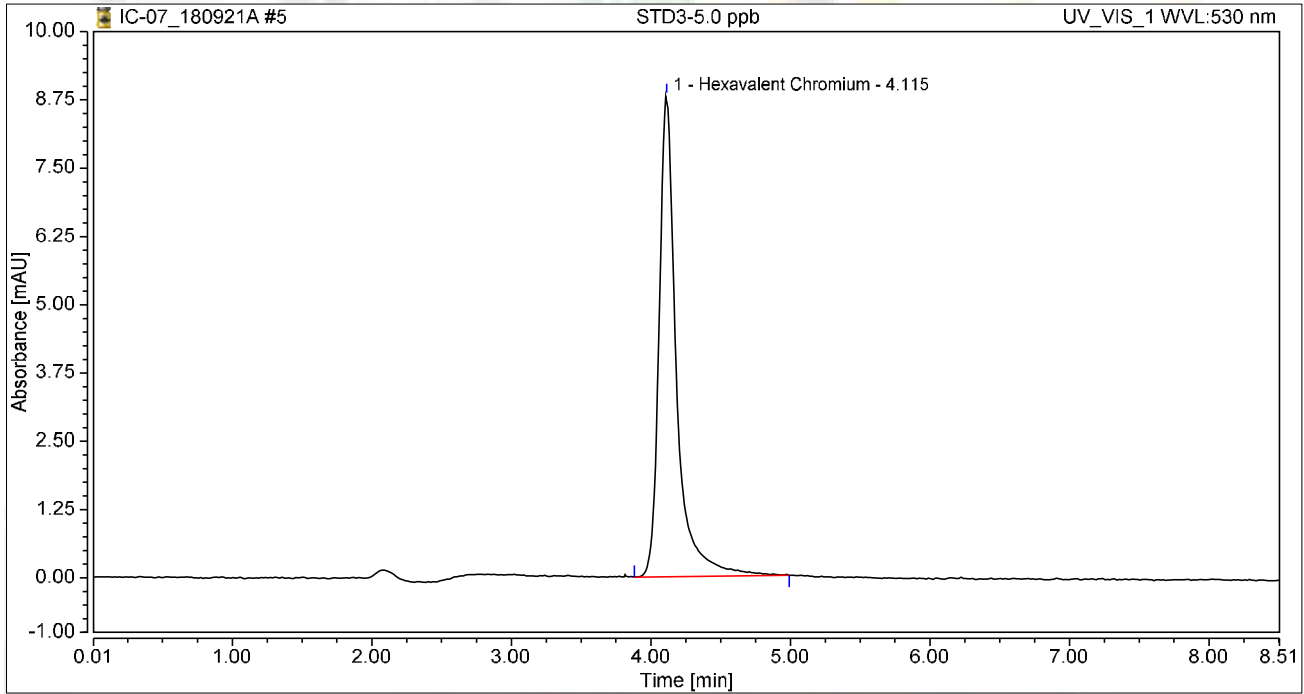
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.240	1.724	100.00	100.00	0.9494
<b>Total:</b>			<b>0.240</b>	<b>1.724</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD3-5.0 ppb	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	03	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

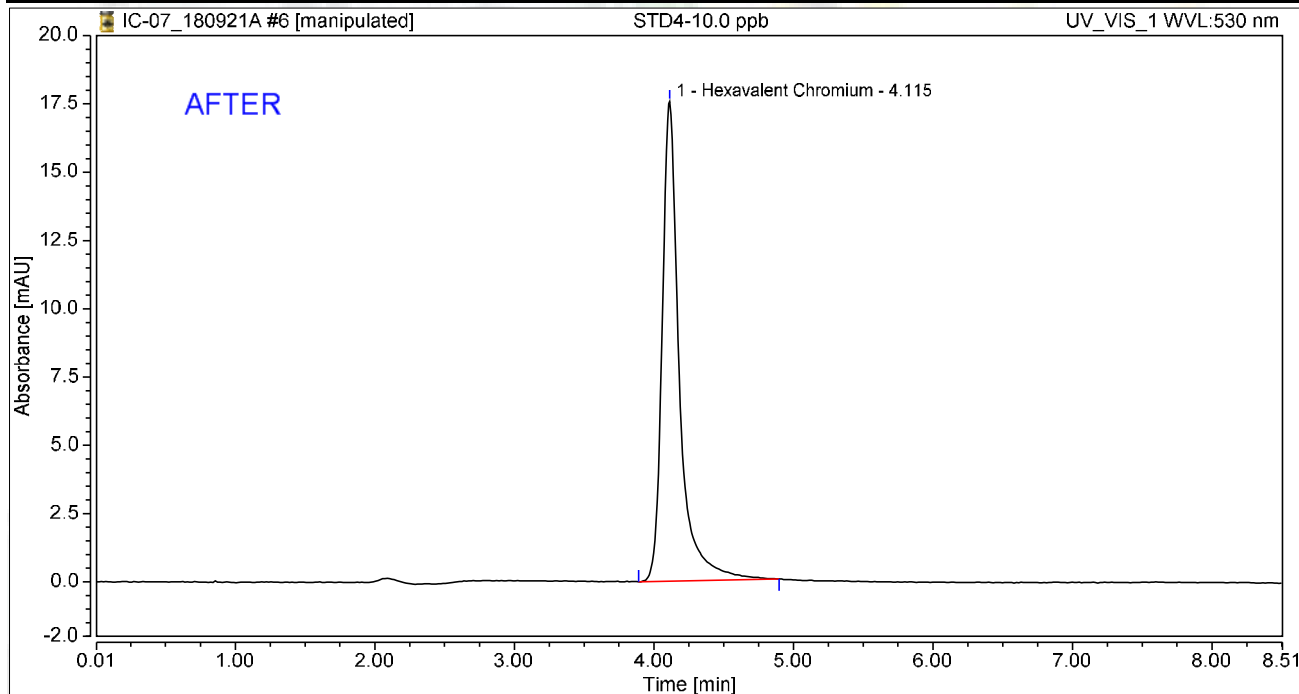
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.276	8.809	100.00	100.00	5.0487
<b>Total:</b>			<b>1.276</b>	<b>8.809</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.525	17.564	100.00	100.00	9.9908
<b>Total:</b>			<b>2.525</b>	<b>17.564</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Reviewed by:

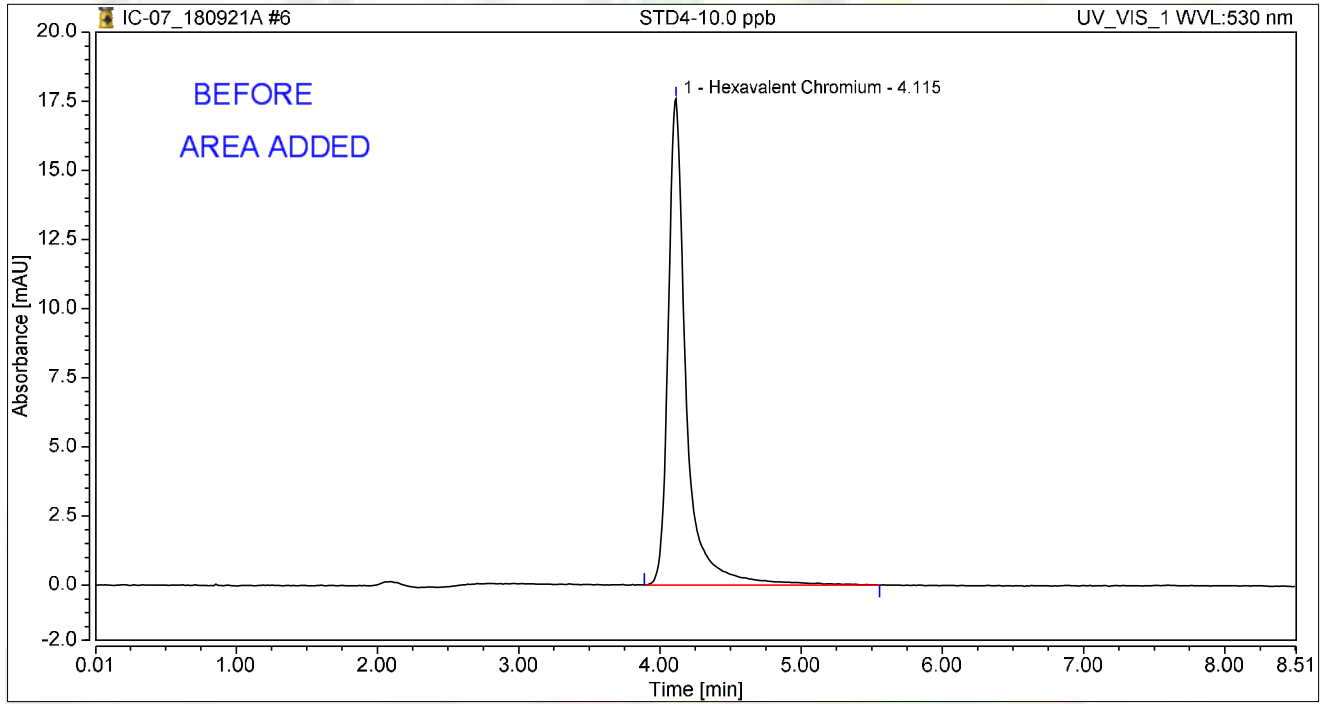
My first report integration  
Merry 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.611	17.589	100.00	100.00	10.0182
<b>Total:</b>			<b>2.611</b>	<b>17.589</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

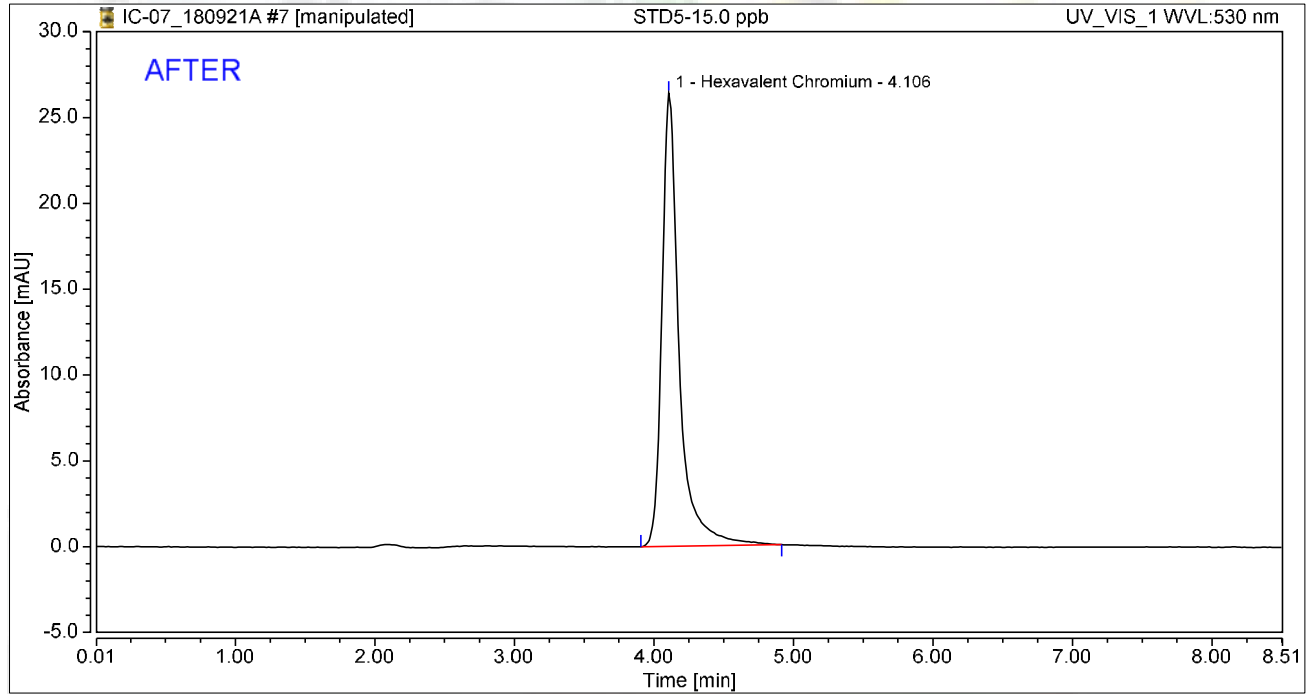


### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	3.802	26.404	100.00	100.00	15.0421
<b>Total:</b>			<b>3.802</b>	<b>26.404</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

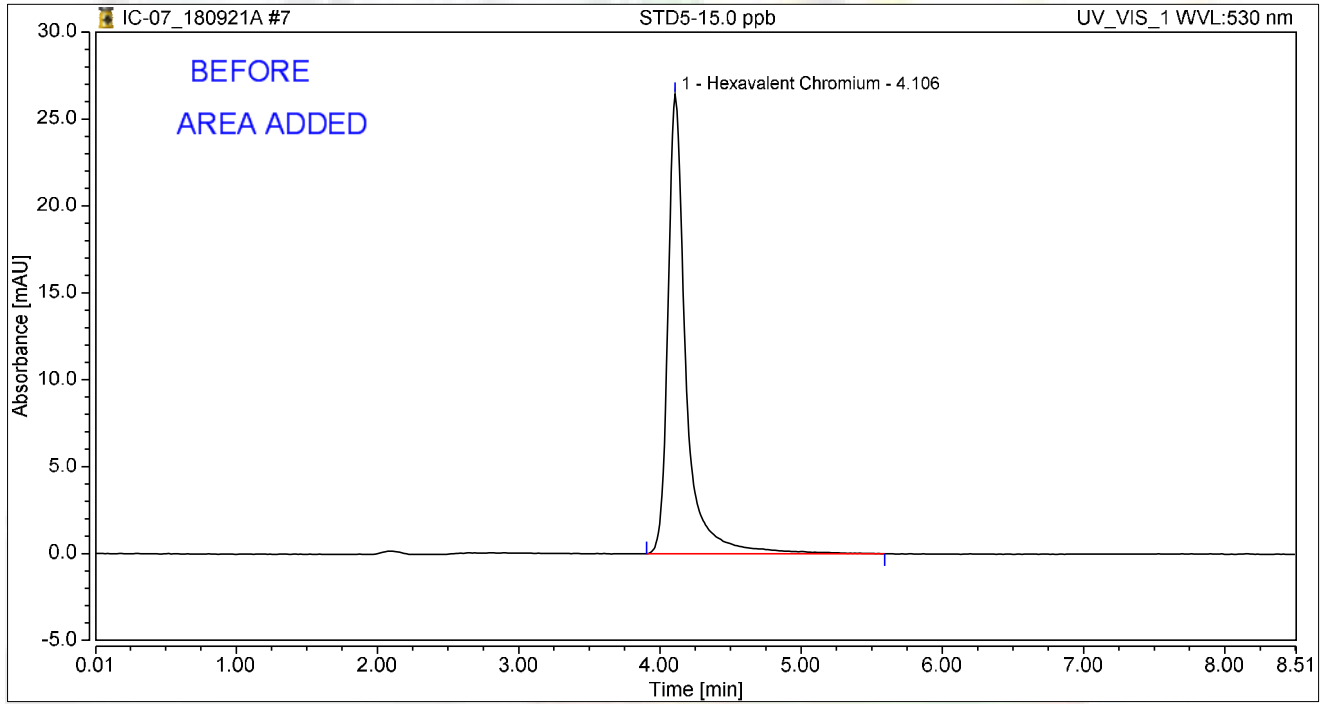
Reviewed by:  
*Monney* 10/8/2018  
My first report/integration

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	3.918	26.433	100.00	100.00	15.0352
<b>Total:</b>			<b>3.918</b>	<b>26.433</b>	<b>100.00</b>	<b>100.00</b>	

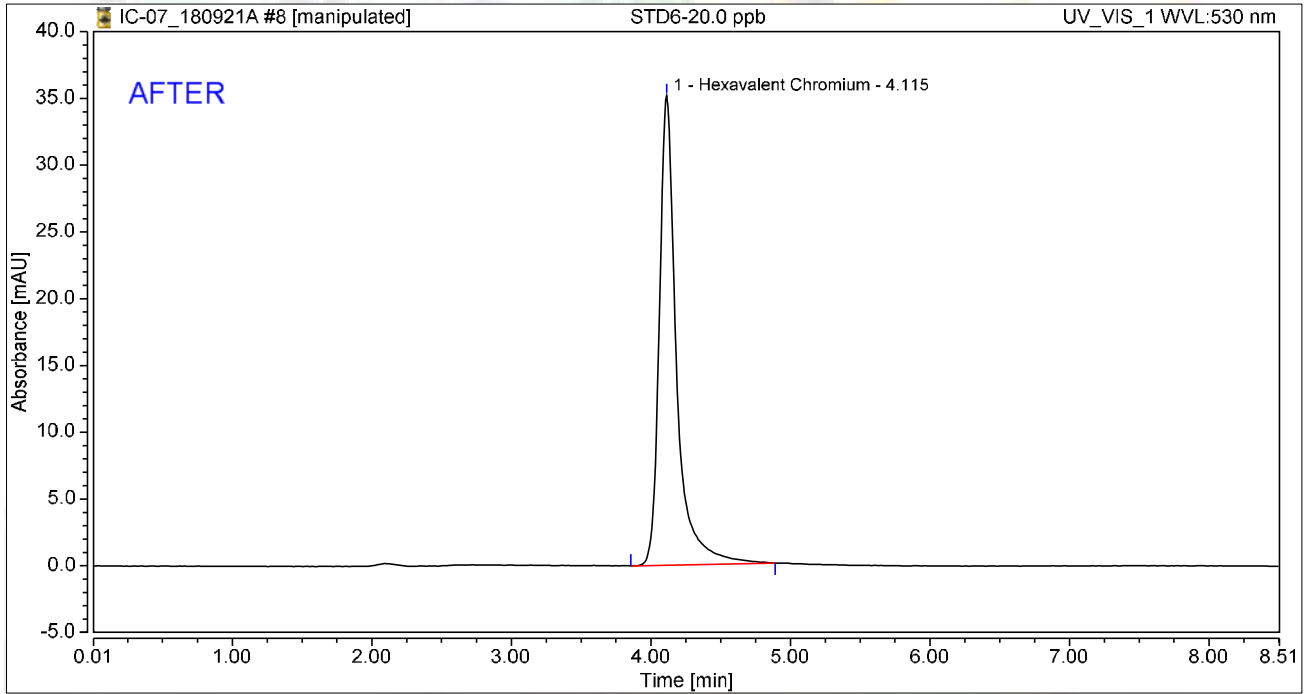
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:25	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	5.046	35.157	100.00	100.00	19.9635
<b>Total:</b>			<b>5.046</b>	<b>35.157</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/30/2018

Reviewed by:  
*Arney* 10/8/2018

My first report/Integration

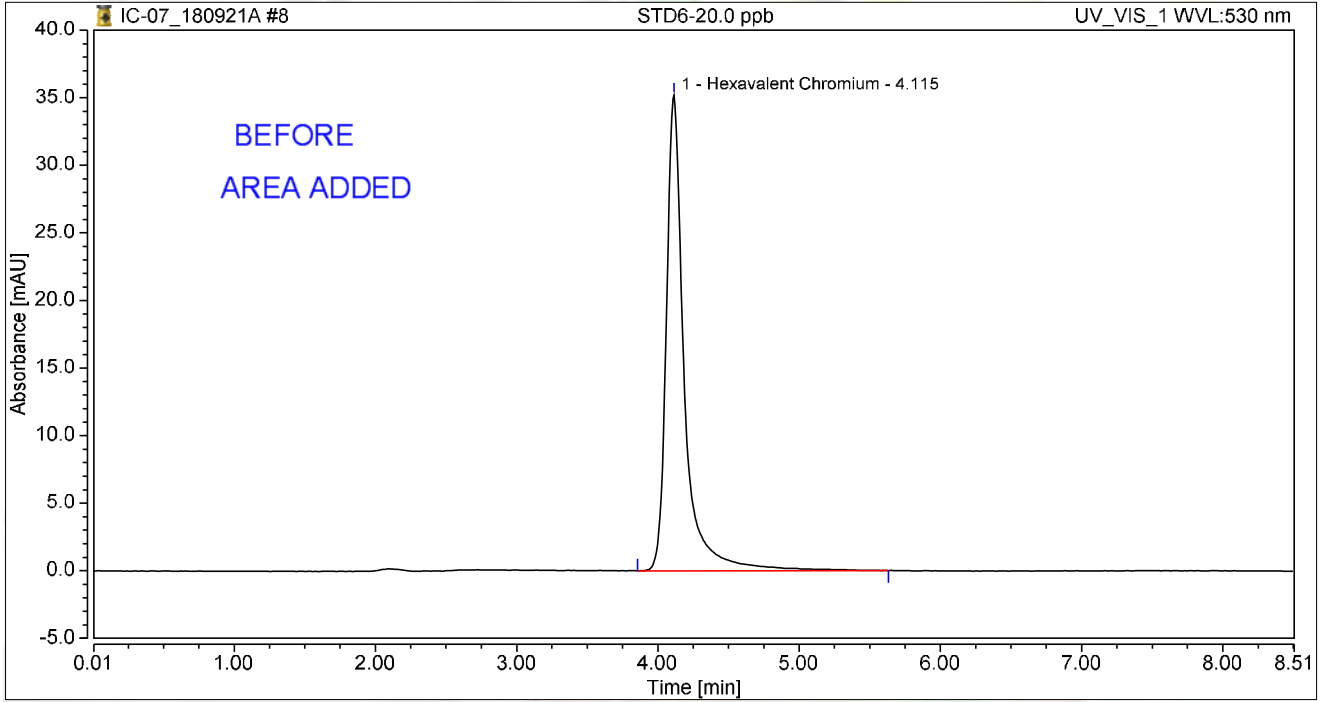
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:25	Sample Weight:	1.0000

**Chromatogram**

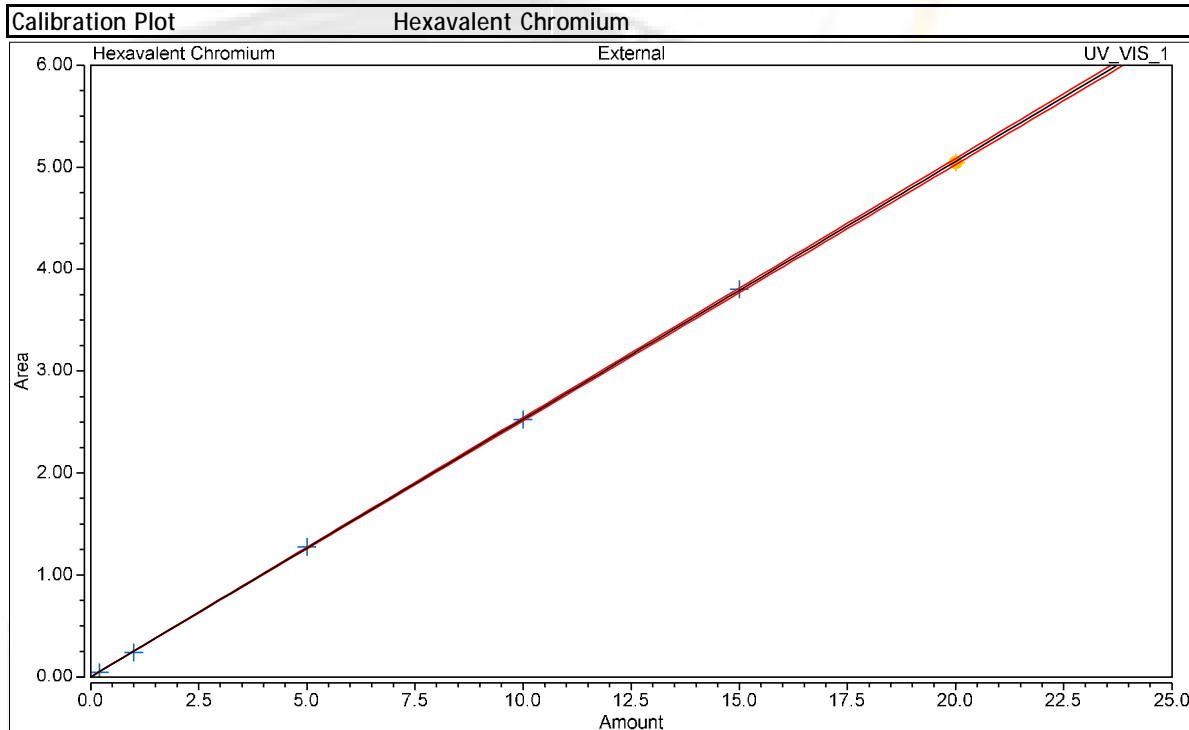


**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	5.210	35.207	100.00	100.00	19.9945
<b>Total:</b>			<b>5.210</b>	<b>35.207</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Initial Calibration Summary			
Calibration Details		Hexavalent Chromium	
Calibration Type	Lin	Offset (C0)	0.0000
Evaluation Type	Area	Slope (C1)	0.2528
Number of Calibration Points	6	Curve (C2)	0.0000
Number of disabled Calibration Points	0	R-Square	0.99997



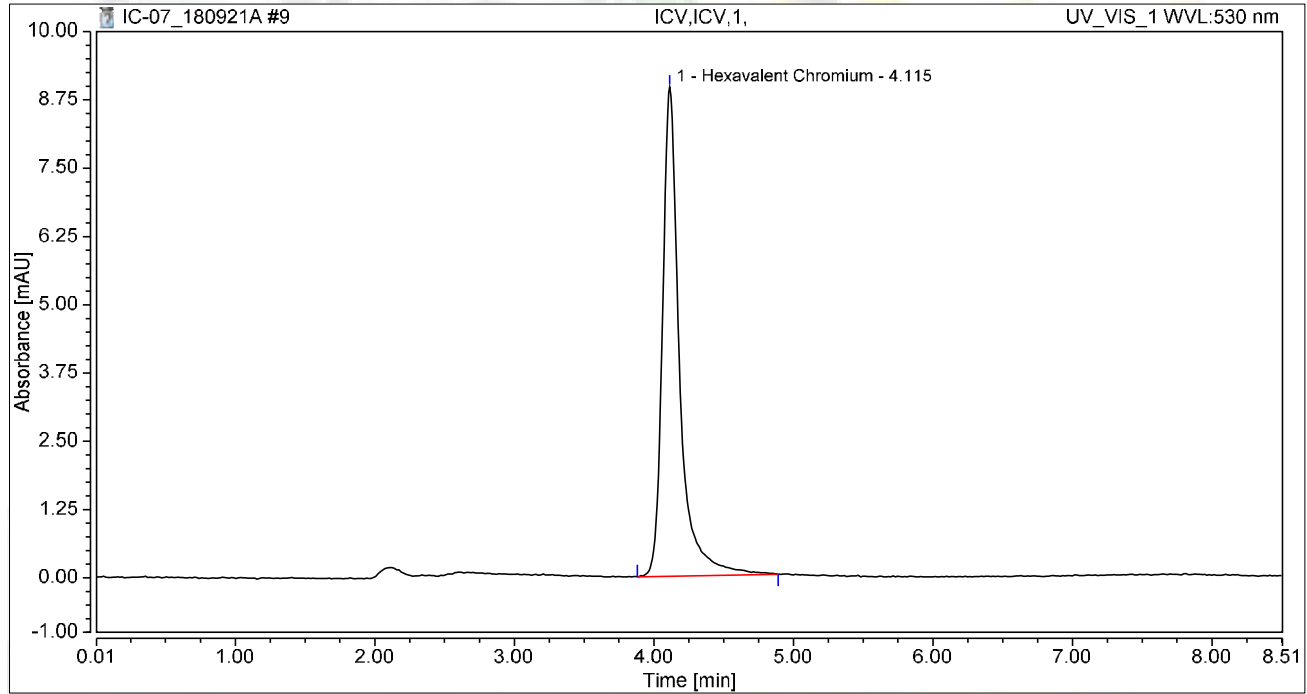
Calibration Results		Hexavalent Chromium				
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
3	STD1-0.2 ppb	01	0.2000	0.0462	0.046	0.379
4	STD2-1.0 ppb	02	1.0000	0.2400	0.240	1.724
5	STD3-5.0 ppb	03	5.0000	1.2761	1.276	8.809
6	STD4-10.0 ppb	04	10.0000	2.5253	2.525	17.564
7	STD5-15.0 ppb	05	15.0000	3.8020	3.802	26.404
8	STD6-20.0 ppb	06	20.0000	5.0460	5.046	35.157

### Chromatogram and Results

**Injection Details**

Injection Name:	ICV,ICV,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

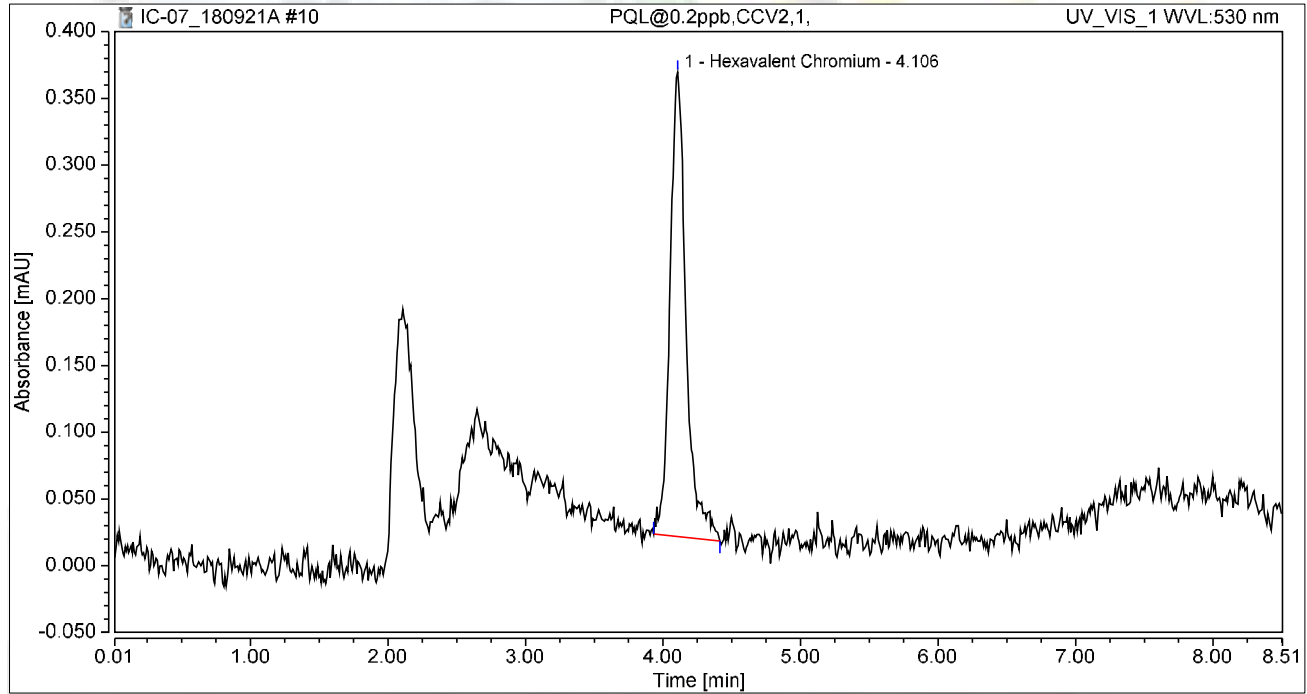
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.276	8.956	100.00	100.00	5.0467
<b>Total:</b>			<b>1.276</b>	<b>8.956</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

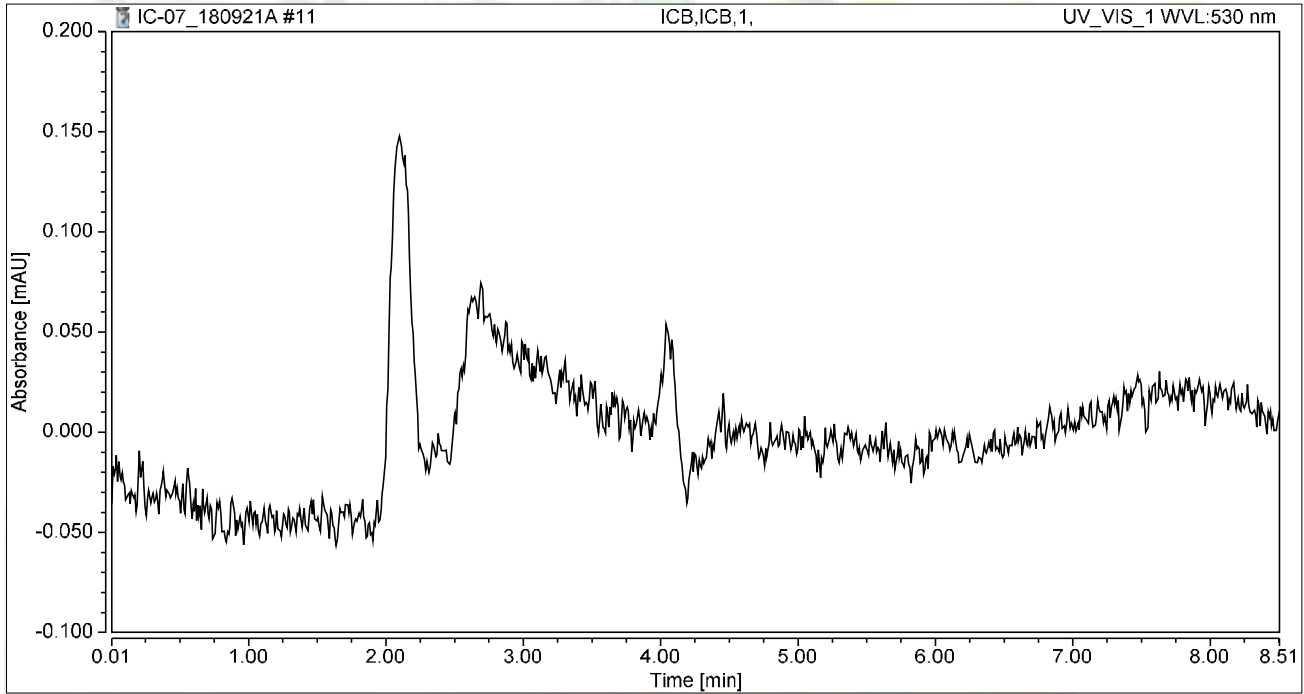
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.047	0.348	100.00	100.00	0.1865
<b>Total:</b>			<b>0.047</b>	<b>0.348</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	ICB,ICB,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	



# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Flamingo Ave., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

**INJECTION LOG: 181001A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	10/01/18 9:30 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	10/01/18 9:40 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	10/01/18 9:50 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	10/01/18 9:59 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	10/01/18 10:09 AM	Reported
14	MB-R128962	MBLK	1	Hexavalent Chromium	10/01/18 10:18 AM	Reported
15	LCS-R128962	LCS	1	Hexavalent Chromium	10/01/18 10:28 AM	Reported
16	N032268-001A	SAMP	1000	Hexavalent Chromium	10/01/18 11:45 AM	Reported
17	N032268-001AMS	MS	1000	Hexavalent Chromium	10/01/18 11:56 AM	Reported
18	N032268-001AMSD	MSD	1000	Hexavalent Chromium	10/01/18 12:06 PM	Reported
19	N032268-002A	SAMP	20	Hexavalent Chromium	10/01/18 12:23 PM	Not Reported
20	N032268-002AMS	MS	20	Hexavalent Chromium	10/01/18 12:35 PM	Not Reported
21	N032268-003A	SAMP	20	Hexavalent Chromium	10/01/18 12:44 PM	Reported
22	N032268-003AMS	MS	20	Hexavalent Chromium	10/01/18 12:54 PM	Reported
23	N032268-005A	SAMP	1	Hexavalent Chromium	10/01/18 1:03 PM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	10/01/18 1:13 PM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	10/01/18 1:22 PM	Reported
26	N032268-005AMS	MS	1	Hexavalent Chromium	10/01/18 1:32 PM	Reported
27	N032268-006A	SAMP	1	Hexavalent Chromium	10/01/18 1:41 PM	Reported
28	N032268-006AMS	MS	1	Hexavalent Chromium	10/01/18 1:50 PM	Not Reported
29	N032268-007A	SAMP	1	Hexavalent Chromium	10/01/18 2:00 PM	Not Reported
30	N032268-007AMS	MS	1	Hexavalent Chromium	10/01/18 2:09 PM	Not Reported
31	N032268-004A	SAMP	20	Hexavalent Chromium	10/01/18 2:19 PM	Reported
32	N032268-004AMS	MS	20	Hexavalent Chromium	10/01/18 2:28 PM	Reported
33	N032268-002A	SAMP	50	Hexavalent Chromium	10/01/18 2:38 PM	Reported
34	N032268-002AMS	MS	50	Hexavalent Chromium	10/01/18 2:47 PM	Reported
35	N032268-005ADUP	DUP	1	Hexavalent Chromium	10/01/18 2:57 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	10/01/18 3:06 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	10/01/18 3:16 PM	Reported
38	N032268-009A	SAMP	20	Hexavalent Chromium	10/01/18 3:25 PM	Reported
39	N032268-009AMS	MS	20	Hexavalent Chromium	10/01/18 3:35 PM	Reported
40	N032268-008A	SAMP	1	Hexavalent Chromium	10/01/18 3:44 PM	Reported
41	N032268-008AMS	MS	1	Hexavalent Chromium	10/01/18 3:53 PM	Reported
42	N032268-006AMS	MS	1	Hexavalent Chromium	10/01/18 4:03 PM	Reported

**INJECTION LOG: 181001A**

**Instrument ID: IC-07**

<b>Sample No</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Peak Name</b>	<b>Injection Date/Time</b>	<b>Comments</b>
43	N032268-007A	SAMP	2	Hexavalent Chromium	10/01/18 4:12 PM	Reported
44	N032268-007AMS	MS	2	Hexavalent Chromium	10/01/18 4:22 PM	Reported
45	CCV-4	CCV1	1	Hexavalent Chromium	10/01/18 4:31 PM	Reported
46	CCB-4	CCB	1	Hexavalent Chromium	10/01/18 4:41 PM	Reported

### Injection Log Summary

**Sequence Details**

Name:	IC-07_181001A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	02/Oct/18 19:45:39
No. of Injections:	49	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	BLANK	1	1000	Unknown		10/01/2018 09:30	Finished	BLANK
10	BLANK	2	1000	Unknown		10/01/2018 09:40	Finished	BLANK
11	CCV-1,CCV,1,	3	1000	Unknown		10/01/2018 09:50	Finished	CCV @5ppb, IWST-180622A
12	PQL@0.2ppb,CCV2,	4	1000	Unknown		10/01/2018 09:59	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		10/01/2018 10:09	Finished	CCB R180919A
14	MB-H2O,MBLK,1,	6	1000	Unknown		10/01/2018 10:18	Finished	MB R180919A
15	LCS-H2O,LCS,1,	7	1000	Unknown		10/01/2018 10:28	Finished	LCS @5ppb, IWST-180622B
16	N032268-001A,SAMP	9	1000	Unknown		10/01/2018 11:45	Finished	SAMP,10.01>10mL
17	N032268-001AMS,MS	10	1000	Unknown		10/01/2018 11:56	Finished	MS (5ppb), IWST-180622B,0.0
18	N032268-001AMSD,N	11	1000	Unknown		10/01/2018 12:06	Finished	MSD (5ppb), IWST-180622B,0.
19	N032268-002A,SAMP	13	1000	Unknown		10/01/2018 12:23	Finished	SAMP,0.5>10mL
20	N032268-002AMS,MS	14	1000	Unknown		10/01/2018 12:35	Finished	MS (5ppb), IWST-180622B,0.5
21	N032268-003A,SAMP	15	1000	Unknown		10/01/2018 12:44	Finished	SAMP,0.5>10mL
22	N032268-003AMS,MS	16	1000	Unknown		10/01/2018 12:54	Finished	MS (5ppb), IWST-180622B,0.5
23	N032268-005A,SAMP	17	1000	Unknown		10/01/2018 13:03	Finished	SAMP,10mL
24	CCV-2,CCV1,1,	18	1000	Unknown		10/01/2018 13:13	Finished	CCV @10ppb, IWST-180622A
25	CCB-2,CCB,1,	19	1000	Unknown		10/01/2018 13:22	Finished	CCB R180919A
26	N032268-005AMS,MS	20	1000	Unknown		10/01/2018 13:32	Finished	MS (1ppb), IWST-180622B,10
27	N032268-006A,SAMP	21	1000	Unknown		10/01/2018 13:41	Finished	SAMP,10mL
28	N032268-006AMS,MS	22	1000	Unknown		10/01/2018 13:50	Finished	MS (1ppb), IWST-180622B,10
29	N032268-007A,SAMP	23	1000	Unknown		10/01/2018 14:00	Finished	SAMP,10mL
30	N032268-007AMS,MS	24	1000	Unknown		10/01/2018 14:09	Finished	MS (5ppb), IWST-180622B,10
31	N032268-004A,SAMP	25	1000	Unknown		10/01/2018 14:19	Finished	SAMP,0.5>10mL
32	N032268-004AMS,MS	26	1000	Unknown		10/01/2018 14:28	Finished	MS (5ppb), IWST-180622B,0.5
33	N032268-002A,SAMP	27	1000	Unknown		10/01/2018 14:38	Finished	SAMP,0.2>10mL
34	N032268-002AMS,MS	28	1000	Unknown		10/01/2018 14:47	Finished	MS (5ppb), IWST-180622B,0.2
35	N032268-005ADUP,D	29	1000	Unknown		10/01/2018 14:57	Finished	DUP,10mL
36	CCV-3,CCV,1,	30	1000	Unknown		10/01/2018 15:06	Finished	CCV @5ppb, IWST-180622A
37	CCB-3,CCB,1,	31	1000	Unknown		10/01/2018 15:16	Finished	CCB R180919A
38	N032268-009A,SAMP	32	1000	Unknown		10/01/2018 15:25	Finished	SAMP,0.5>10mL
39	N032268-009AMS,MS	33	1000	Unknown		10/01/2018 15:35	Finished	MS (5ppb), IWST-180622B,0.5
40	N032268-008A,SAMP	34	1000	Unknown		10/01/2018 15:44	Finished	SAMP,10mL
41	N032268-008AMS,MS	35	1000	Unknown		10/01/2018 15:53	Finished	MS (1ppb), IWST-180622B,10
42	N032268-006AMS,MS	36	1000	Unknown		10/01/2018 16:03	Finished	MS (1ppb), IWST-180622B,10
43	N032268-007A,SAMP	37	1000	Unknown		10/01/2018 16:12	Finished	SAMP,2>10mL
44	N032268-007AMS,MS	38	1000	Unknown		10/01/2018 16:22	Finished	MS (5ppb), IWST-180622B,2>1
45	CCV-4,CCV1,1,	39	1000	Unknown		10/01/2018 16:31	Finished	CCV @10ppb, IWST-180622A
46	CCB-4,CCB,1,	40	1000	Unknown		10/01/2018 16:41	Finished	CCB R180919A
47	SHUTDOWN	41	1000	Unknown		10/01/2018 16:50	Finished	
48	Eluent: R181001A	42	1000	Unknown		n.a.	Finished	Eluent
49	PCR: R181001B	43	1000	Unknown		n.a.	Finished	Post-Column Reagent

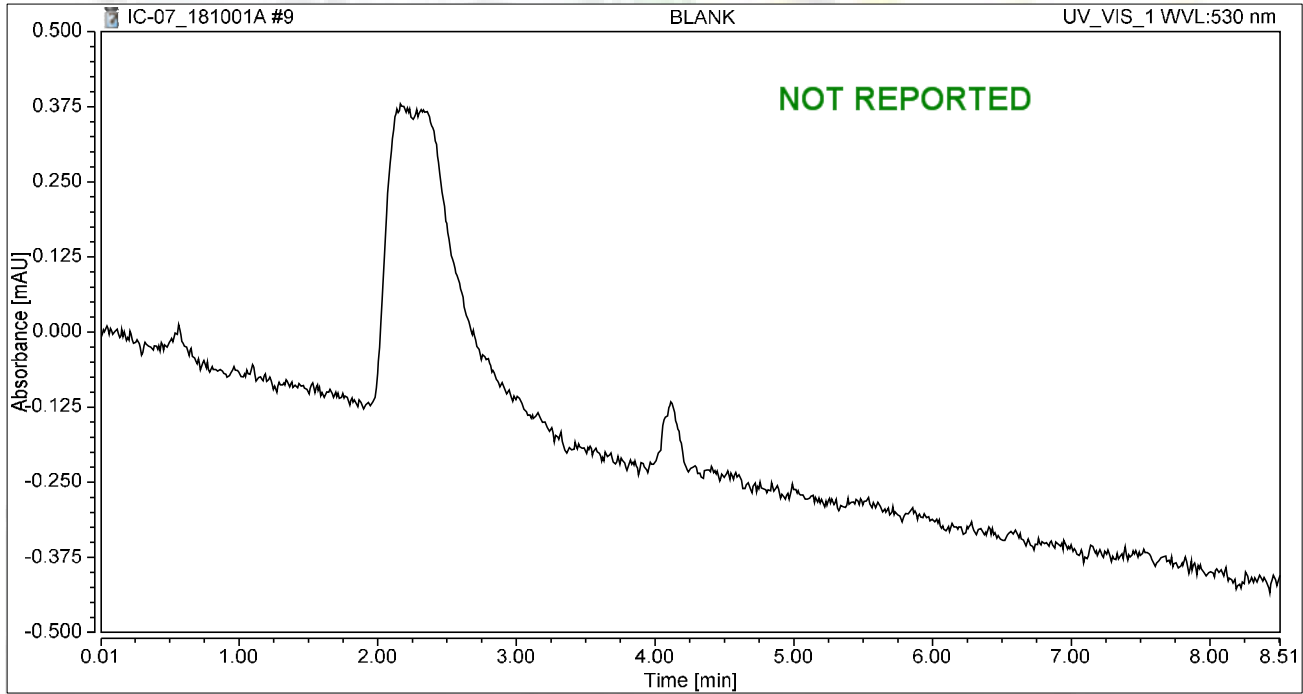
*rba* 10/10/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	<b>BLANK</b>	Run Time (min):	<b>8.50</b>
Vial Number:	<b>1</b>	Injection Volume:	<b>1000.00</b>
Injection Type:	<b>Unknown</b>	Channel:	<b>UV_VIS_1</b>
Calibration Level:		Wavelength:	<b>530.0</b>
Instrument Method:	<b>Hex Chrom 4 mm</b>	Bandwidth:	<b>n.a.</b>
Processing Method:	<b>180921_IC-07_Cr6_218_6_HIGH</b>	Dilution Factor:	<b>1.0000</b>
Injection Date/Time:	<b>01/Oct/18 09:30</b>	Sample Weight:	<b>1.0000</b>

**Chromatogram**



**Integration Results**

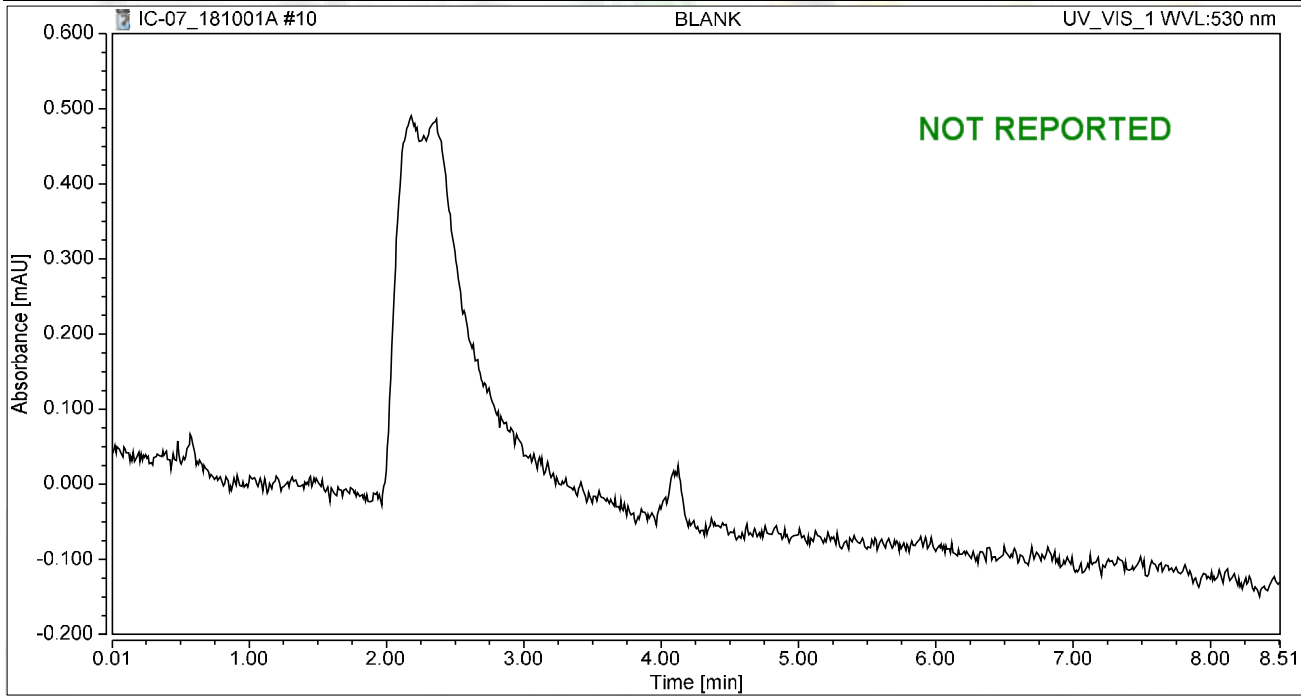
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 09:40	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

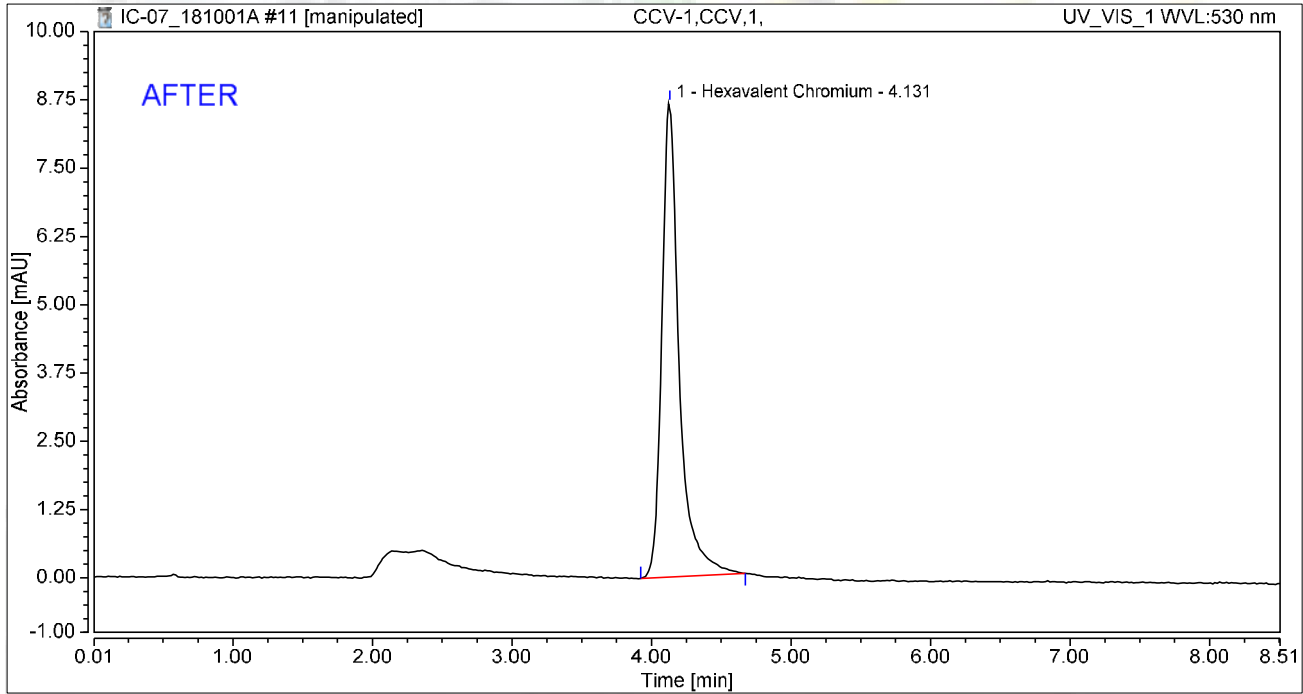
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-1,CCV,1,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 09:50	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.256	8.686	100.00	100.00	4.9709
<b>Total:</b>			<b>1.256</b>	<b>8.686</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/10/2018

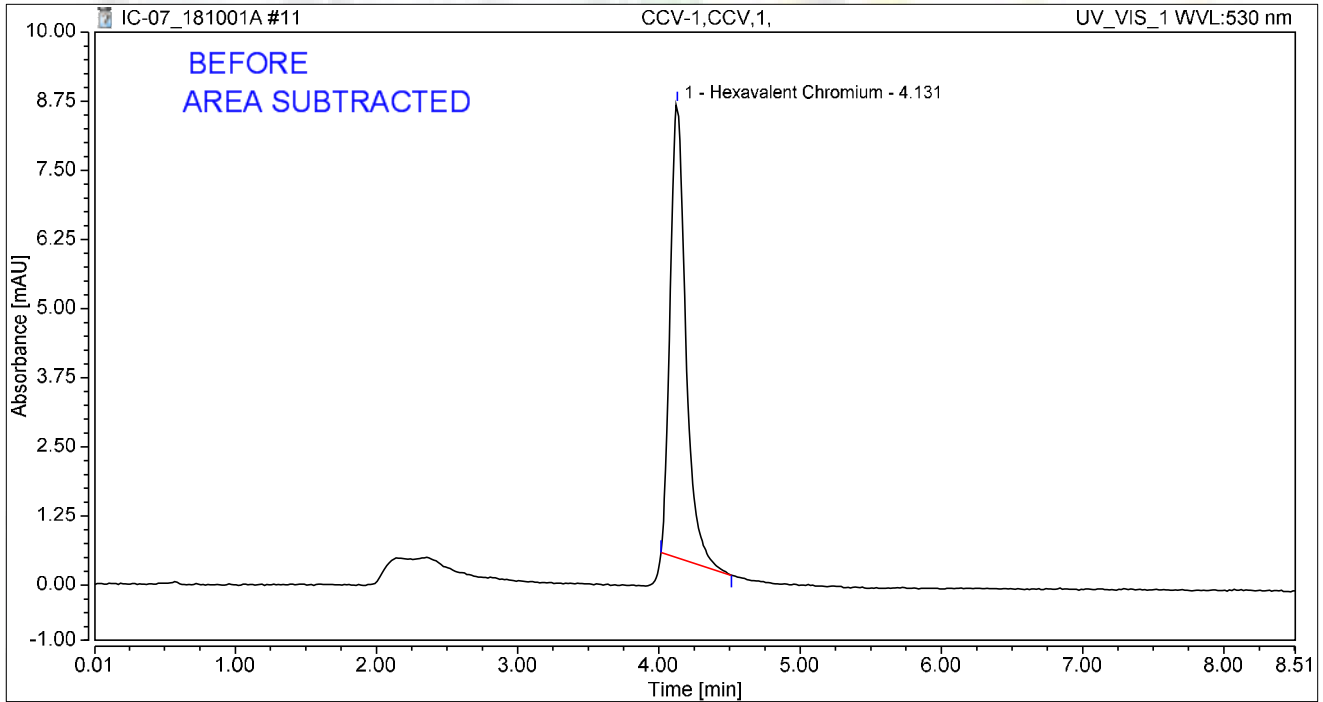
Reviewed by:  
*Donny* 10/11/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-1,CCV,1,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 09:50	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.059	8.205	100.00	100.00	4.1878
<b>Total:</b>			<b>1.059</b>	<b>8.205</b>	<b>100.00</b>	<b>100.00</b>	

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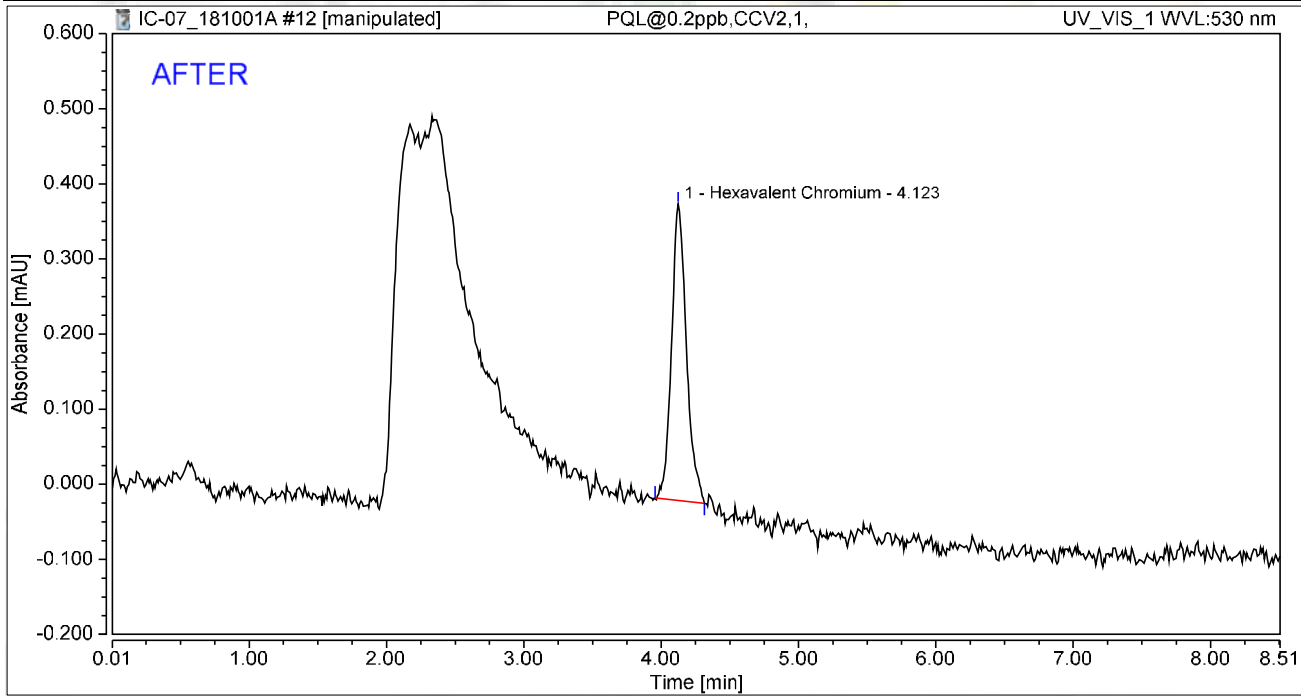


### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 09:59	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.049	0.395	100.00	100.00	0.1954
<b>Total:</b>			<b>0.049</b>	<b>0.395</b>	<b>100.00</b>	<b>100.00</b>	

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Reviewed by:  
*Monica* 10/11/2018

My first report/Integration

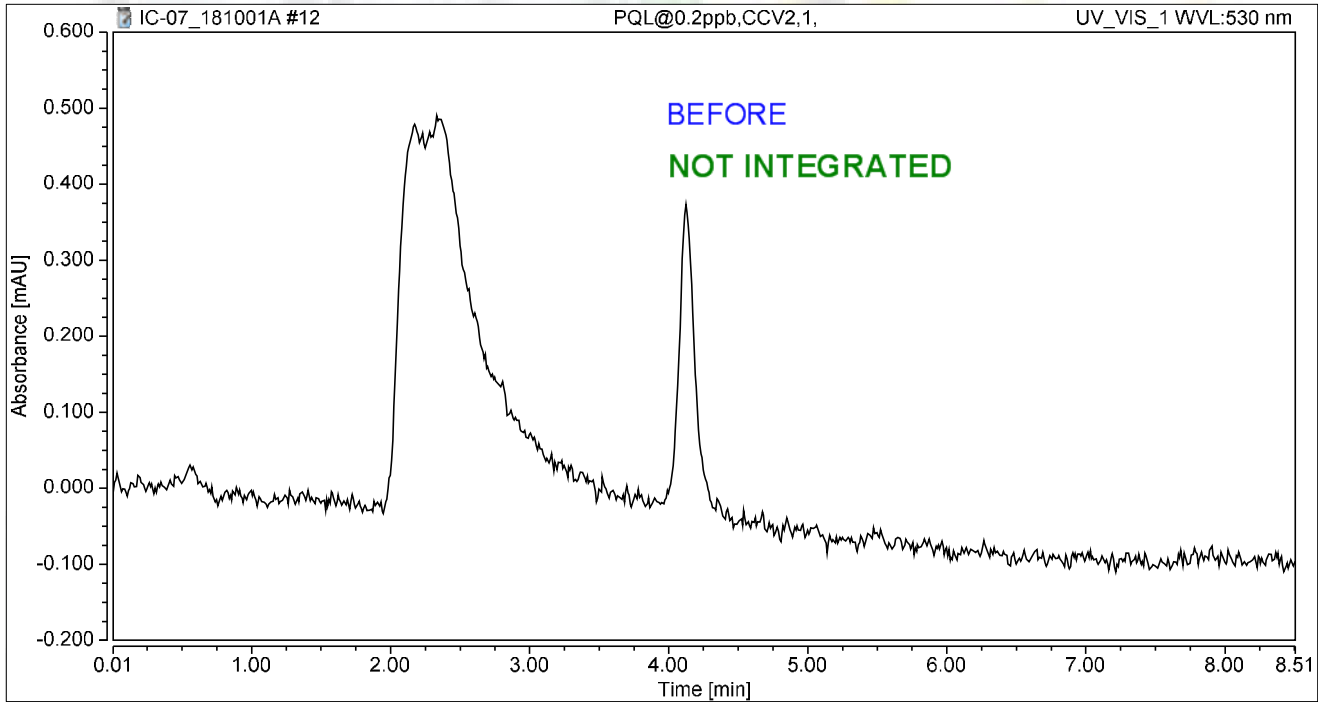
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 09:59	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

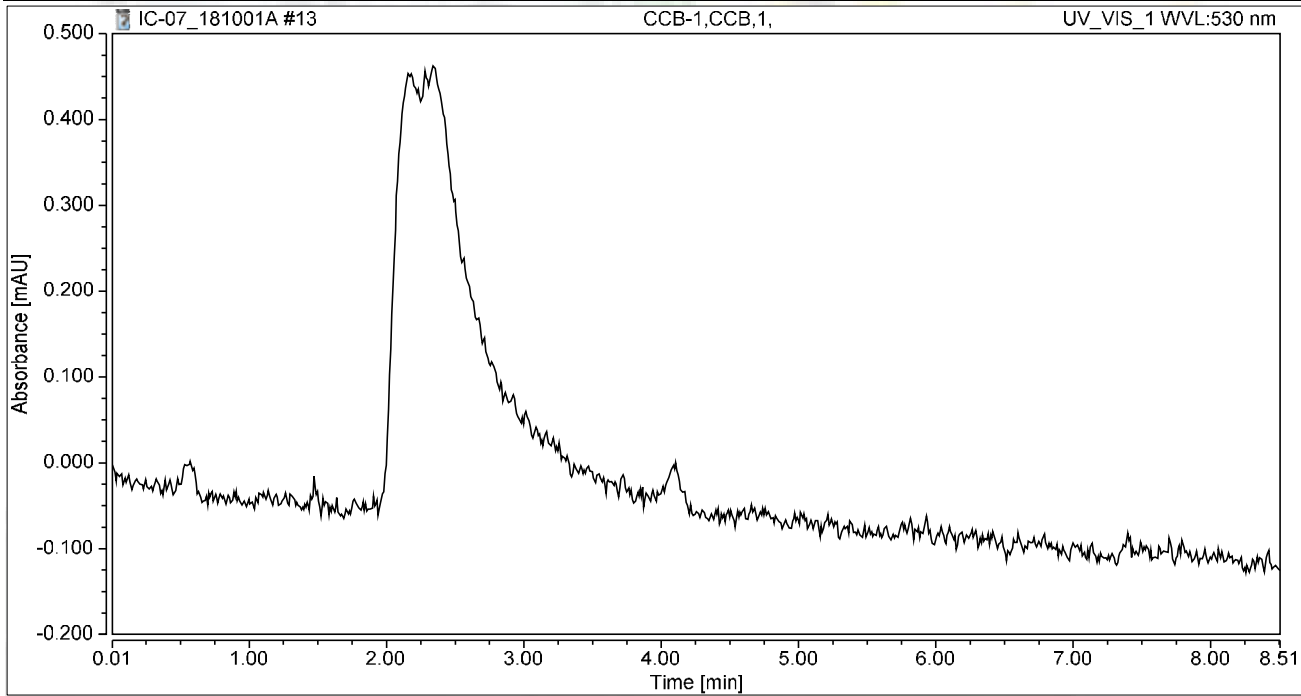
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### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-1,CCB,1,	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 10:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

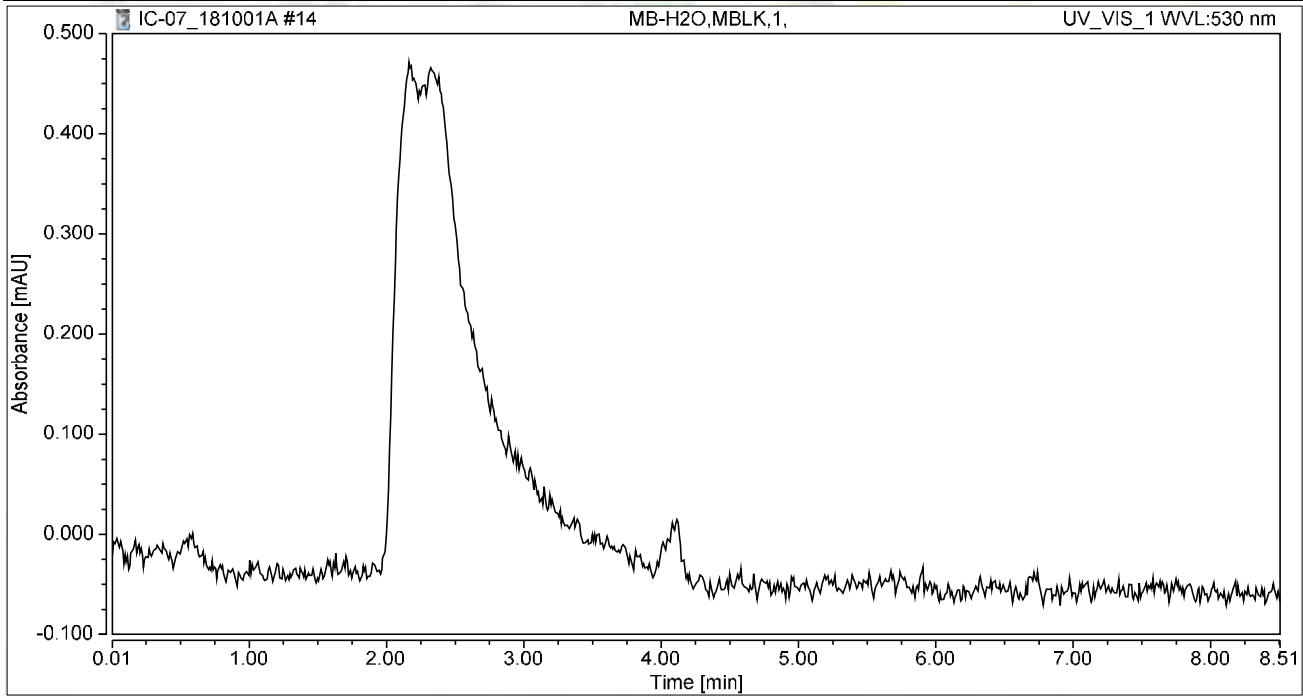
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	MB-H2O,MBLK,1,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 10:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

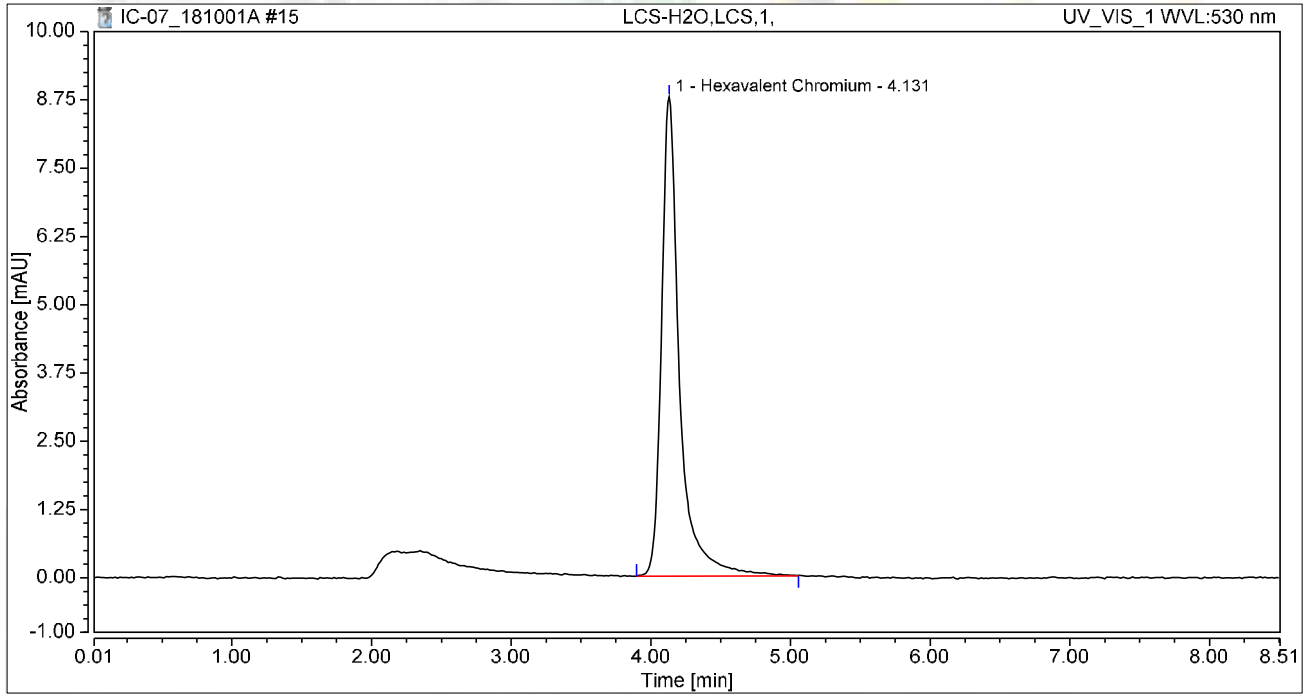
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	LCS-H2O,LCS,1,	Run Time (min):	8.49
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 10:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

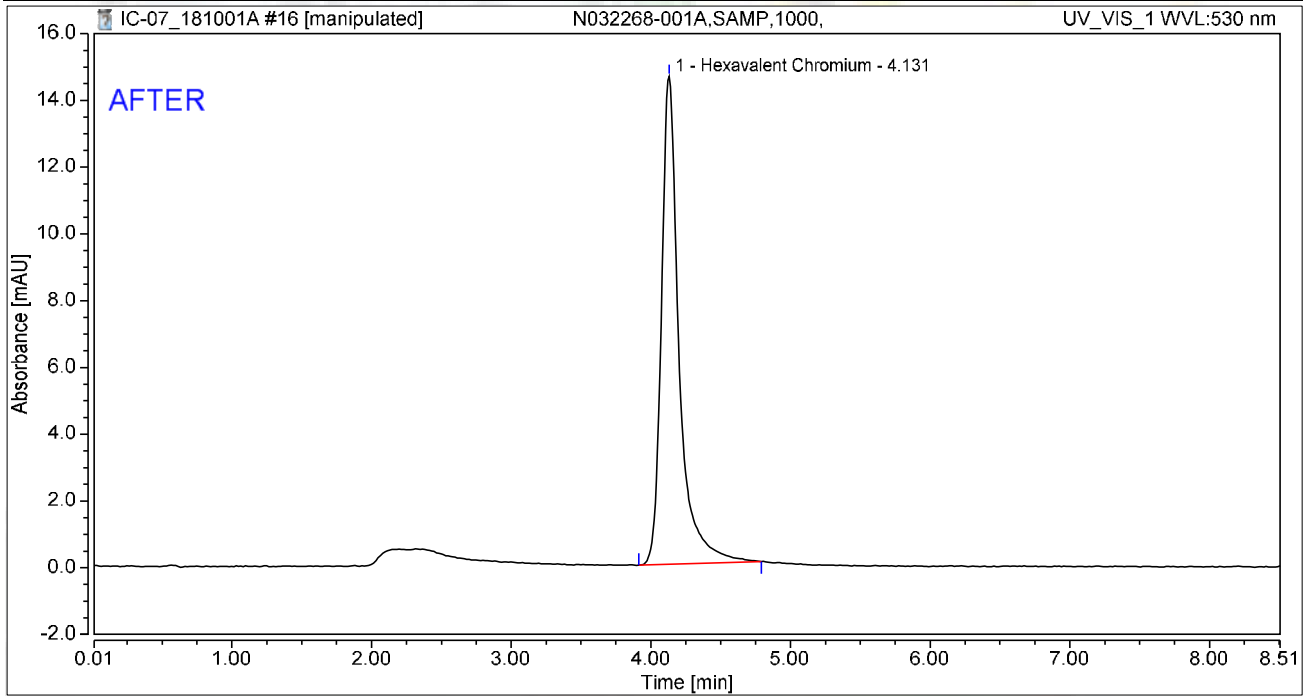
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.313	8.772	100.00	100.00	5.1930
<b>Total:</b>			<b>1.313</b>	<b>8.772</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-001A,SAMP,1000,	Run Time (min):	8.49
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 11:45	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.152	14.622	100.00	100.00	8.5134
<b>Total:</b>			<b>2.152</b>	<b>14.622</b>	<b>100.00</b>	<b>100.00</b>	

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Reviewed by:

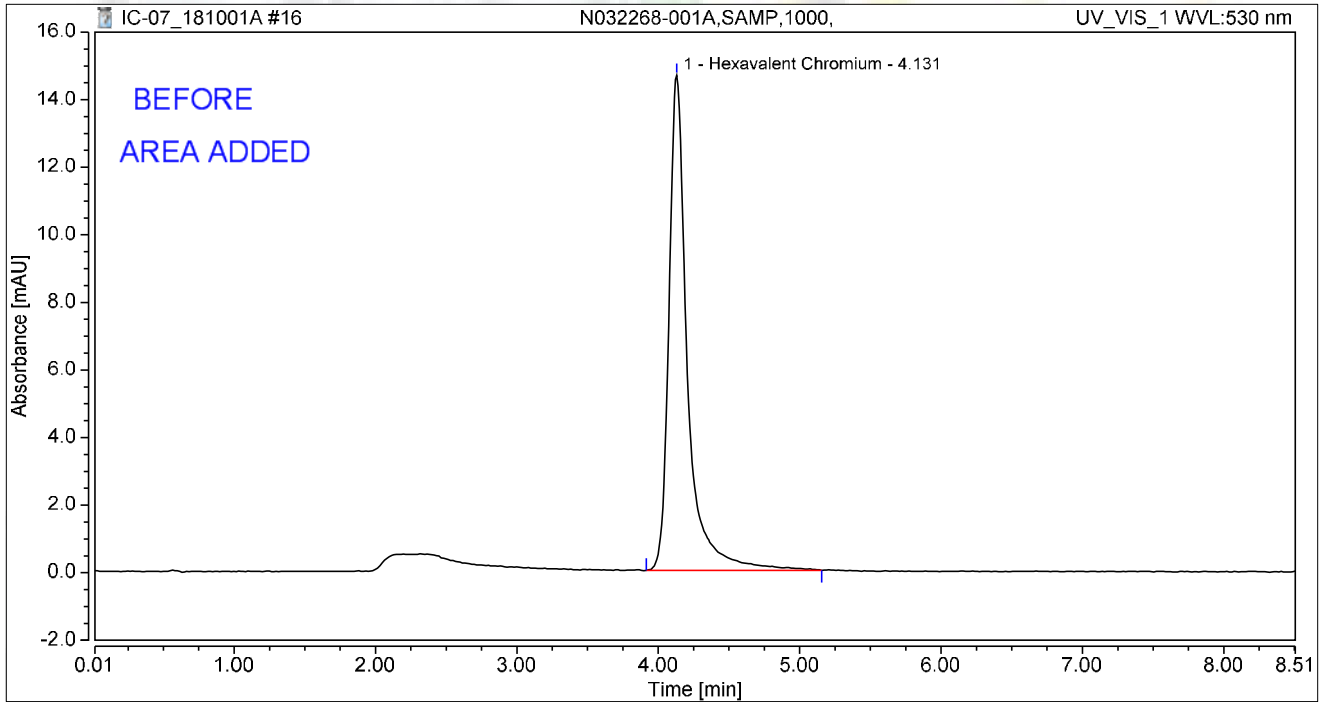
My first report/Integration *Nancy* 10/11/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-001A,SAMP,1000,	Run Time (min):	8.49
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 11:45	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.218	14.648	100.00	100.00	8.7741
<b>Total:</b>			<b>2.218</b>	<b>14.648</b>	<b>100.00</b>	<b>100.00</b>	

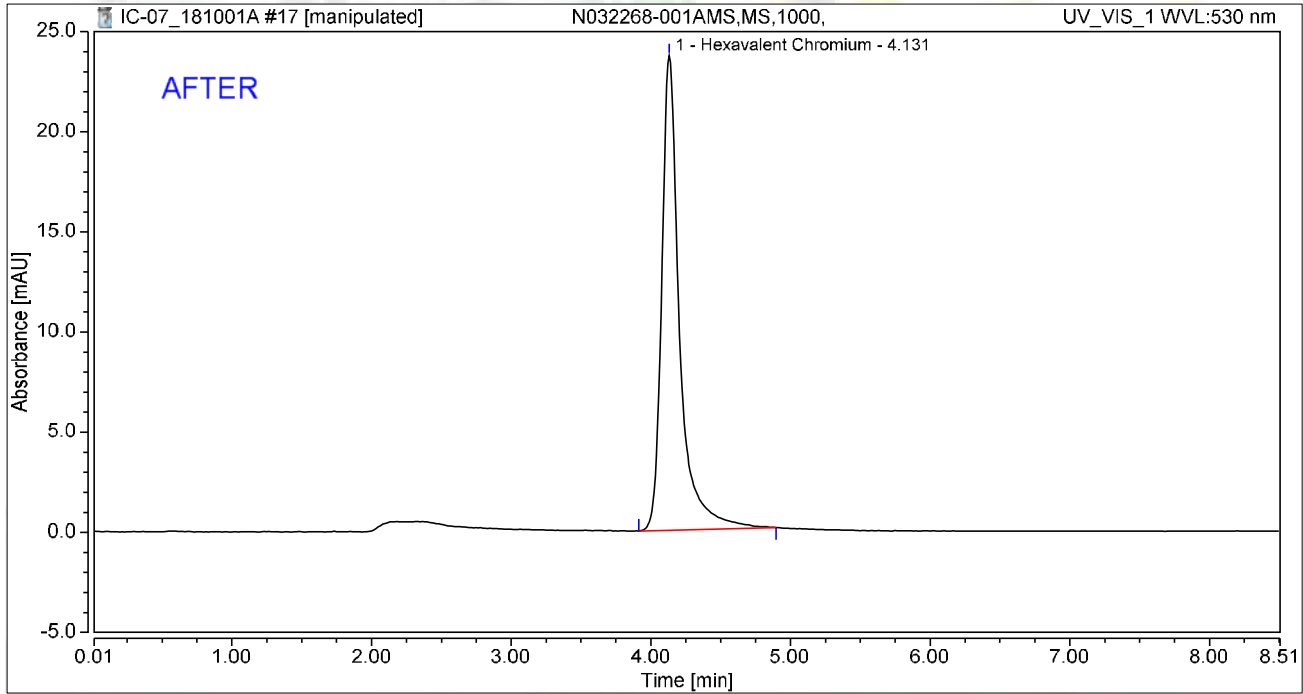
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### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-001AMS,MS,1000,	Run Time (min):	8.49
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 11:56	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	3.516	23.690	100.00	100.00	13.9121
<b>Total:</b>			<b>3.516</b>	<b>23.690</b>	<b>100.00</b>	<b>100.00</b>	

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Reviewed by:  
*Money* 10/11/2018

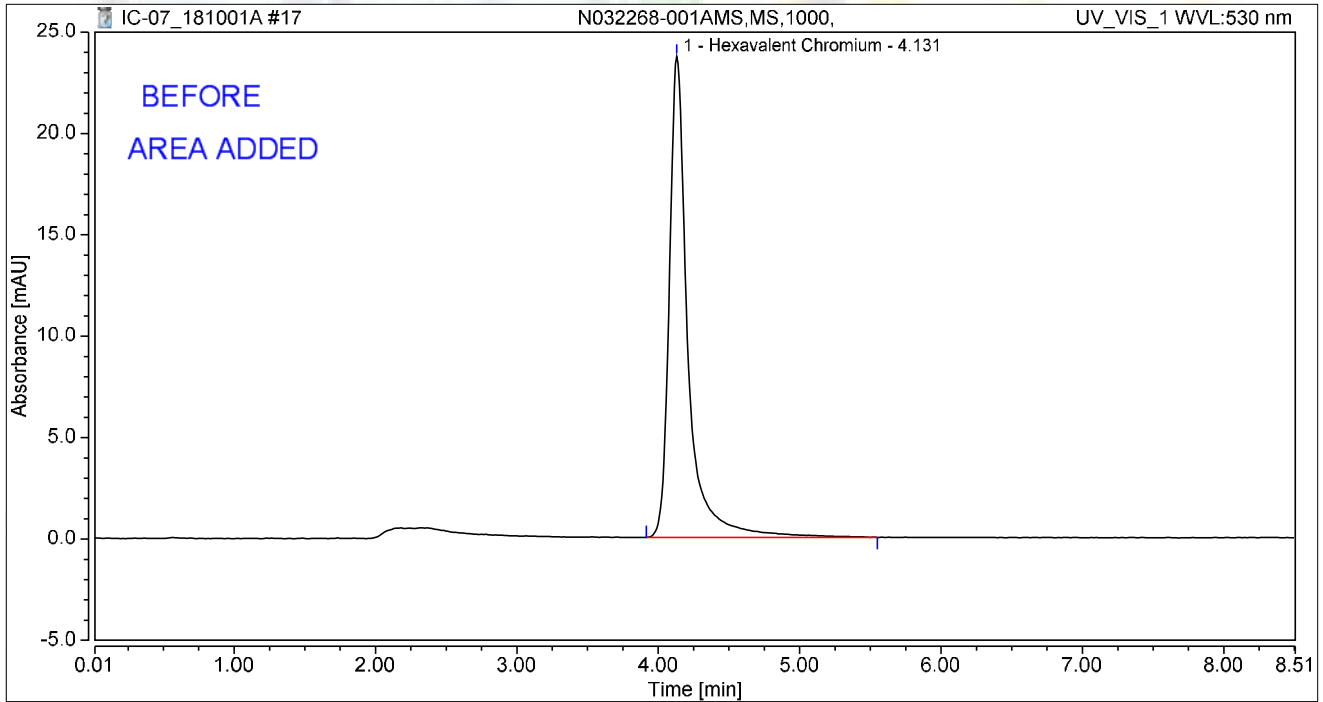


### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-001AMS,MS,1000,	Run Time (min):	8.49
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 11:56	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	3.633	23.723	100.00	100.00	14.3727
<b>Total:</b>			<b>3.633</b>	<b>23.723</b>	<b>100.00</b>	<b>100.00</b>	

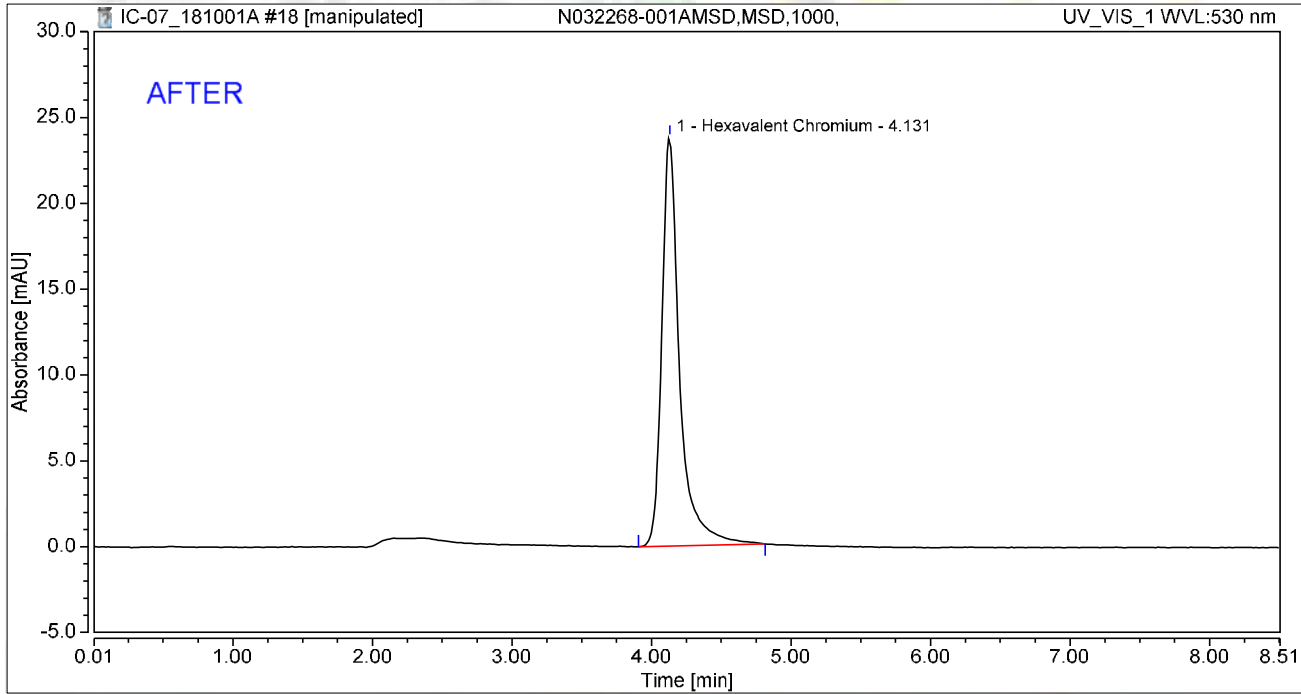
rba 10/10/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-001AMSD,MSD,1000,	Run Time (min):	8.50
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 12:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	3.515	23.820	100.00	100.00	13.9084
<b>Total:</b>			<b>3.515</b>	<b>23.820</b>	<b>100.00</b>	<b>100.00</b>	

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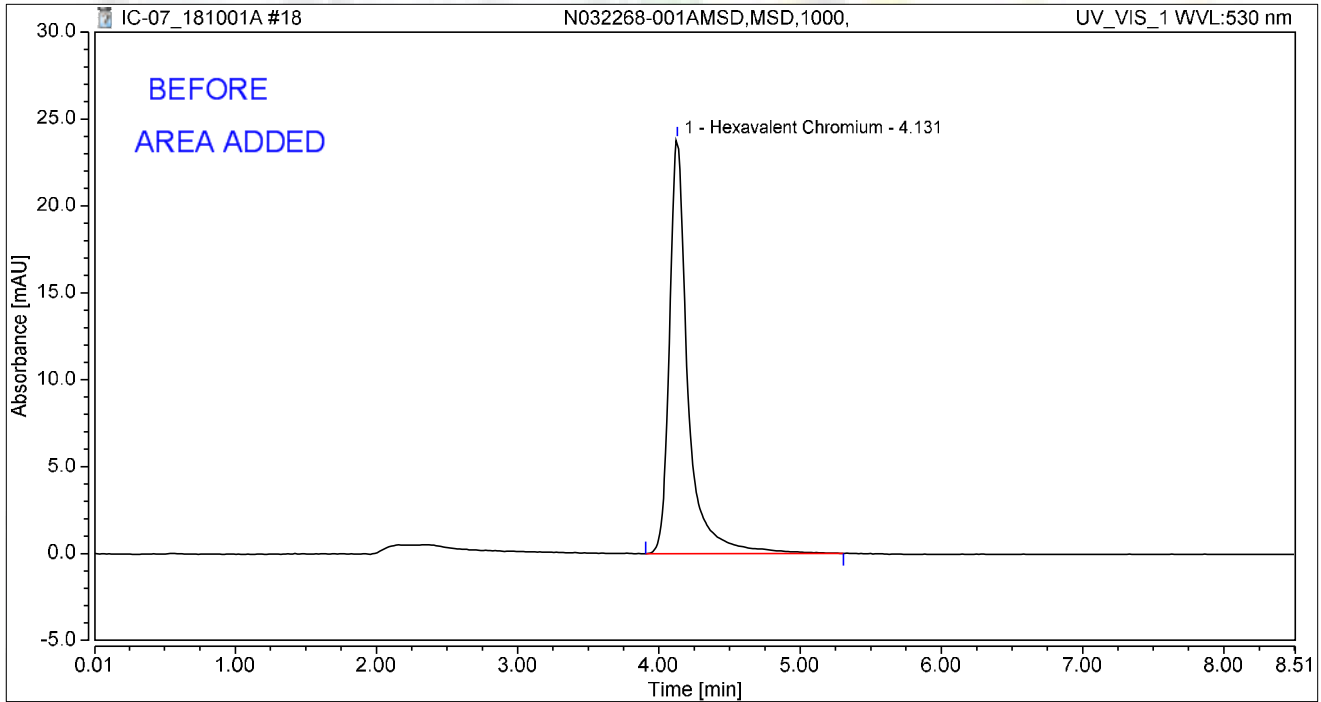
Reviewed by:  
*My first report/Integration*  
Merry 10/11/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-001AMSD,MSD,1000,	Run Time (min):	8.50
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 12:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	3.629	23.863	100.00	100.00	14.3571
<b>Total:</b>			<b>3.629</b>	<b>23.863</b>	<b>100.00</b>	<b>100.00</b>	

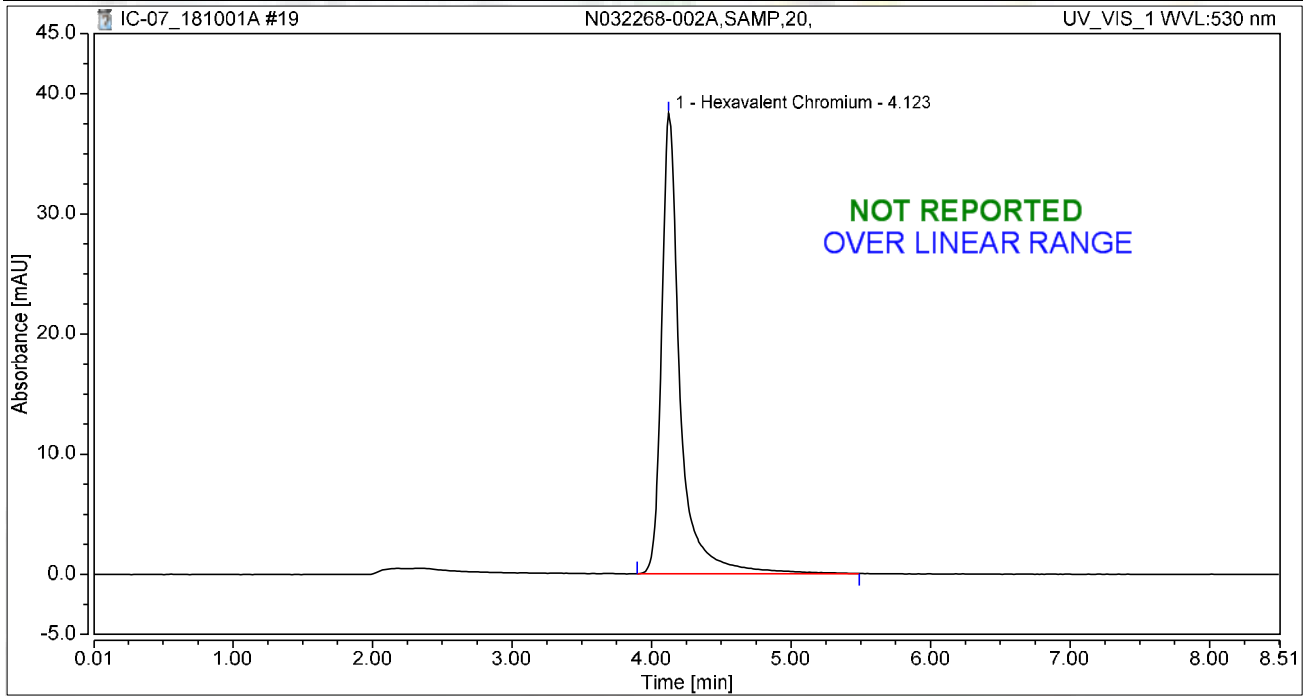
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### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-002A,SAMP,20,	Run Time (min):	8.50
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 12:23	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

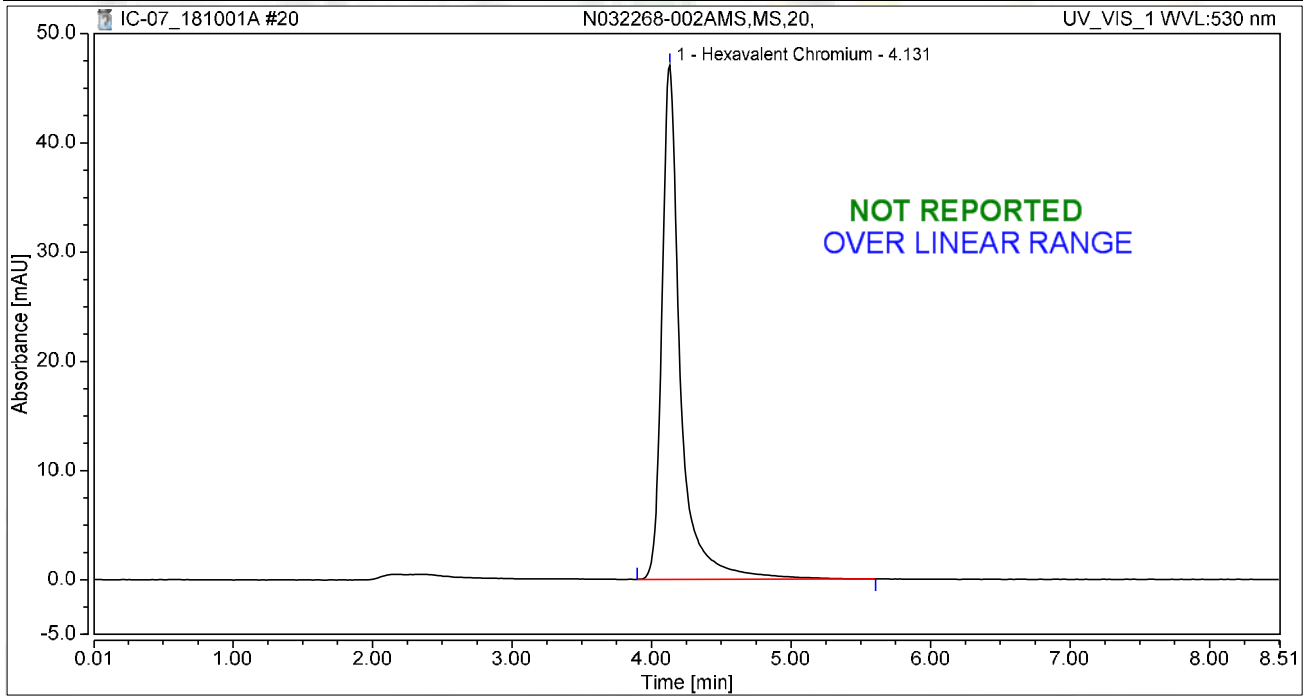
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	5.891	38.304	100.00	100.00	23.3081
<b>Total:</b>			<b>5.891</b>	<b>38.304</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-002AMS,MS,20,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 12:35	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

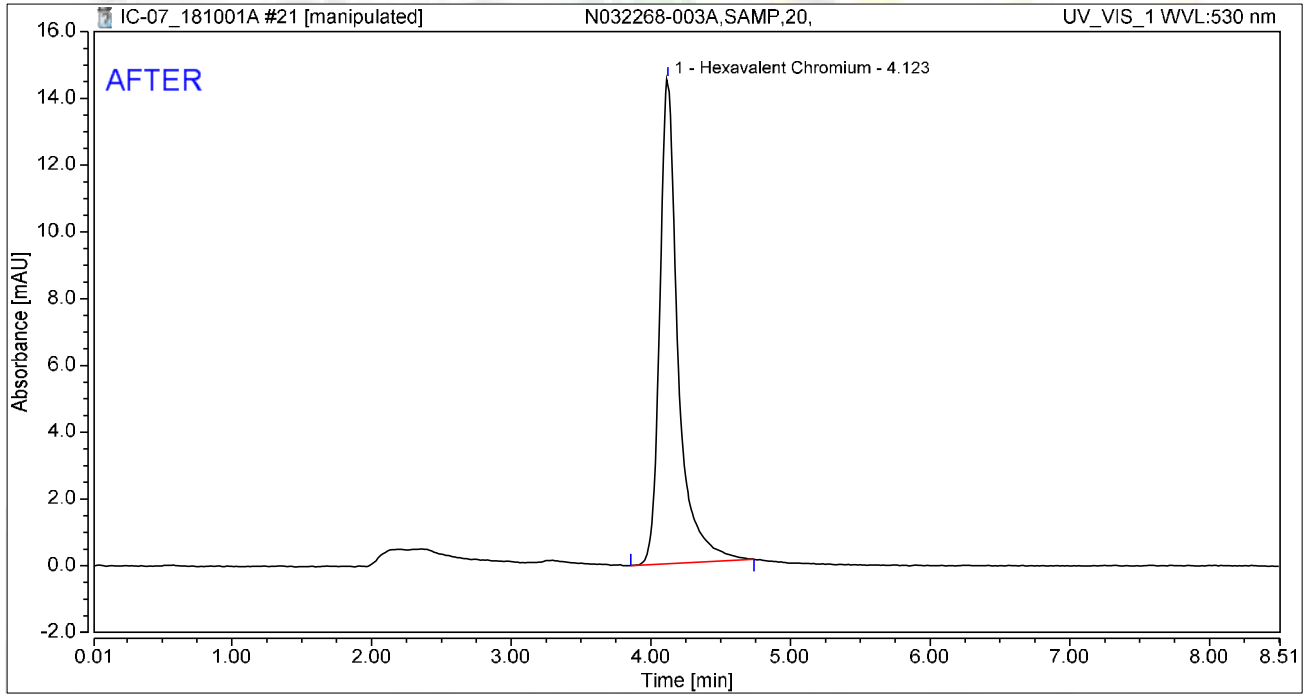
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	7.235	47.052	100.00	100.00	28.6223
<b>Total:</b>			<b>7.235</b>	<b>47.052</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-003A,SAMP,20,	Run Time (min):	8.49
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 12:44	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	2.223	14.524	100.00	100.00	8.7966
<b>Total:</b>			<b>2.223</b>	<b>14.524</b>	<b>100.00</b>	<b>100.00</b>	

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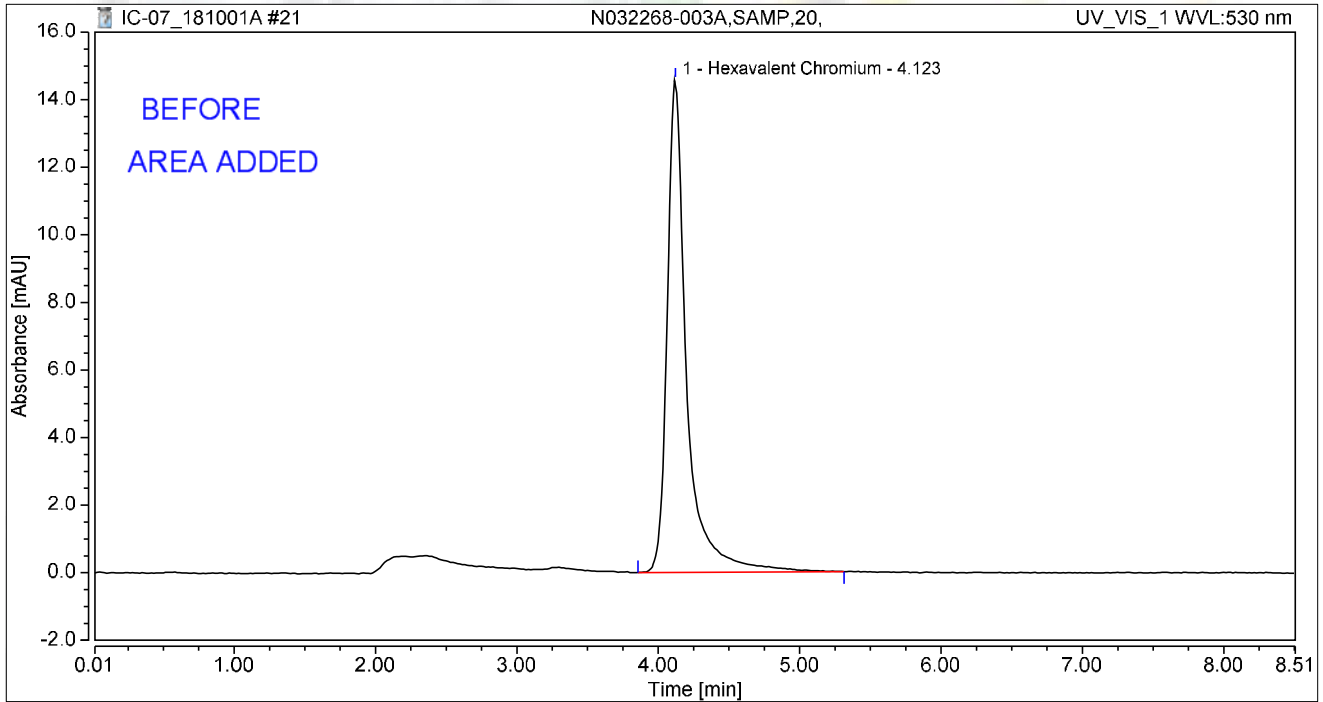
Reviewed by:  
 Nancy  
 My first report/Integration 10/11/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-003A,SAMP,20,	Run Time (min):	8.49
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 12:44	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	2.334	14.574	100.00	100.00	9.2344
<b>Total:</b>			<b>2.334</b>	<b>14.574</b>	<b>100.00</b>	<b>100.00</b>	

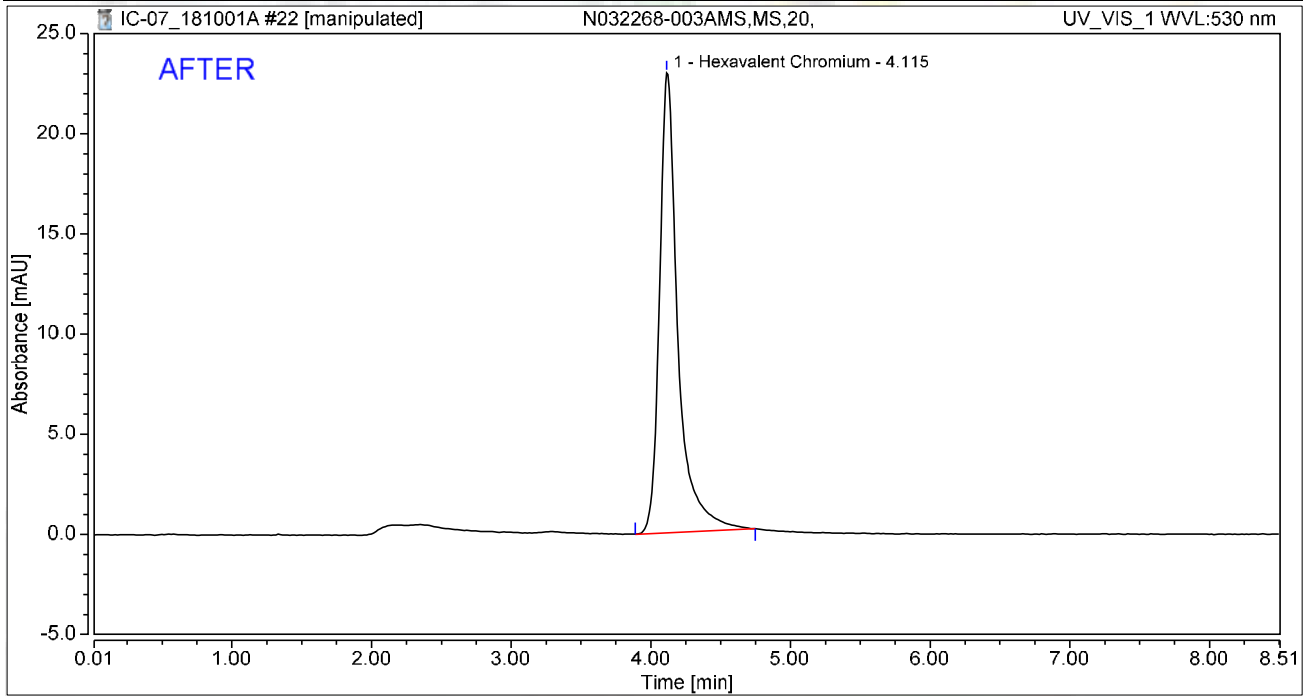
rba 10/10/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-003AMS,MS,20,	Run Time (min):	8.49
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 12:54	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	3.515	22.967	100.00	100.00	13.9075
<b>Total:</b>			<b>3.515</b>	<b>22.967</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/10/2018

Reviewed by:  
*naney* 10/11/2018  
My first report/Integration

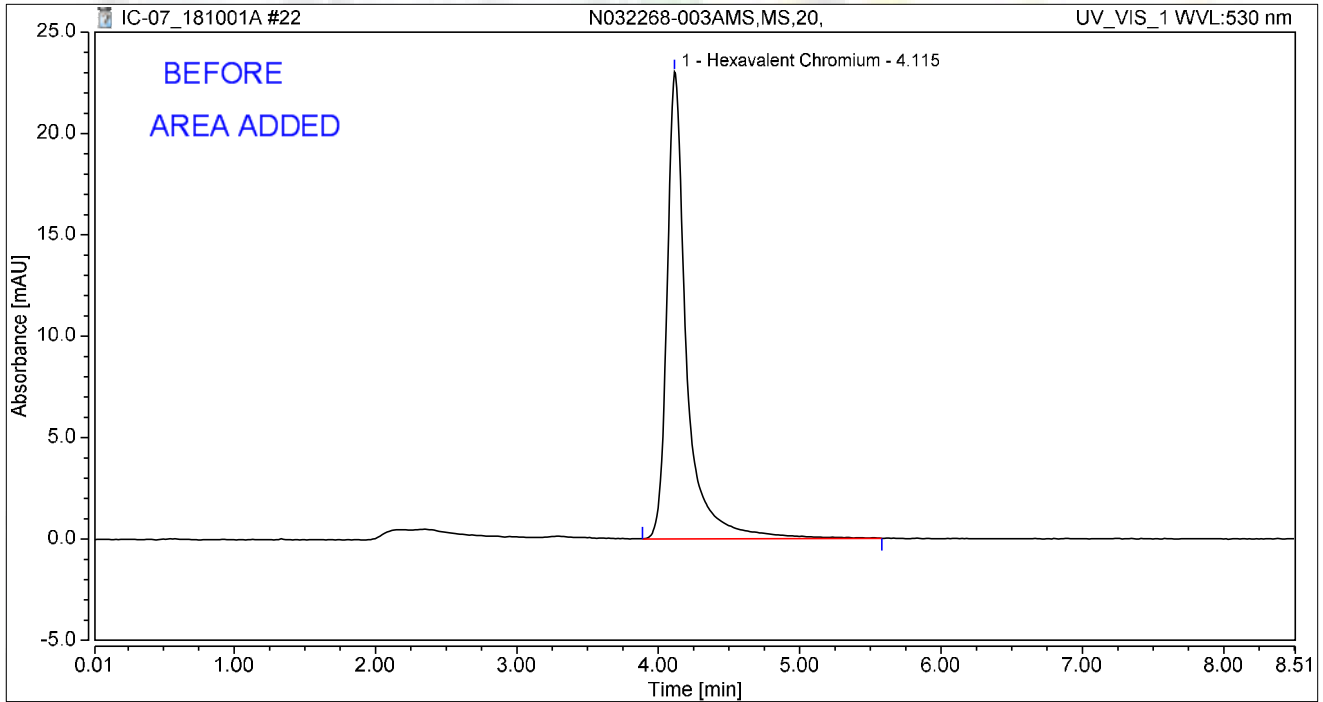


### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-003AMS,MS,20,	Run Time (min):	8.49
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 12:54	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	3.707	23.037	100.00	100.00	14.6658
<b>Total:</b>			<b>3.707</b>	<b>23.037</b>	<b>100.00</b>	<b>100.00</b>	

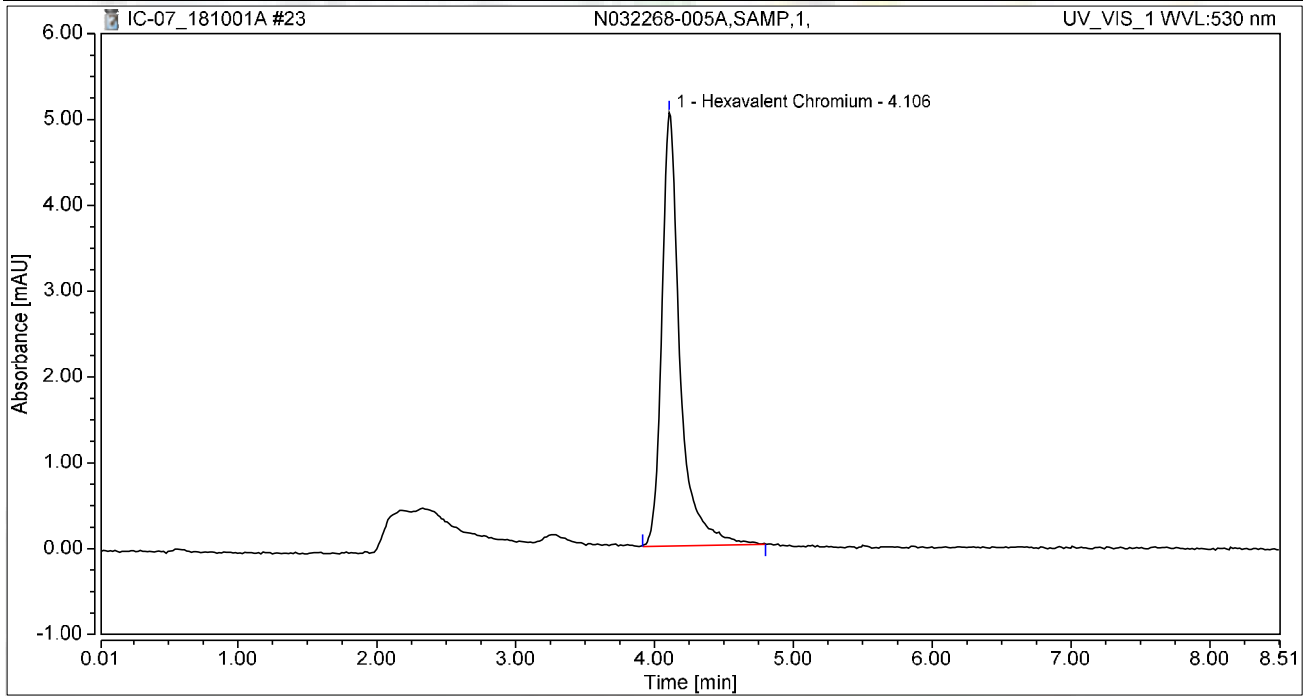
rba 10/10/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-005A,SAMP,1,	Run Time (min):	8.49
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 13:03	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

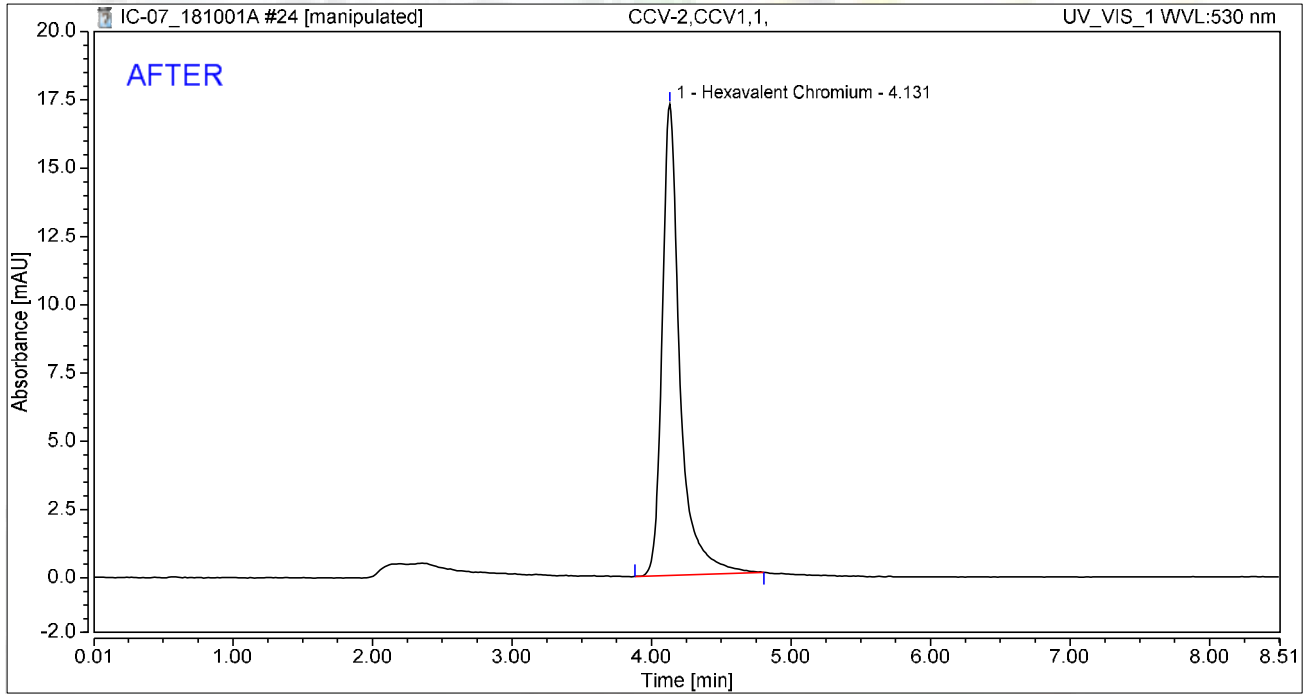
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.770	5.048	100.00	100.00	3.0453
<b>Total:</b>			<b>0.770</b>	<b>5.048</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-2,CCV1,1,	Run Time (min):	8.50
Vial Number:	18	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 13:13	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.543	17.259	100.00	100.00	10.0610
<b>Total:</b>			<b>2.543</b>	<b>17.259</b>	<b>100.00</b>	<b>100.00</b>	

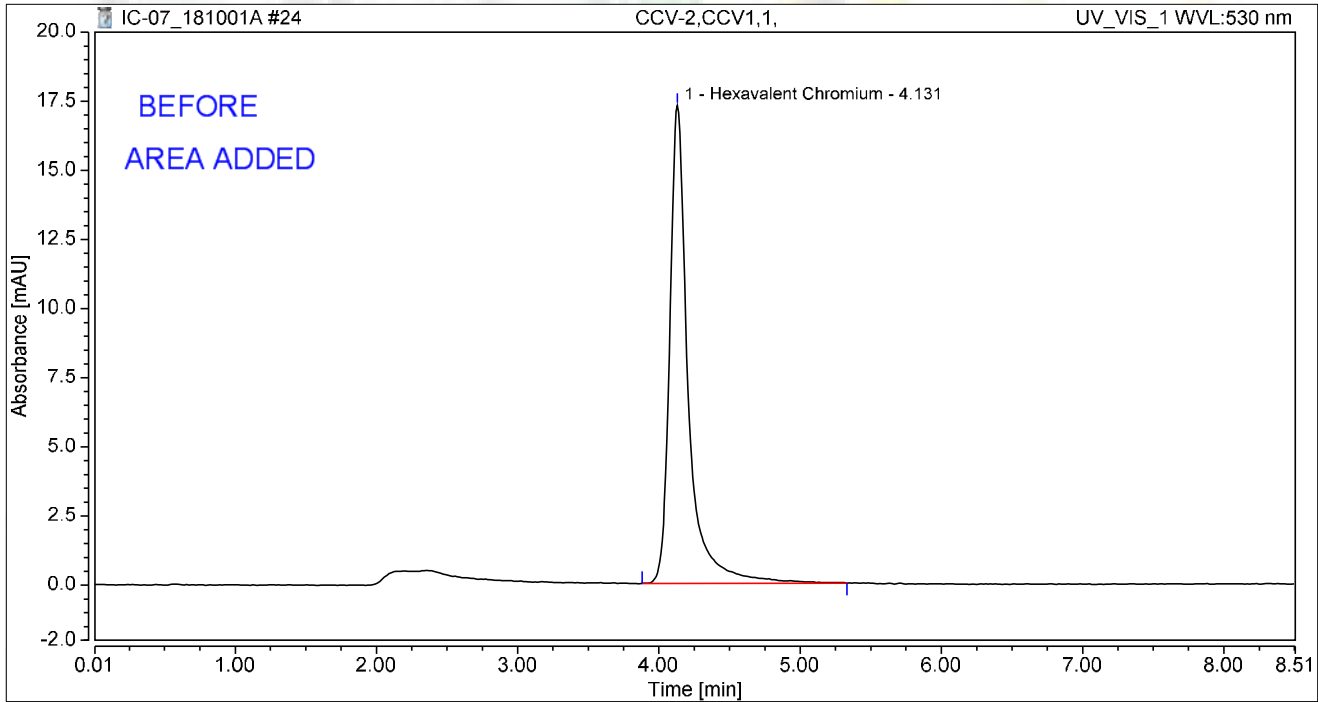
*nba* 10/10/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-2,CCV1,1,	Run Time (min):	8.50
Vial Number:	18	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 13:13	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.634	17.294	100.00	100.00	10.4194
<b>Total:</b>			<b>2.634</b>	<b>17.294</b>	<b>100.00</b>	<b>100.00</b>	

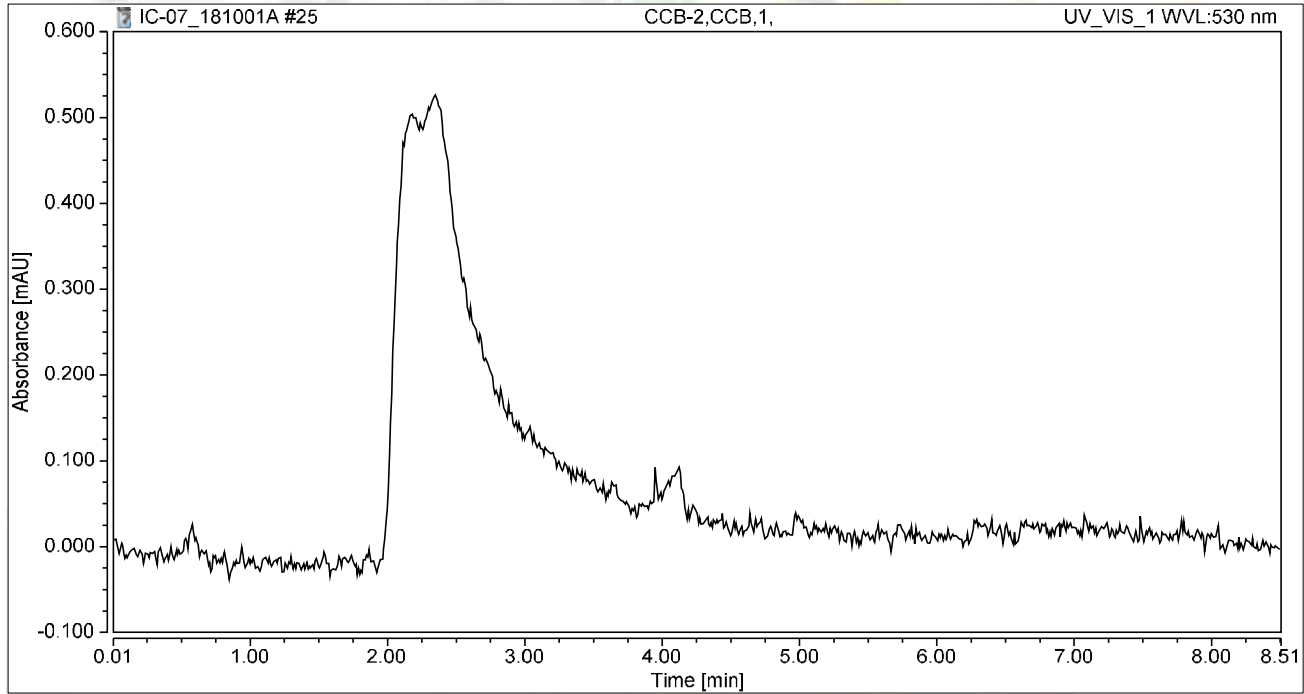
rba 10/10/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	<b>CCB-2,CCB,1,</b>	Run Time (min):	<b>8.50</b>
Vial Number:	<b>19</b>	Injection Volume:	<b>1000.00</b>
Injection Type:	<b>Unknown</b>	Channel:	<b>UV_VIS_1</b>
Calibration Level:		Wavelength:	<b>530.0</b>
Instrument Method:	<b>Hex Chrom 4 mm</b>	Bandwidth:	<b>n.a.</b>
Processing Method:	<b>180921_IC-07_Cr6_218_6_HIGH</b>	Dilution Factor:	<b>1.0000</b>
Injection Date/Time:	<b>01/Oct/18 13:22</b>	Sample Weight:	<b>1.0000</b>

**Chromatogram**



**Integration Results**

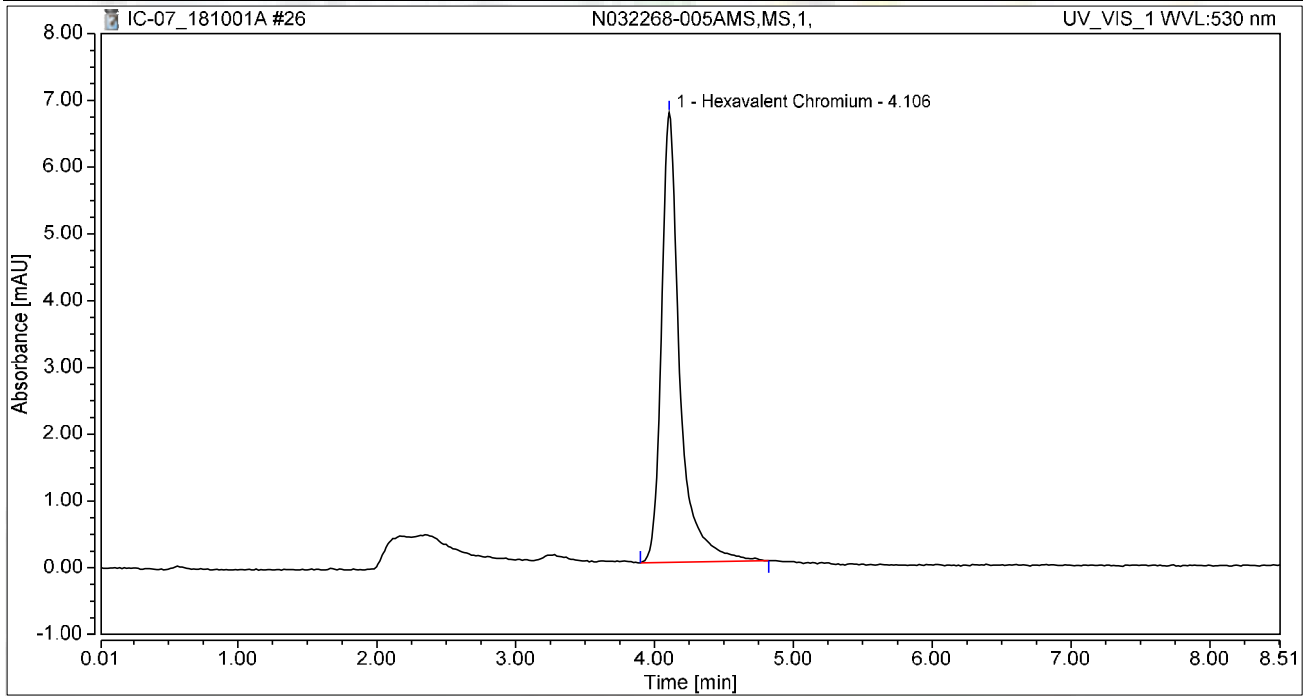
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-005AMS,MS,1,	Run Time (min):	8.49
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 13:32	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

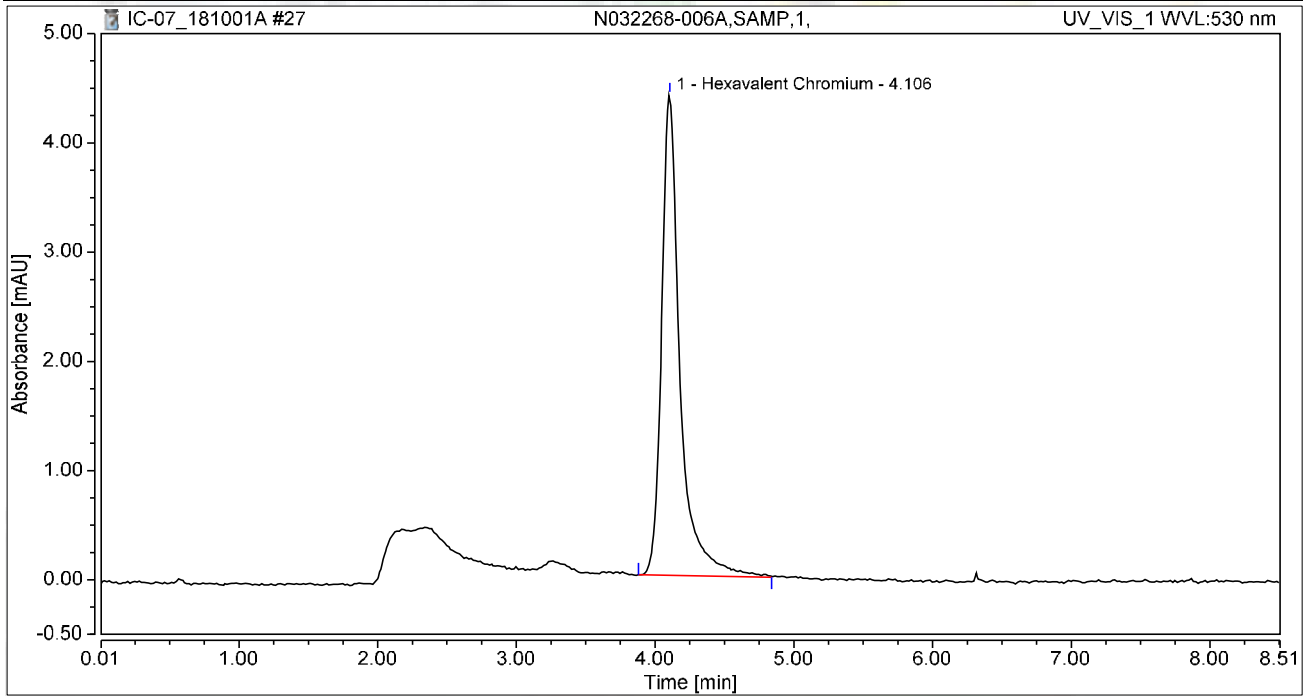
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	1.035	6.737	100.00	100.00	4.0936
<b>Total:</b>			<b>1.035</b>	<b>6.737</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-006A,SAMP,1,	Run Time (min):	8.50
Vial Number:	21	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 13:41	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

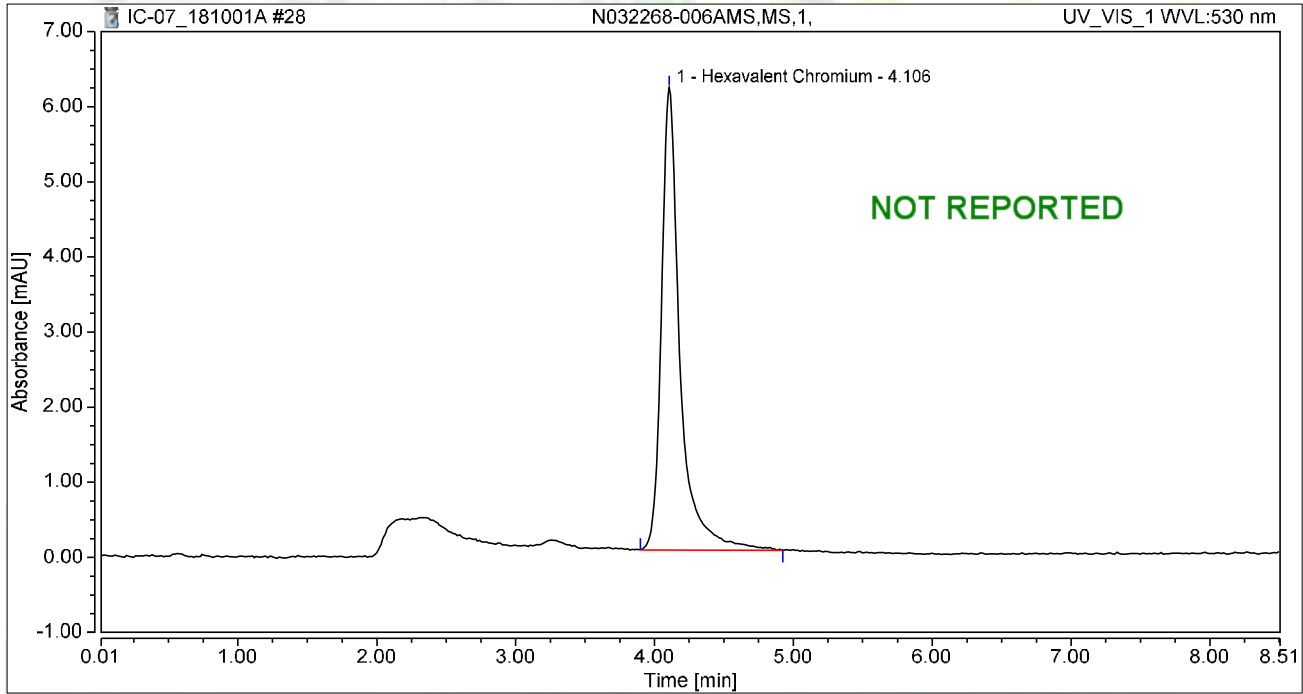
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.678	4.400	100.00	100.00	2.6842
<b>Total:</b>			<b>0.678</b>	<b>4.400</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-006AMS,MS,1,	Run Time (min):	8.49
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 13:50	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.957	6.158	100.00	100.00	3.7846
<b>Total:</b>			<b>0.957</b>	<b>6.158</b>	<b>100.00</b>	<b>100.00</b>	

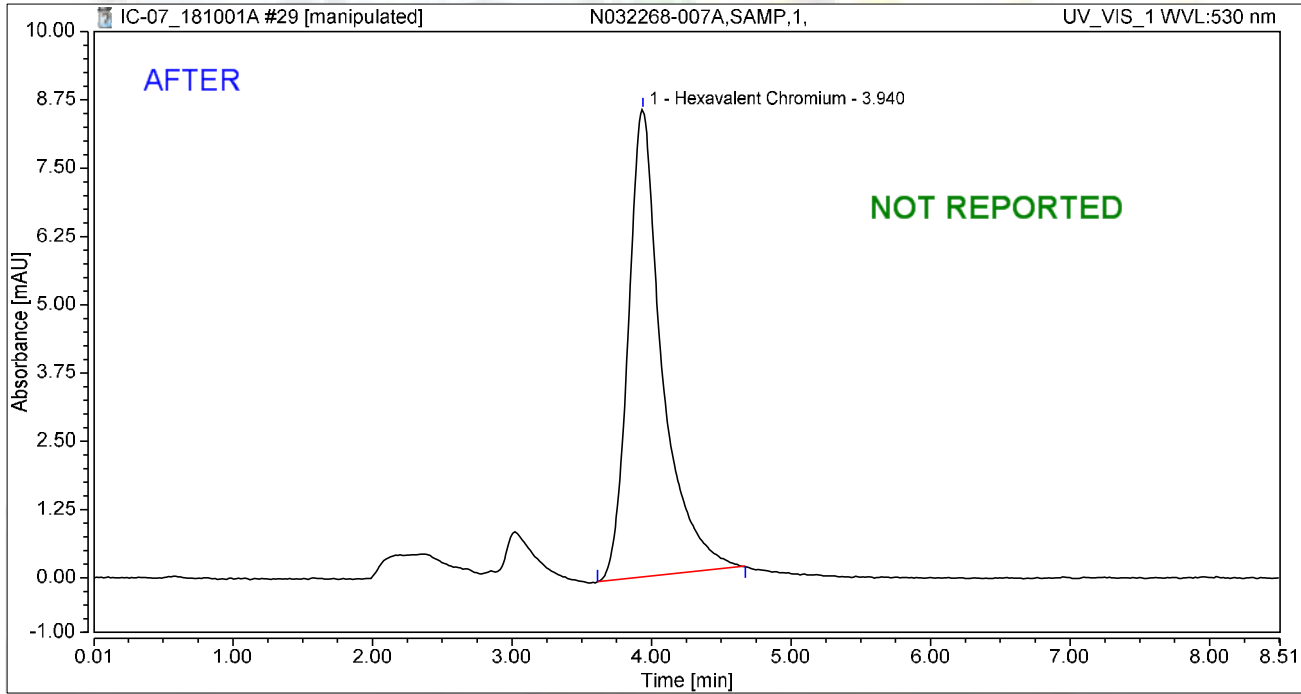


### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-007A,SAMP,1,	Run Time (min):	8.50
Vial Number:	23	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 14:00	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

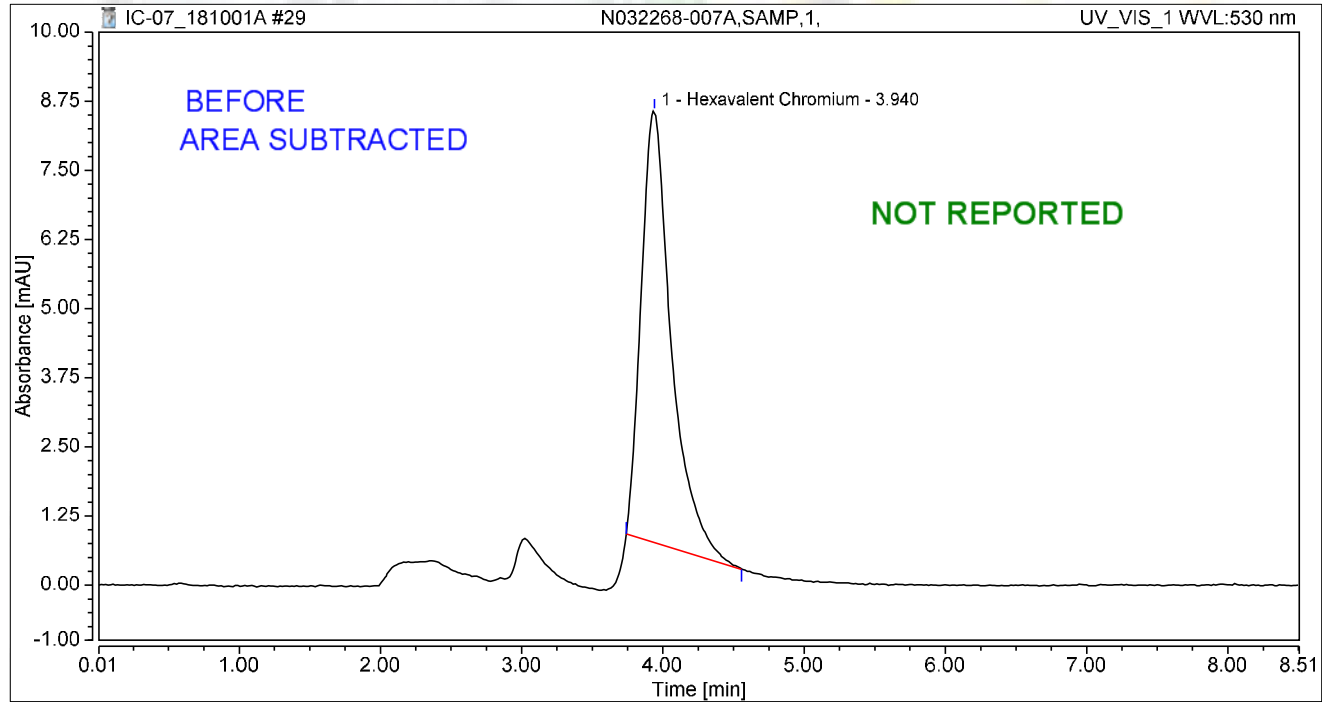
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.940	2.408	8.554	100.00	100.00	9.5262
<b>Total:</b>			<b>2.408</b>	<b>8.554</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/10/2018

### Chromatogram and Results

Injection Details		
Injection Name:	N032268-007A,SAMP,1,	Run Time (min): 8.50
Vial Number:	23	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	01/Oct/18 14:00	Sample Weight: 1.0000

#### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.940	1.936	7.804	100.00	100.00	7.6586
<b>Total:</b>			<b>1.936</b>	<b>7.804</b>	<b>100.00</b>	<b>100.00</b>	

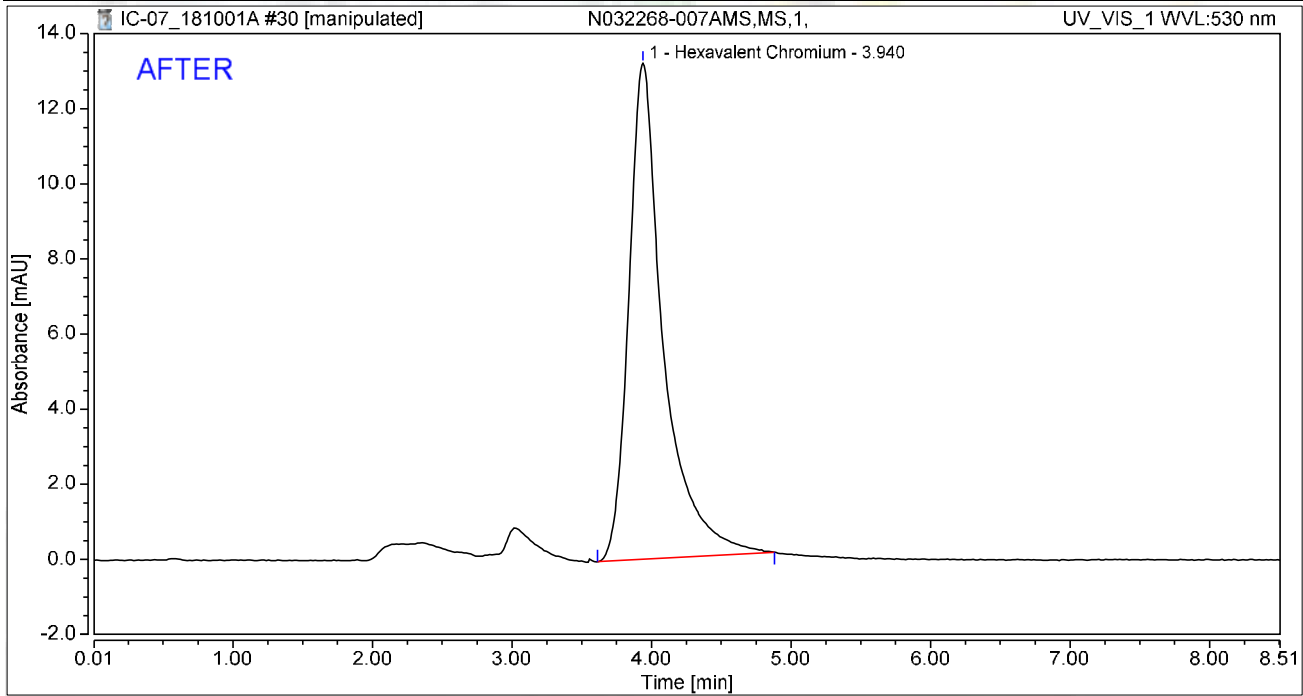
rba 10/10/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-007AMS,MS,1,	Run Time (min):	8.50
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 14:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.940	3.812	13.207	100.00	100.00	15.0806
<b>Total:</b>			<b>3.812</b>	<b>13.207</b>	<b>100.00</b>	<b>100.00</b>	

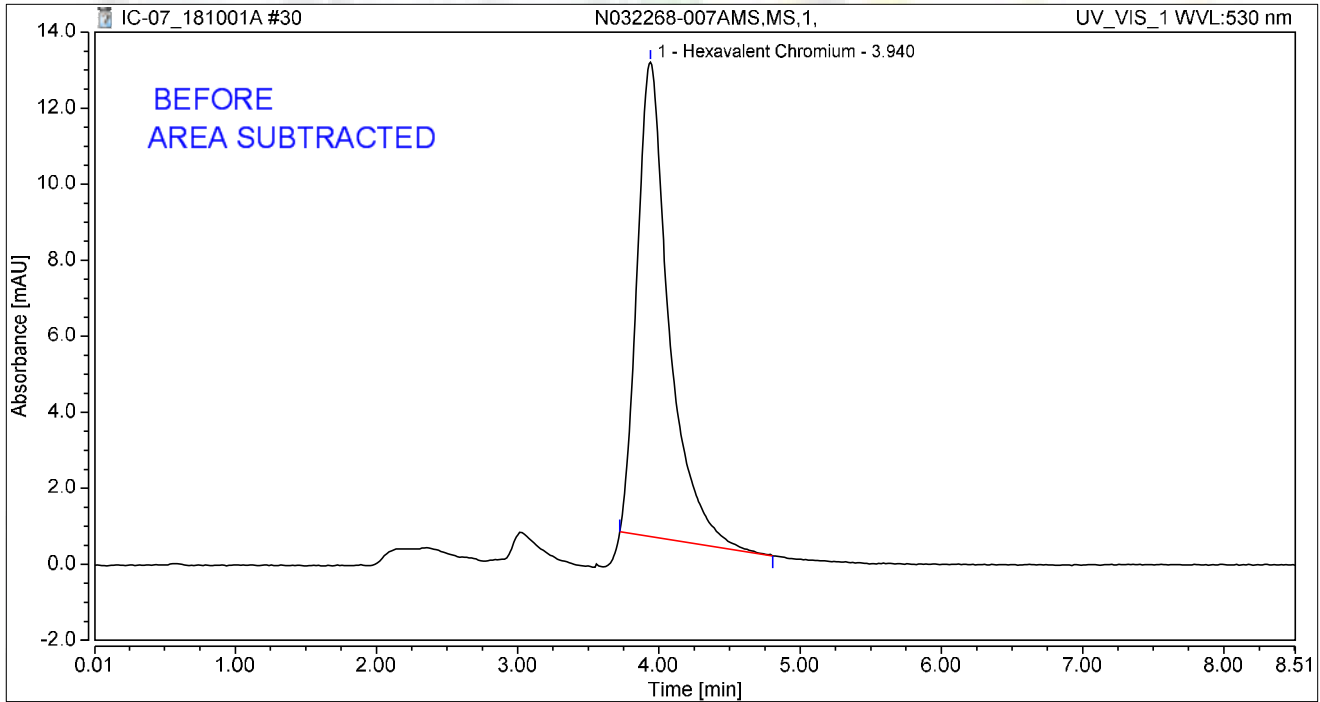
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### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-007AMS,MS,1,	Run Time (min):	8.50
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 14:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.940	3.264	12.473	100.00	100.00	12.9124
<b>Total:</b>			<b>3.264</b>	<b>12.473</b>	<b>100.00</b>	<b>100.00</b>	

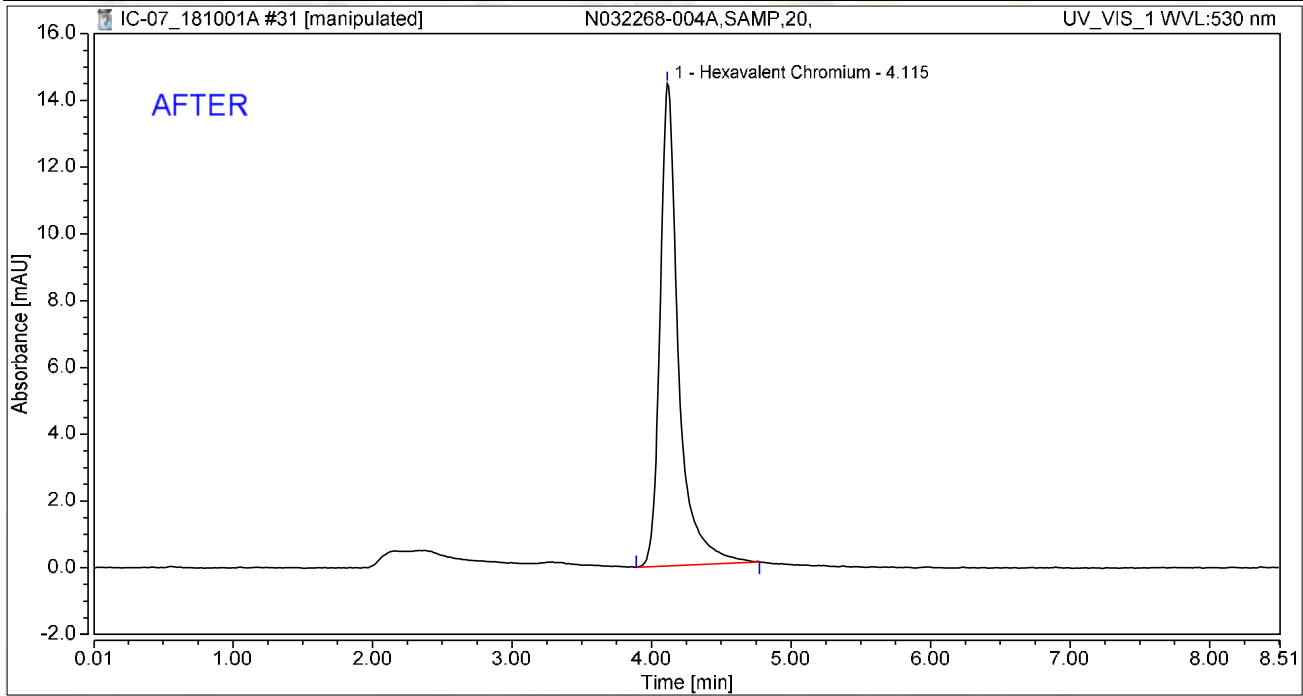
rba 10/10/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-004A,SAMP,20,	Run Time (min):	8.50
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 14:19	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.220	14.451	100.00	100.00	8.7825
<b>Total:</b>			<b>2.220</b>	<b>14.451</b>	<b>100.00</b>	<b>100.00</b>	

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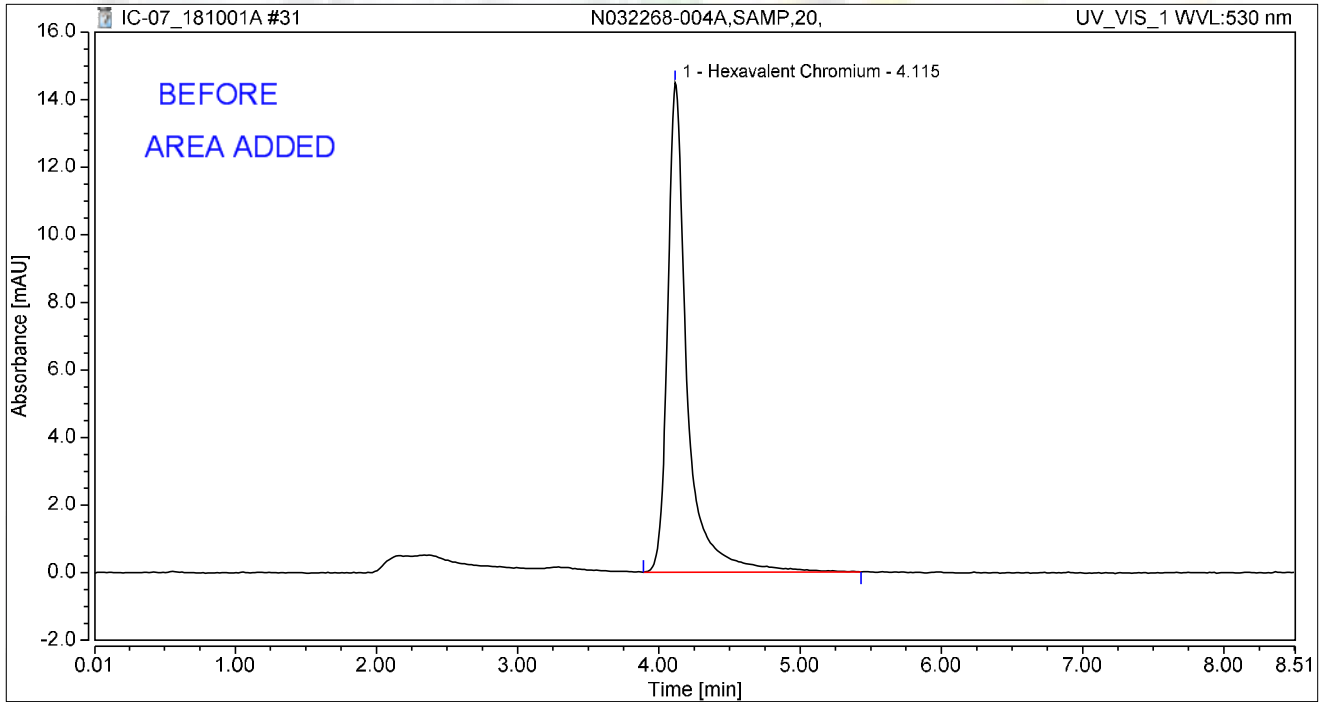
Reviewed by:  
*Shirley* 10/11/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-004A,SAMP,20,	Run Time (min):	8.50
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 14:19	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.330	14.490	100.00	100.00	9.2190
<b>Total:</b>			<b>2.330</b>	<b>14.490</b>	<b>100.00</b>	<b>100.00</b>	

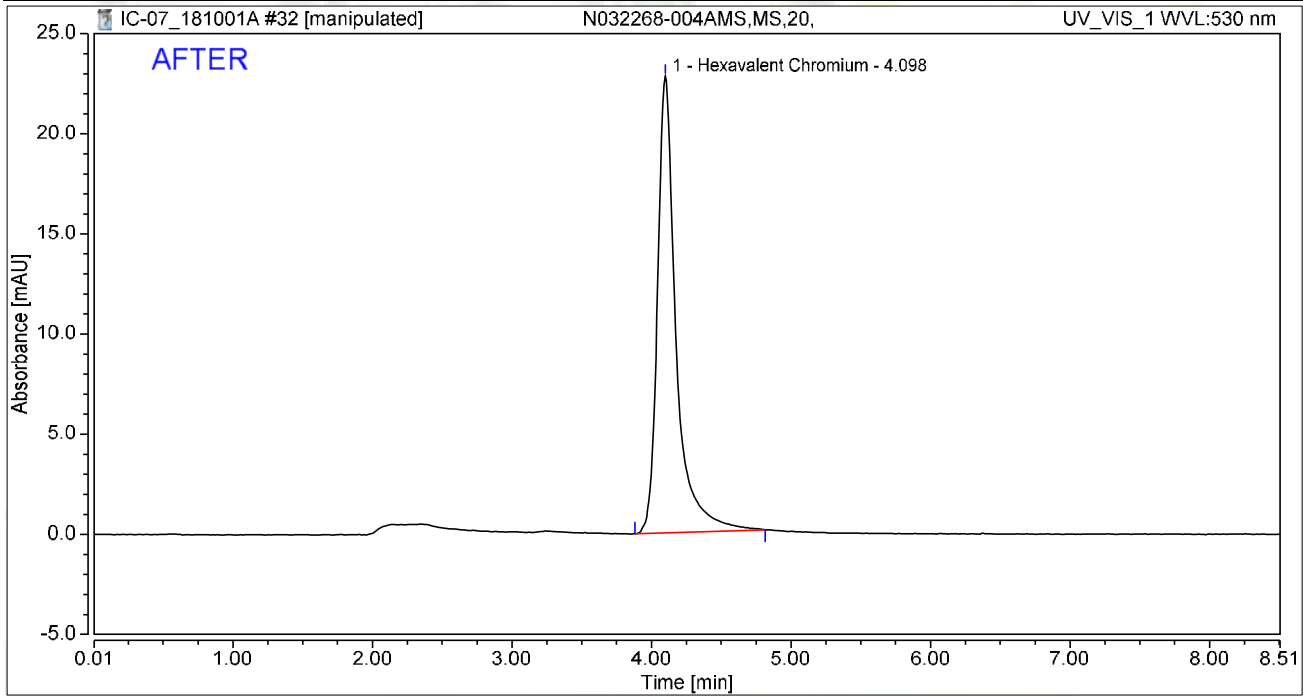
rba 10/10/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-004AMS,MS,20,	Run Time (min):	8.50
Vial Number:	26	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 14:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	3.519	22.801	100.00	100.00	13.9232
<b>Total:</b>			<b>3.519</b>	<b>22.801</b>	<b>100.00</b>	<b>100.00</b>	

rba 10/10/2018

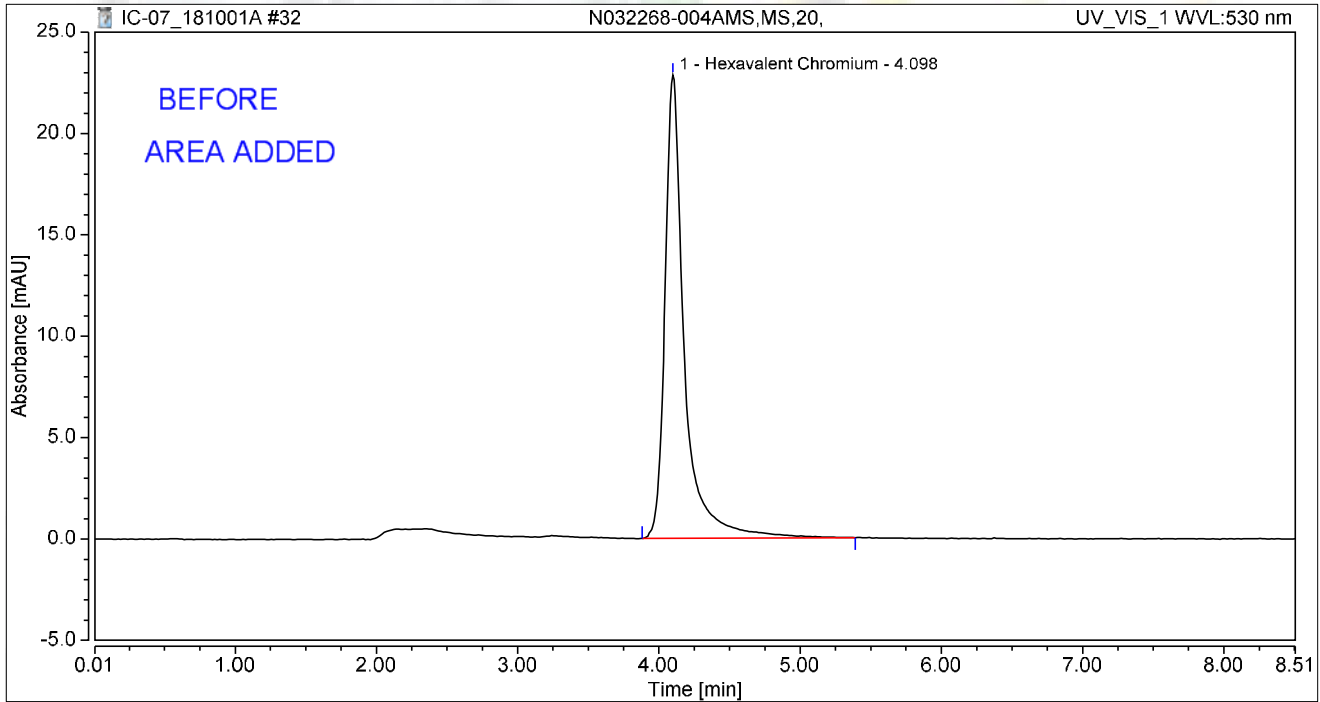
Reviewed by:  
*Mancy* 10/11/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-004AMS,MS,20,	Run Time (min):	8.50
Vial Number:	26	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 14:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	3.646	22.842	100.00	100.00	14.4265
<b>Total:</b>			<b>3.646</b>	<b>22.842</b>	<b>100.00</b>	<b>100.00</b>	

rba 10/10/2018

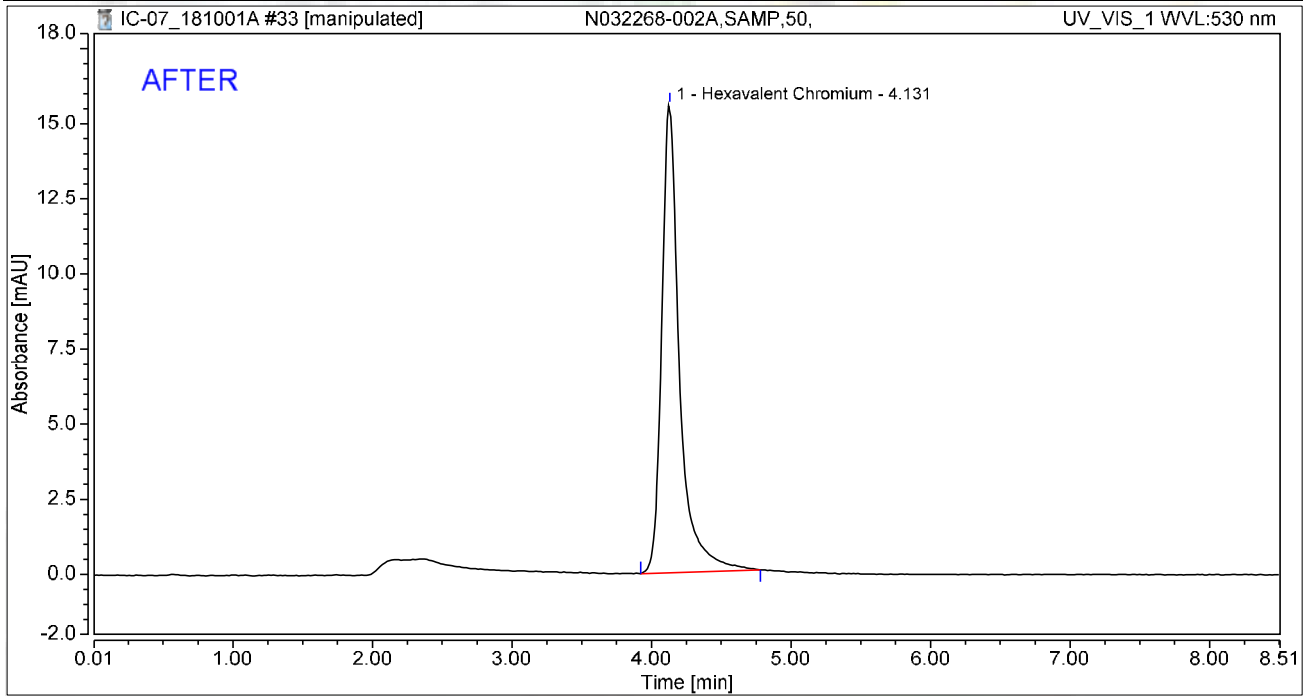


### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-002A,SAMP,50,	Run Time (min):	8.50
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 14:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.301	15.567	100.00	100.00	9.1021
<b>Total:</b>			<b>2.301</b>	<b>15.567</b>	<b>100.00</b>	<b>100.00</b>	

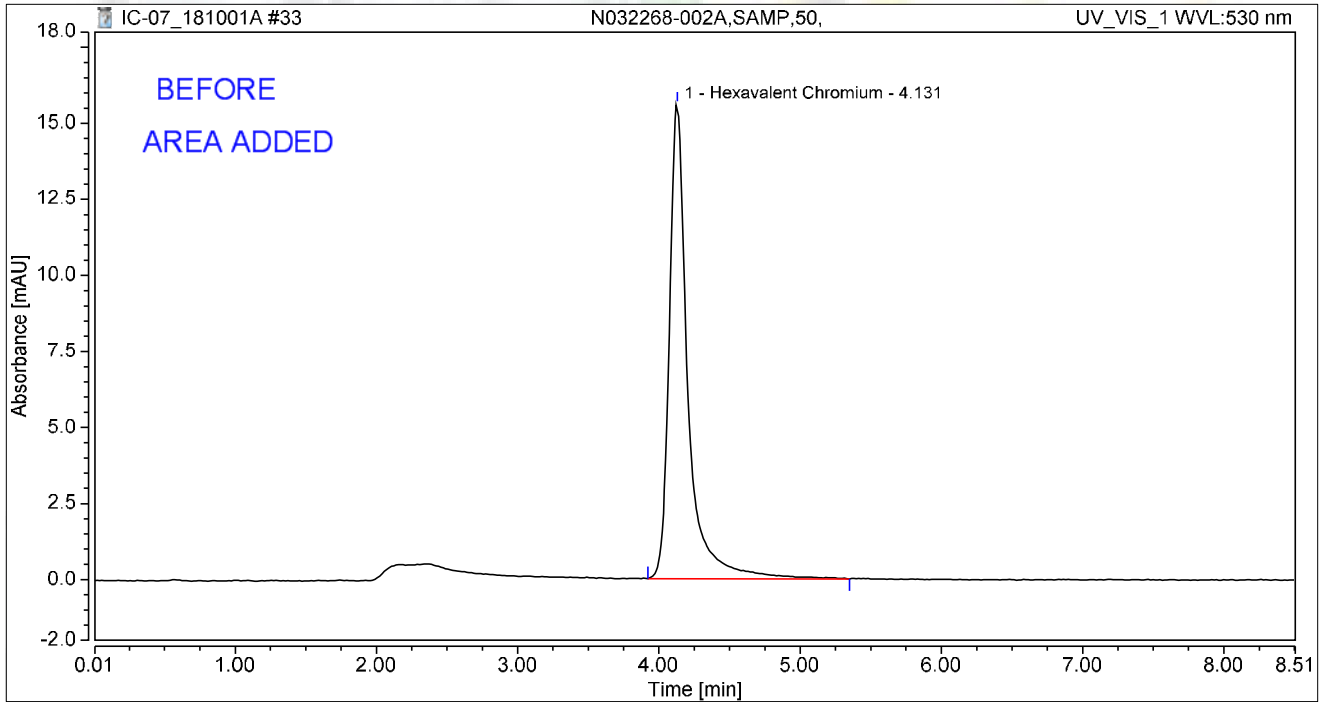
*rba* 10/10/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-002A,SAMP,50,	Run Time (min):	8.50
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 14:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.389	15.599	100.00	100.00	9.4523
<b>Total:</b>			<b>2.389</b>	<b>15.599</b>	<b>100.00</b>	<b>100.00</b>	

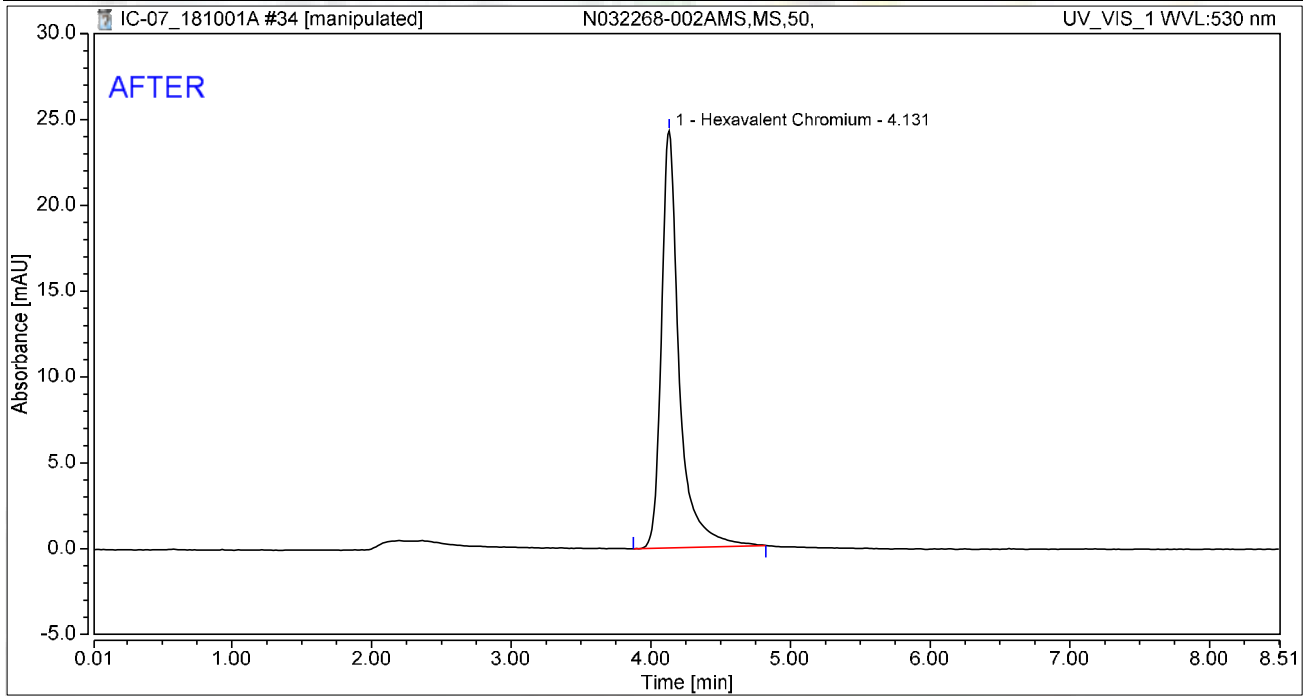
rba 10/10/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-002AMS,MS,50,	Run Time (min):	8.49
Vial Number:	28	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 14:47	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	3.596	24.292	100.00	100.00	14.2269
<b>Total:</b>			<b>3.596</b>	<b>24.292</b>	<b>100.00</b>	<b>100.00</b>	

rba 10/10/2018

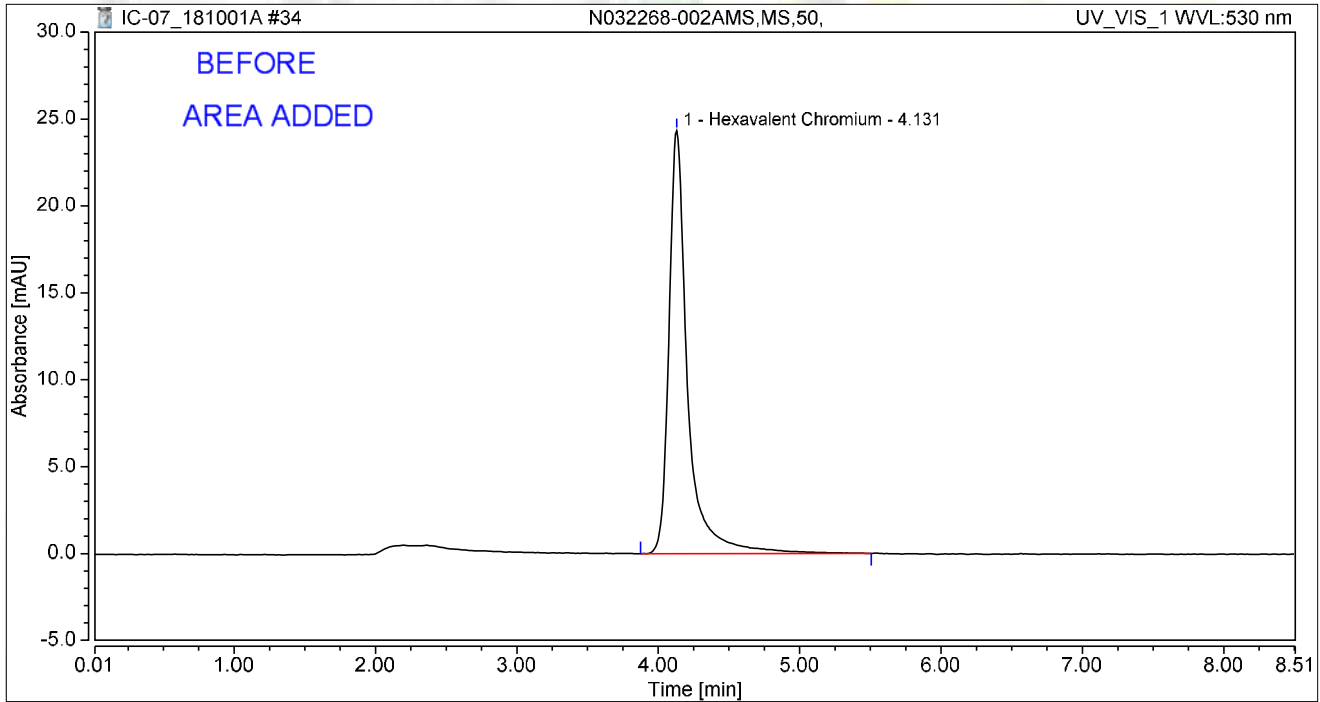
Reviewed by:  
*Shirley* 10/11/2018  
My first report/Integration

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-002AMS,MS,50,	Run Time (min):	8.49
Vial Number:	28	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 14:47	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	3.730	24.343	100.00	100.00	14.7585
<b>Total:</b>			<b>3.730</b>	<b>24.343</b>	<b>100.00</b>	<b>100.00</b>	

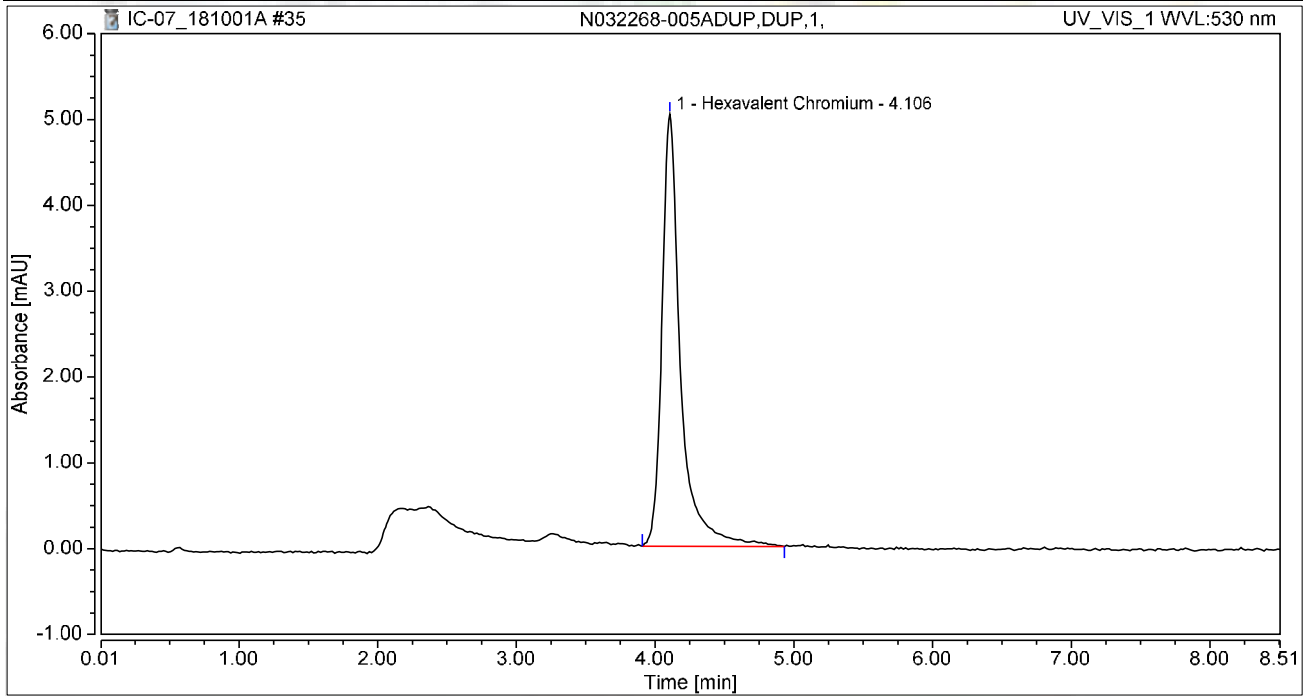
rba 10/10/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-005ADUP,DUP,1,	Run Time (min):	8.50
Vial Number:	29	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 14:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

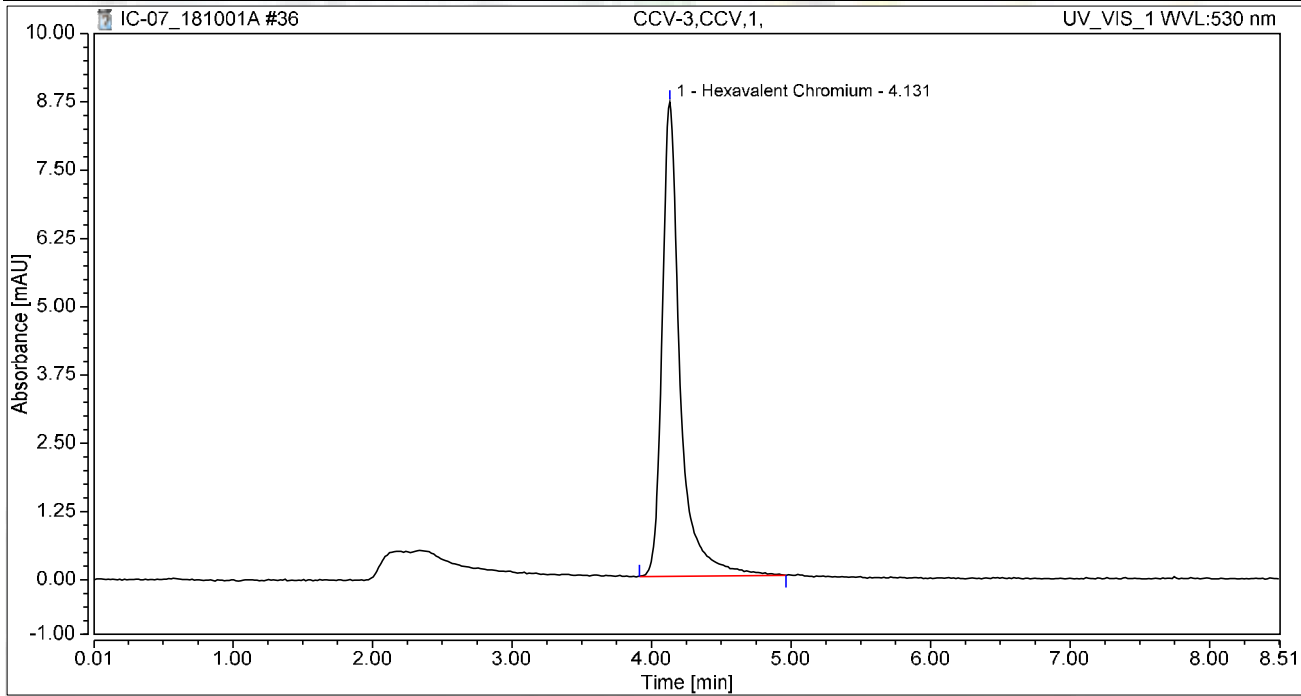
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.783	5.031	100.00	100.00	3.0970
<b>Total:</b>			<b>0.783</b>	<b>5.031</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-3,CCV,1,	Run Time (min):	8.50
Vial Number:	30	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

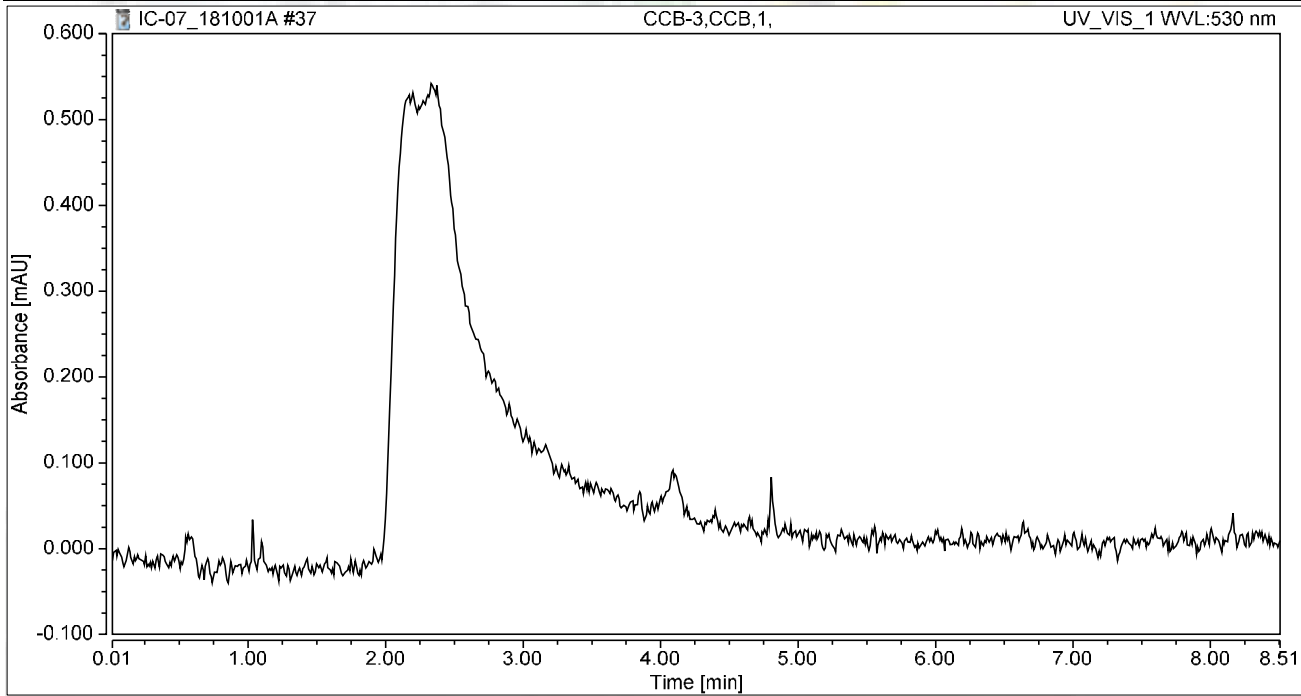
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.300	8.679	100.00	100.00	5.1449
<b>Total:</b>			<b>1.300</b>	<b>8.679</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-3,CCB,1,	Run Time (min):	8.49
Vial Number:	31	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 15:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

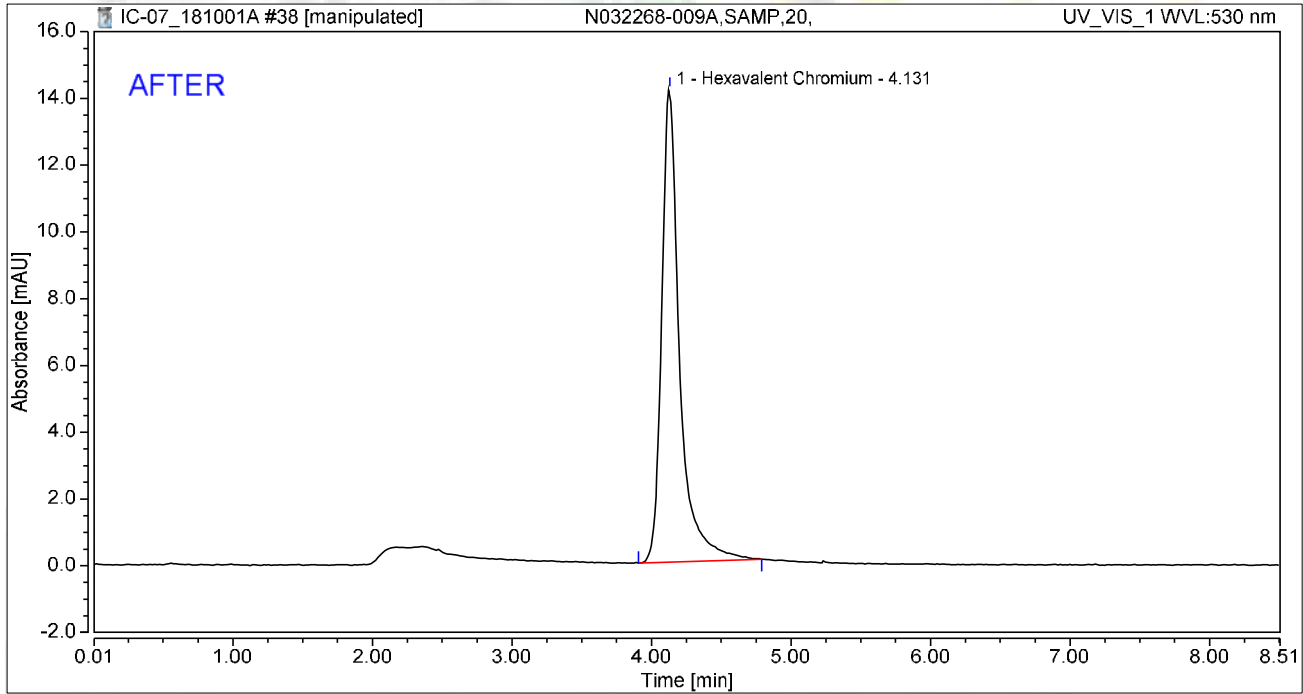
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-009A,SAMP,20,	Run Time (min):	8.50
Vial Number:	32	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 15:25	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.110	14.160	100.00	100.00	8.3487
<b>Total:</b>			<b>2.110</b>	<b>14.160</b>	<b>100.00</b>	<b>100.00</b>	

rba 10/10/2018

Reviewed by:  
My first report/Integration  
*Sherry* 10/11/2018

Chromeleon (c) Dionex  
Version 7.1.1.1127

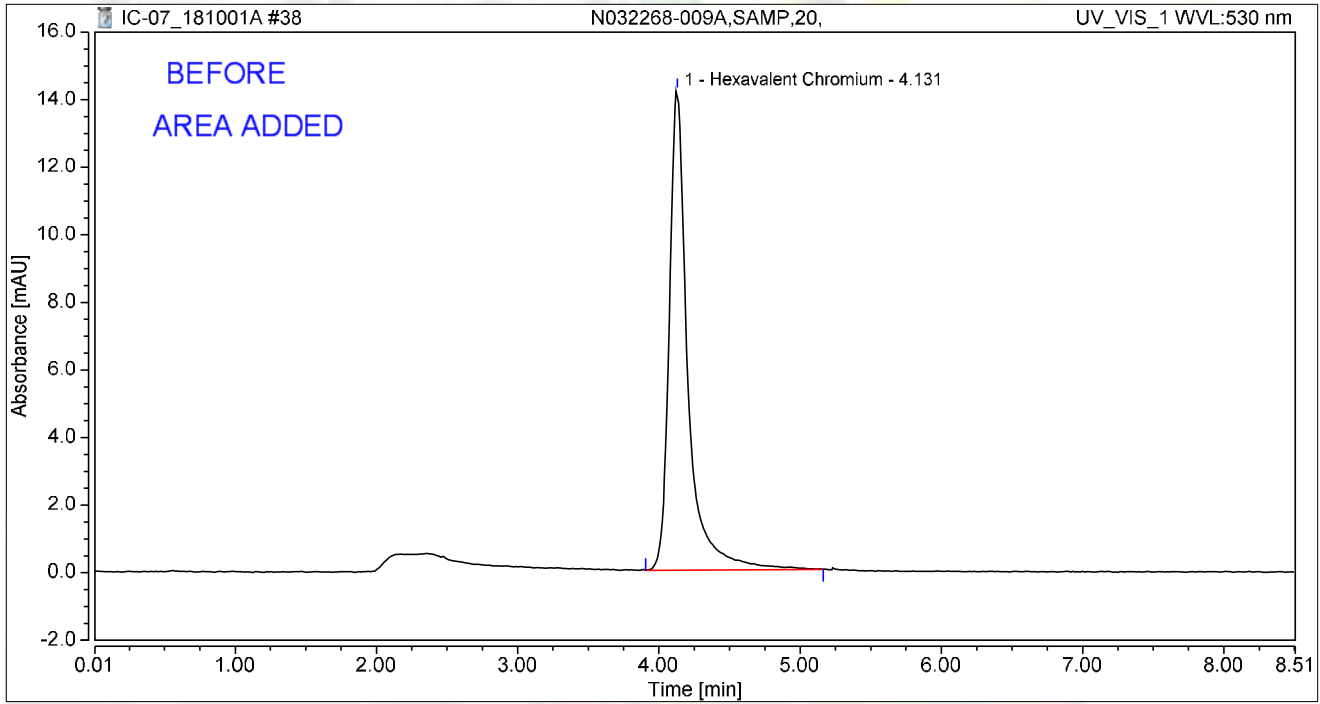


### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-009A,SAMP,20,	Run Time (min):	8.50
Vial Number:	32	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 15:25	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.172	14.185	100.00	100.00	8.5933
<b>Total:</b>			<b>2.172</b>	<b>14.185</b>	<b>100.00</b>	<b>100.00</b>	

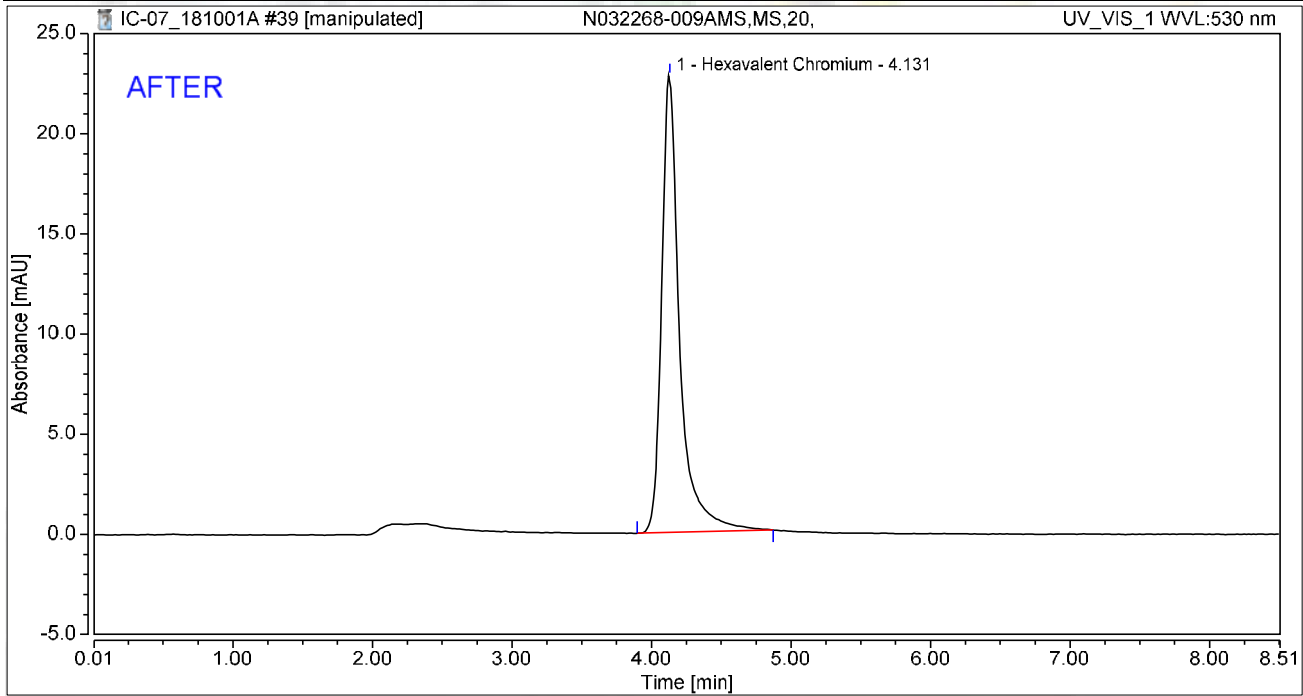
rba 10/10/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-009AMS,MS,20,	Run Time (min):	8.50
Vial Number:	33	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 15:35	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	3.422	22.820	100.00	100.00	13.5402
<b>Total:</b>			<b>3.422</b>	<b>22.820</b>	<b>100.00</b>	<b>100.00</b>	

rba 10/10/2018

Reviewed by:

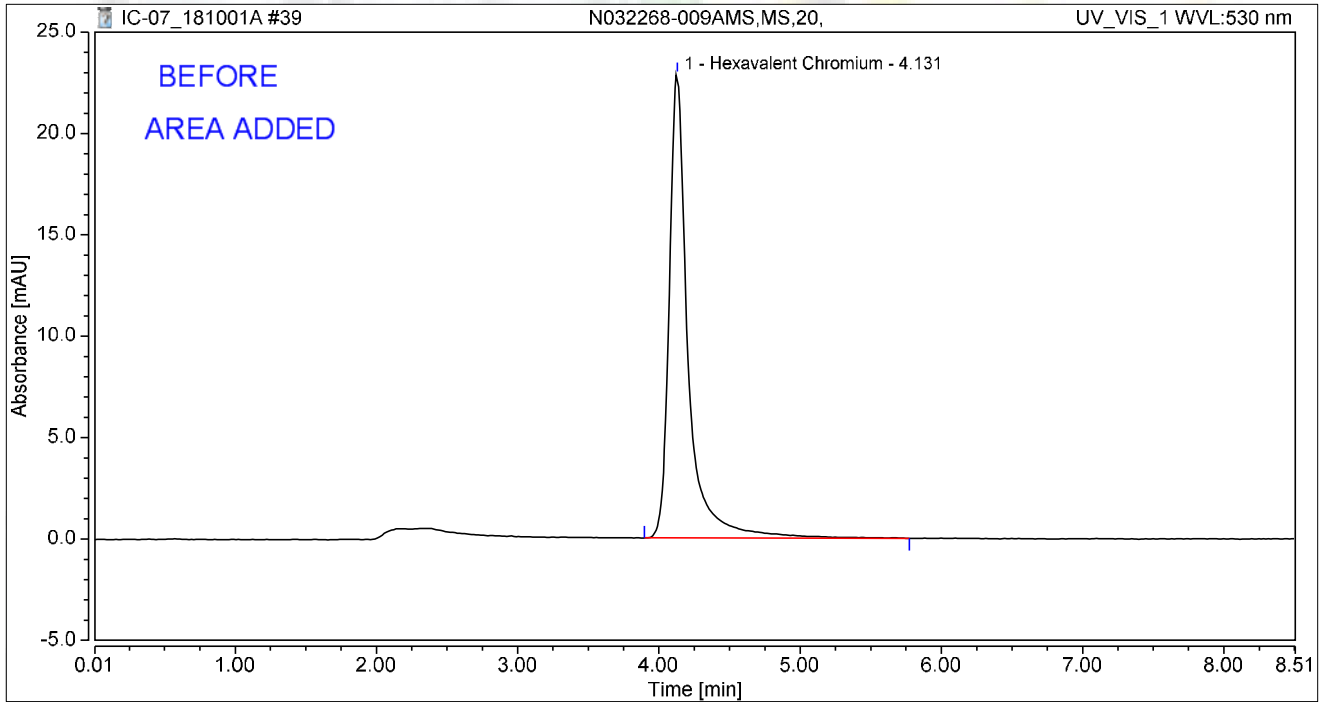
*Money* 10/11/2018  
My first report/Integration

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-009AMS,MS,20,	Run Time (min):	8.50
Vial Number:	33	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 15:35	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	3.566	22.864	100.00	100.00	14.1102
<b>Total:</b>			<b>3.566</b>	<b>22.864</b>	<b>100.00</b>	<b>100.00</b>	

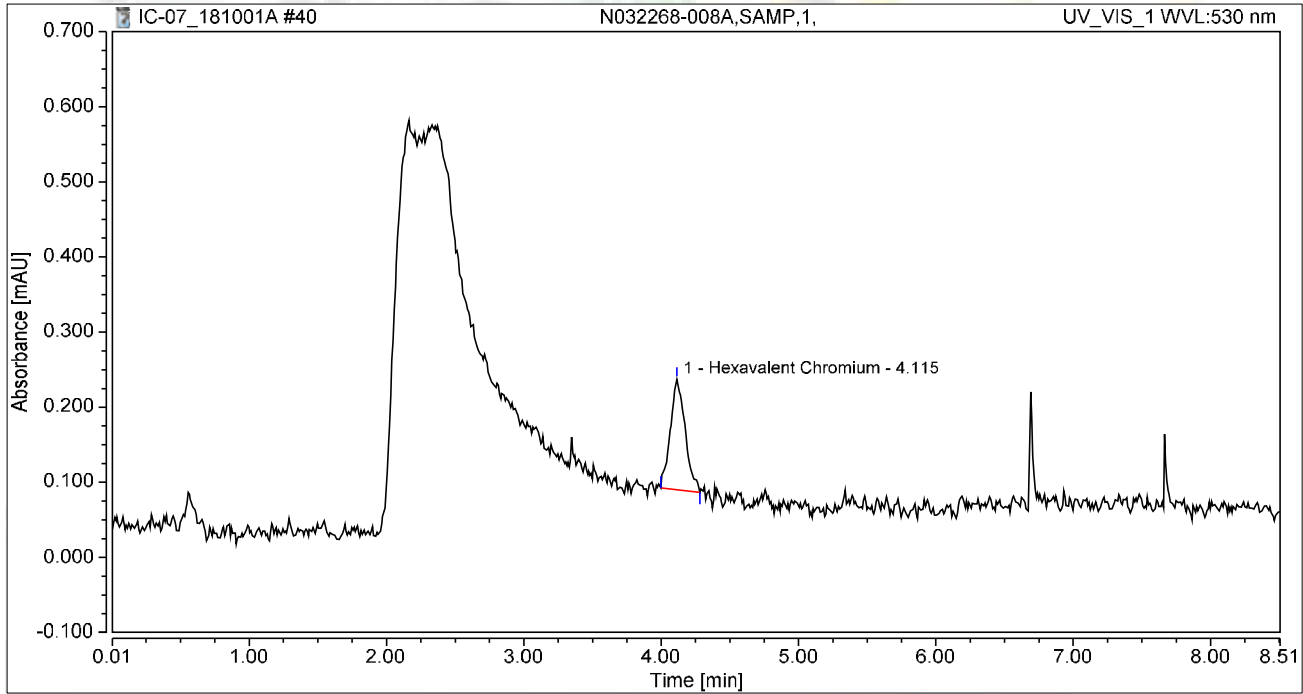
rba 10/10/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-008A,SAMP,1,	Run Time (min):	8.50
Vial Number:	34	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 15:44	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

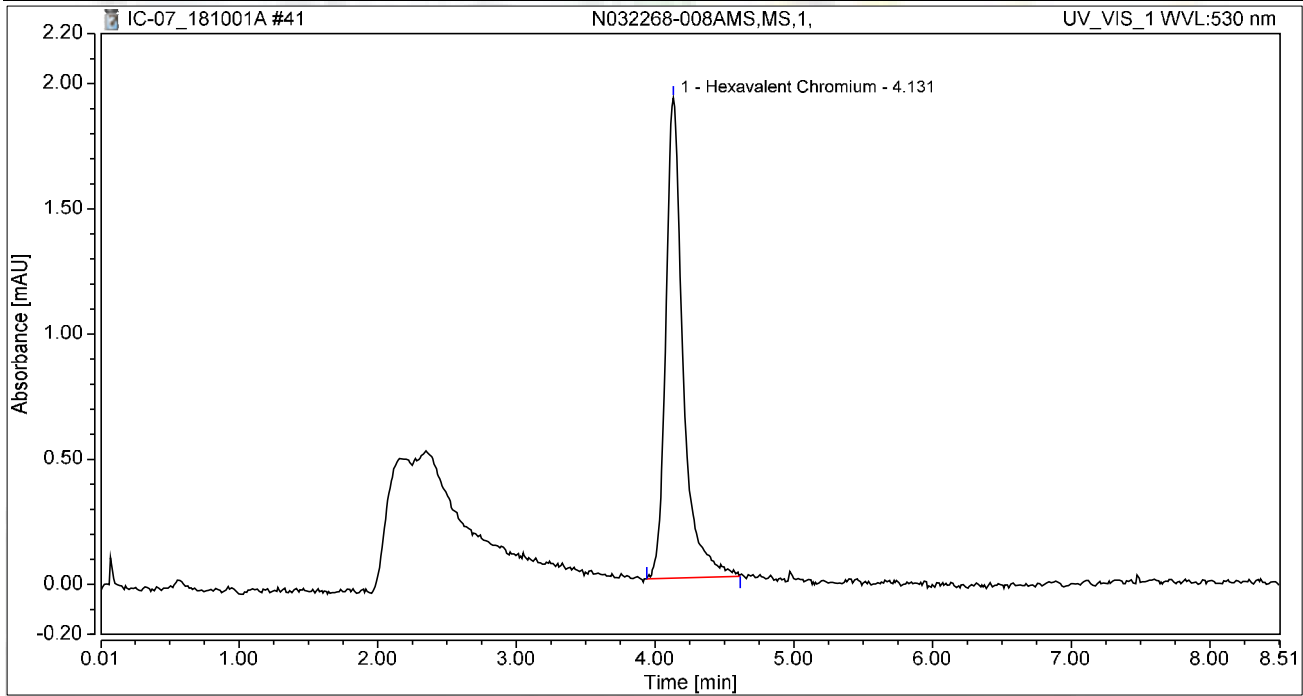
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.018	0.147	100.00	100.00	0.0726
<b>Total:</b>			<b>0.018</b>	<b>0.147</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-008AMS,MS,1,	Run Time (min):	8.50
Vial Number:	35	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 15:53	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

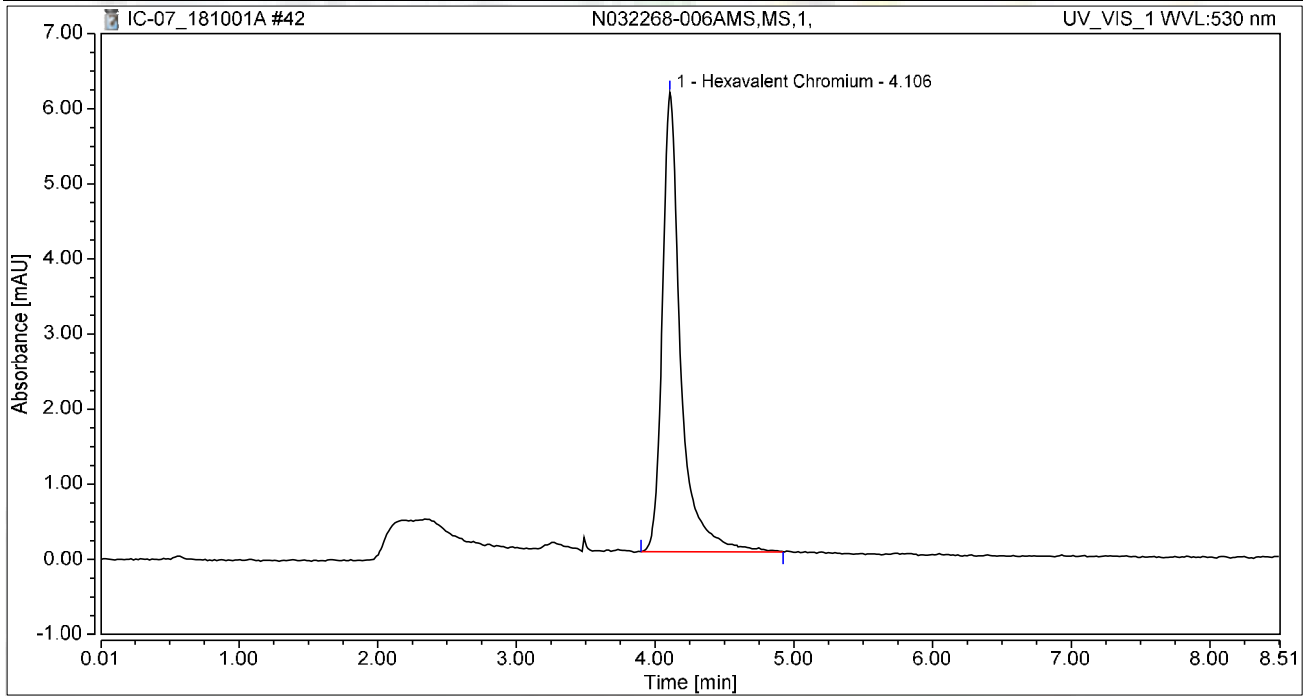
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.278	1.919	100.00	100.00	1.0996
<b>Total:</b>			<b>0.278</b>	<b>1.919</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-006AMS,MS,1,	Run Time (min):	8.50
Vial Number:	36	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 16:03	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

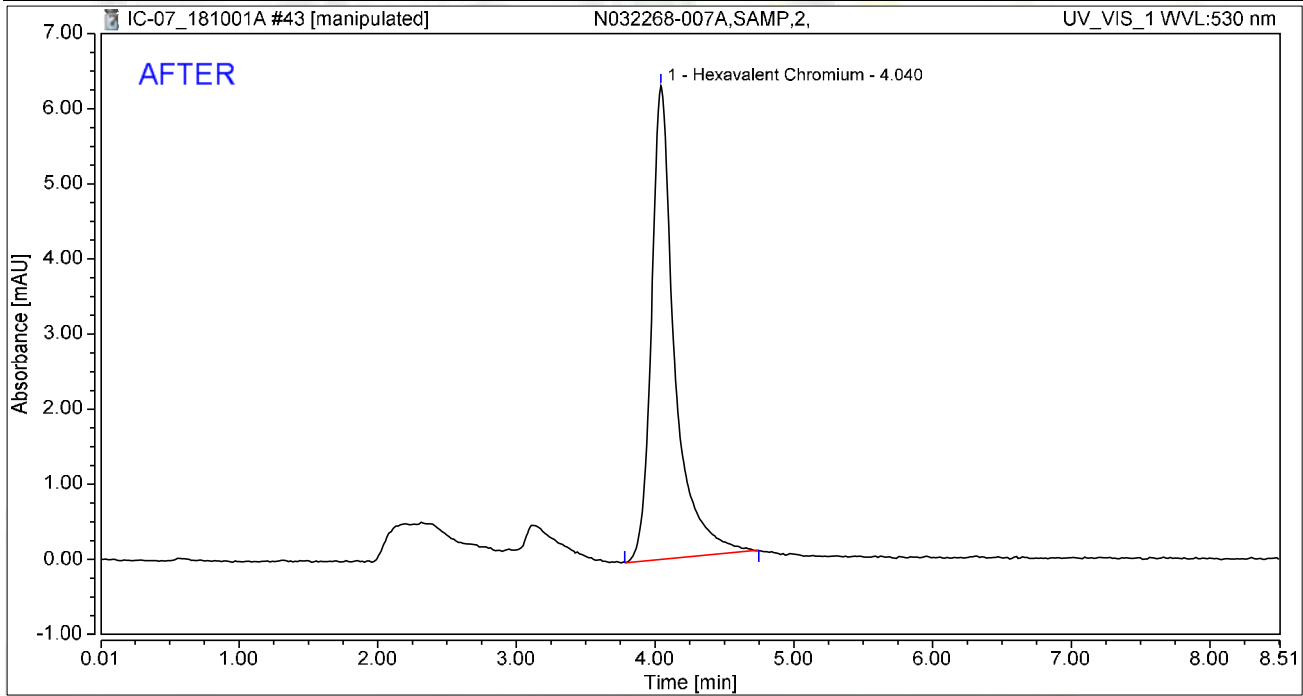
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.943	6.114	100.00	100.00	3.7297
<b>Total:</b>			<b>0.943</b>	<b>6.114</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-007A,SAMP,2,	Run Time (min):	8.50
Vial Number:	37	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 16:12	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.040	1.221	6.305	100.00	100.00	4.8305
<b>Total:</b>			<b>1.221</b>	<b>6.305</b>	<b>100.00</b>	<b>100.00</b>	

rba 10/10/2018

Reviewed by:  
*Nancy* 10/11/2018

My first report/Integration

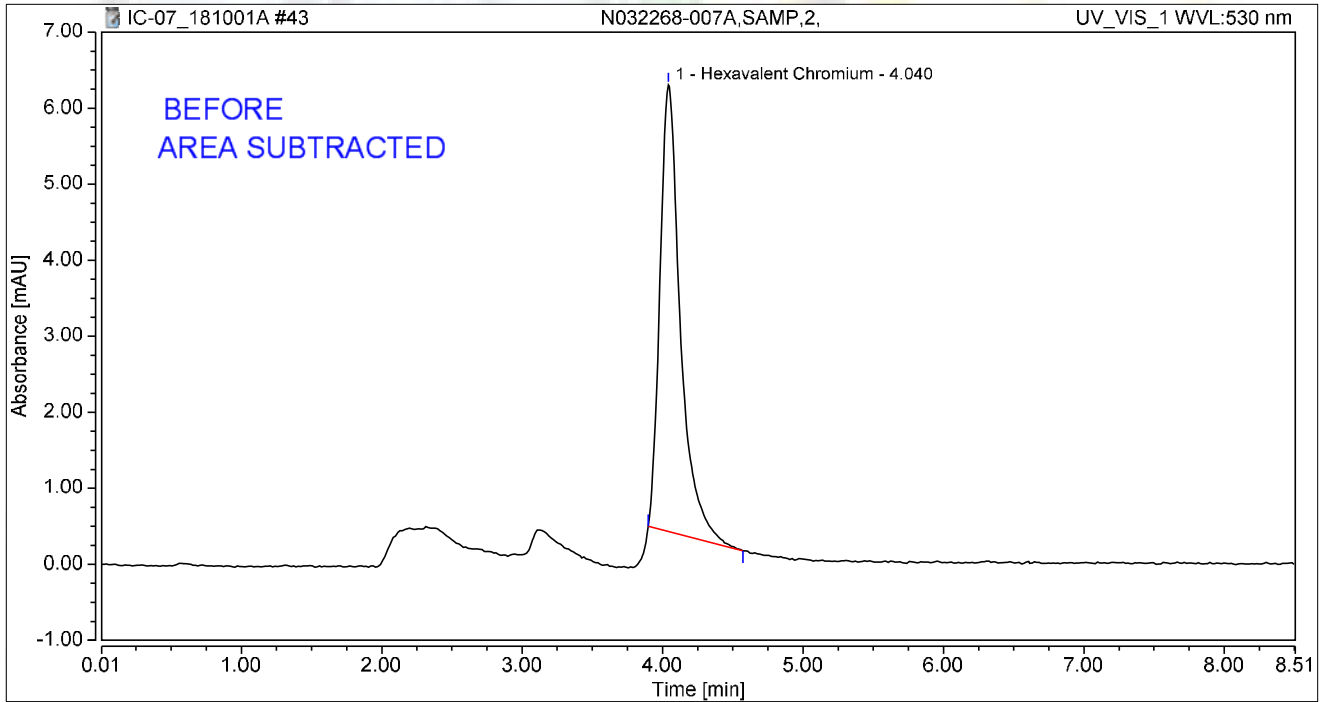
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-007A,SAMP,2,	Run Time (min):	8.50
Vial Number:	37	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 16:12	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.040	0.994	5.873	100.00	100.00	3.9311
<b>Total:</b>			<b>0.994</b>	<b>5.873</b>	<b>100.00</b>	<b>100.00</b>	

rba 10/10/2018

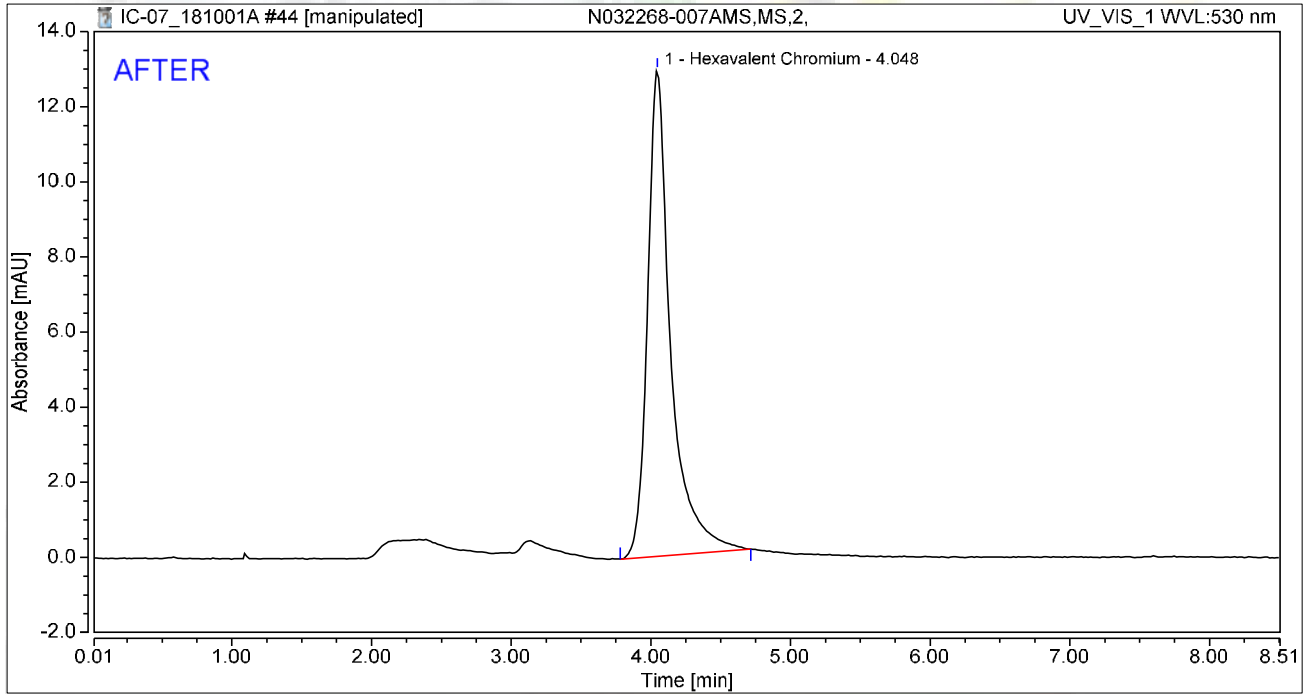


### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-007AMS,MS,2,	Run Time (min):	8.49
Vial Number:	38	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 16:22	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.048	2.491	12.952	100.00	100.00	9.8548
<b>Total:</b>			<b>2.491</b>	<b>12.952</b>	<b>100.00</b>	<b>100.00</b>	

*nba* 10/10/2018

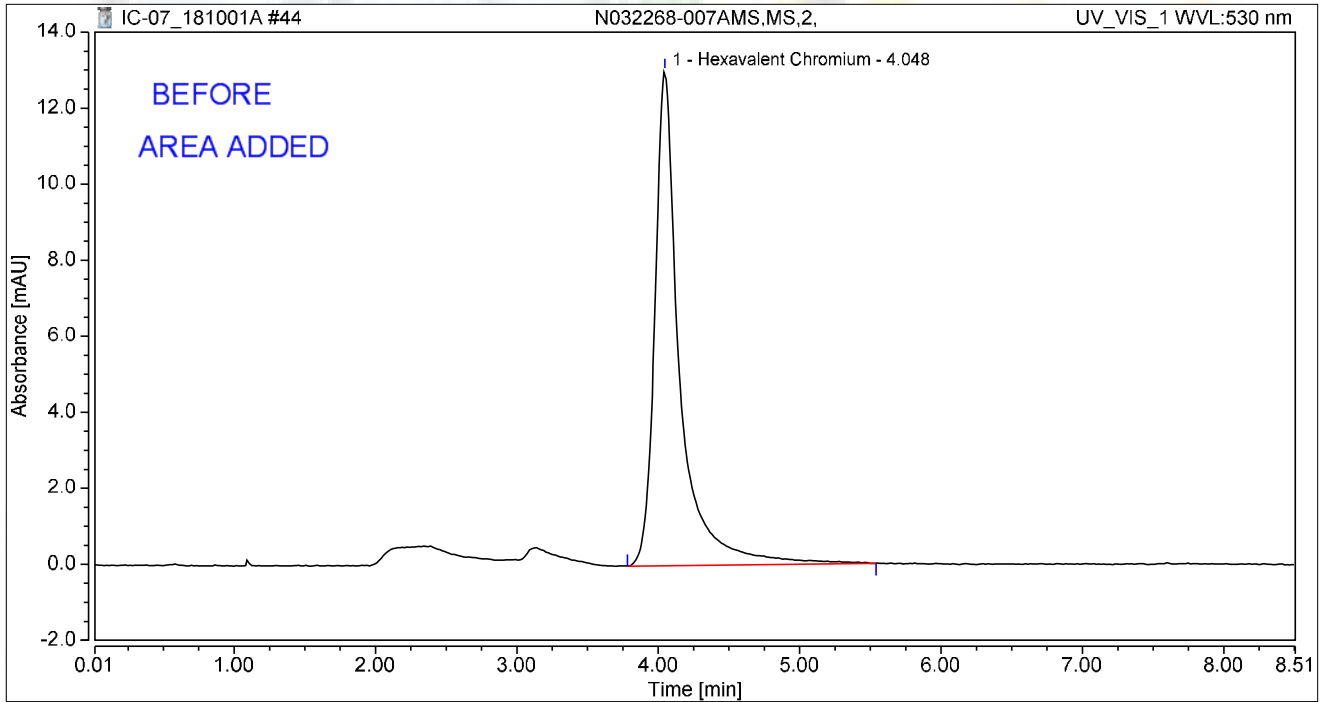
Reviewed by:  
*Money* 10/11/2018  
My first report/Integration

### Chromatogram and Results

**Injection Details**

Injection Name:	N032268-007AMS,MS,2,	Run Time (min):	8.49
Vial Number:	38	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 16:22	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.048	2.675	13.019	100.00	100.00	10.5831
<b>Total:</b>			<b>2.675</b>	<b>13.019</b>	<b>100.00</b>	<b>100.00</b>	

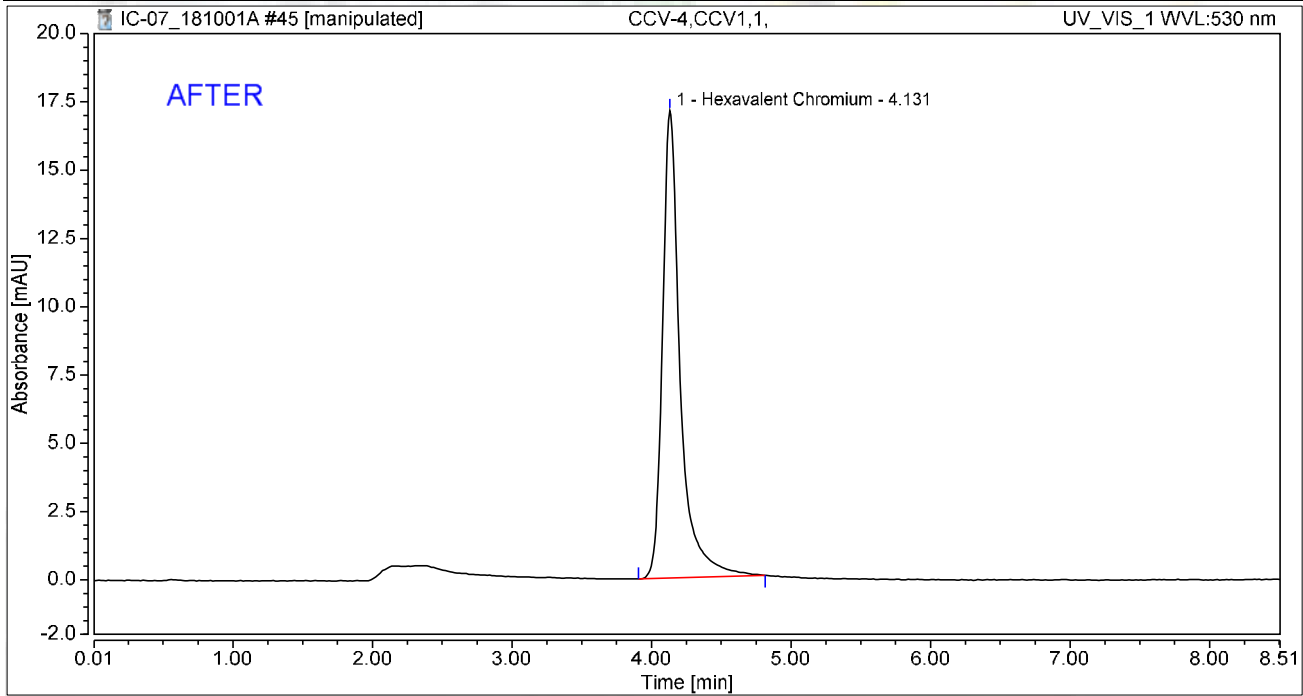
*rba* 10/10/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-4,CCV1,1,	Run Time (min):	8.50
Vial Number:	39	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 16:31	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.523	17.118	100.00	100.00	9.9828
<b>Total:</b>			<b>2.523</b>	<b>17.118</b>	<b>100.00</b>	<b>100.00</b>	

*nba* 10/10/2018

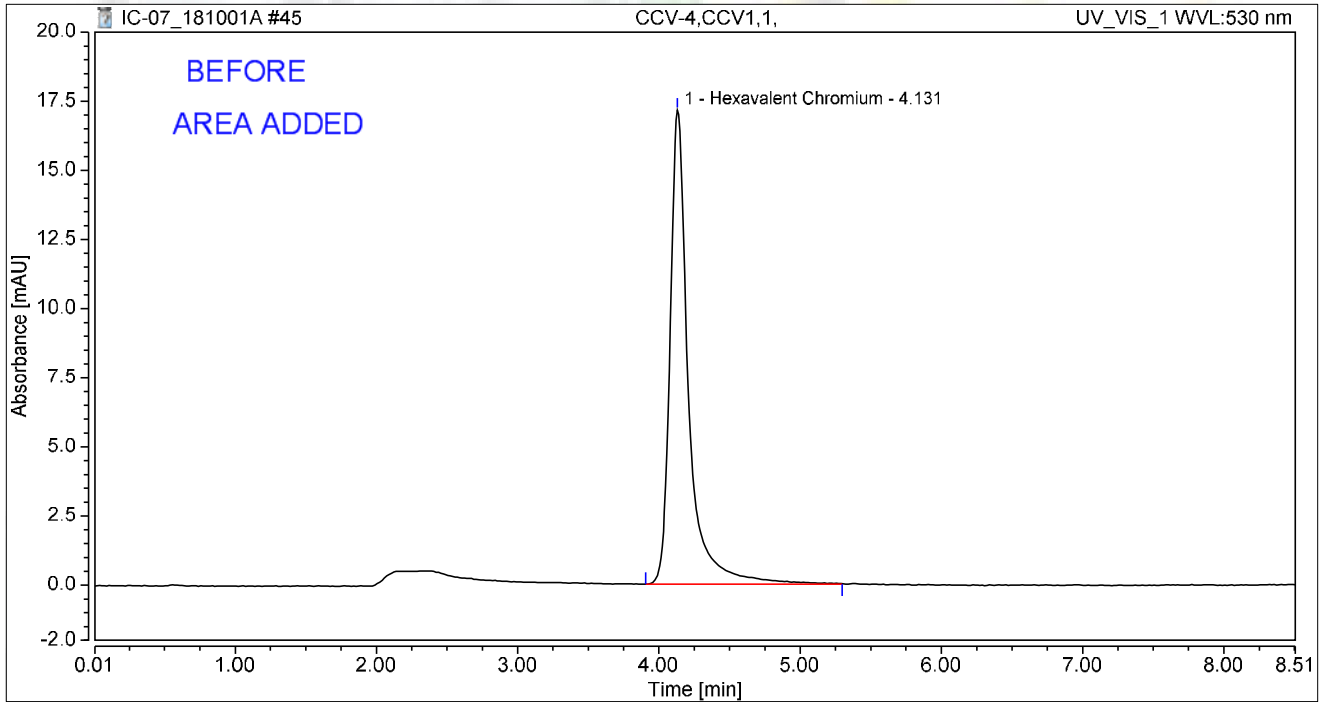
My first report  
 Reviewed by: *Sherry* 10/11/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-4,CCV1,1,	Run Time (min):	8.50
Vial Number:	39	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 16:31	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.611	17.150	100.00	100.00	10.3304
<b>Total:</b>			<b>2.611</b>	<b>17.150</b>	<b>100.00</b>	<b>100.00</b>	

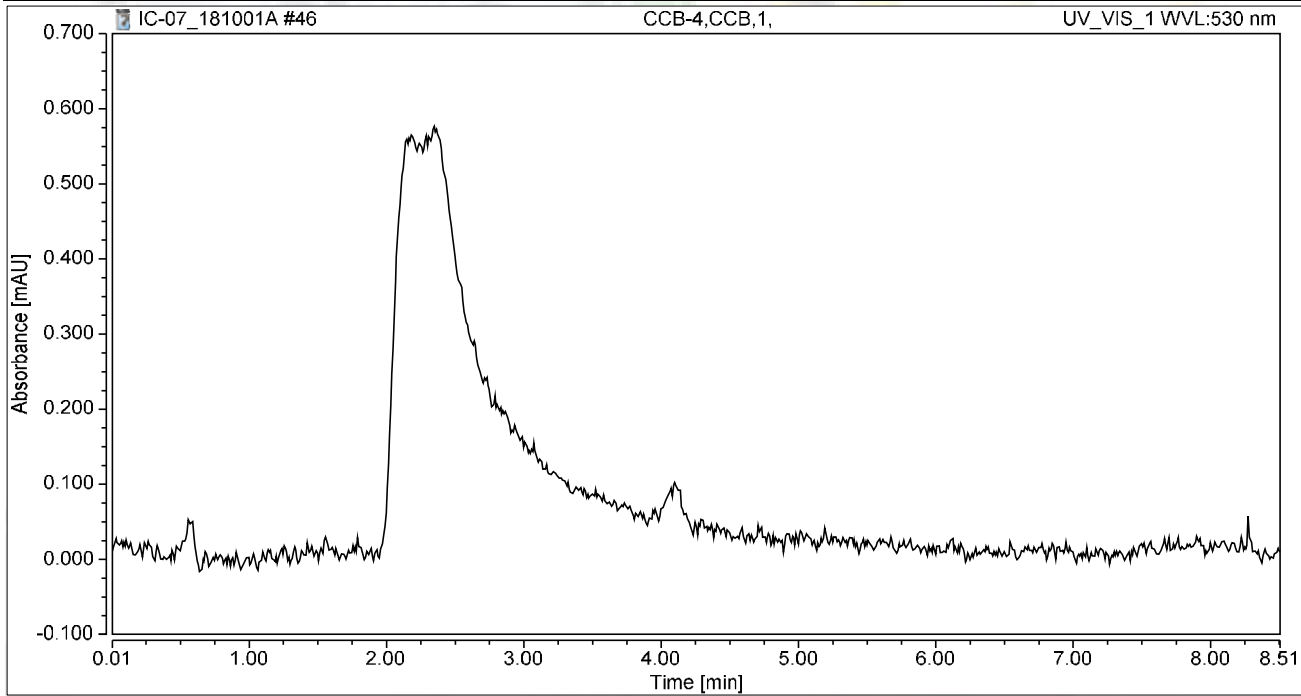
rba 10/10/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-4,CCB,1,	Run Time (min):	8.50
Vial Number:	40	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	01/Oct/18 16:41	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# SM 4500-NO3F



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Wet Chemistry Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

WC ARCUS  
 REV 1.0  
 071118

**FIRST LEVEL REVIEW:**

QC Batch Number:                     R129094                     Analyst:                     QBM                    

ASSET #:                     N032268                     Date Analyzed:                     10/8/2018                    

Method:           4500\_N03          

Initial Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis or every 24 hrs.	X					
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)	X					
3. ICV within ± 15% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.	X					
5. CCV within ± 15% of expected value.	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)	X					
<b>Sample Information</b>						
8. All samples are within linear range.	X					
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

Comments:

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer           QBM          

Date:           10/11/18          

2nd Level Reviewer           *Manny* 10/11/2018          

Date:           \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 4500N03F  
**TEST NAME:** Nitrate/Nitrite-N by Automated Cadmium Reduction  
**MATRIX:** Groundwater

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

$$\text{Nitrate/Nitrite-N, mg/L} = A * DF$$

where:

A = mg/L, instrument calculated concentration  
DF = dilution factor

For: **N032268-001C**

The concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{Nitrate/Nitrite-N} &= 0.5696 * 20 \\ &= 11.392 \text{ mg/L} \end{aligned}$$

Reporting result in two significant figures,

$$\text{Nitrate/Nitrite-N} = 11 \text{ mg/L}$$

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**EPA 353.2 NO3 as N (NO3CD) - Endpoint**

**General setup**

Measuring unit	ppm
Number of decimals	4
Stabilization time (sec)	26
Measurement time (sec)	3
Sample volume (µl)	450
Filter	546
Reagent prime	No
CD Reduction	Yes

**Limits and dilution**

Low level	-0.2
High level	4
Max linearity	4
Blank min	0
Blank max	0.049
Postdilution factor %	10
Factor Calculations	No

**Washes**

Number of final washes	6
Wash every	R1, R2

**O.D. Corrections**

Carry Over	No
Carry Over value	0.0000
Blank	No
Gain	No

**Reagents**

N.	Volume (µl)	Incubation time (sec)
1	200	102
2	300	663
3	0	0

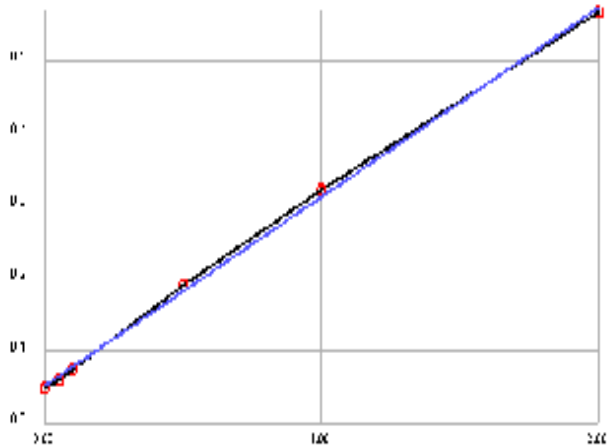
**QC**

N.	Value	Tolerance
1	1	0.1

**Calibration**

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	$y = 0.2613x + 0.0514$
Correlation	.999357



Calibrant	Energy	Set	Conc
1	0.0477	0.0000	-0.0141
2	0.0594	0.0500	0.0307
3	0.0742	0.1000	0.0874
4	0.1916	0.5000	0.5367
5	0.3217	1.0000	1.0346
6	0.5673	2.0000	1.9746

**Notes:**

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129094</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129094</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3165610</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.492	0.050	0.5000	0	98.5	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129094</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129094</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3165621</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.487	0.050	0.5000	0	97.5	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129094</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129094</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3165631</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.485	0.050	0.5000	0	97.1	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# INITIAL CALIBRATION AND CONTINUING CALIBRATION BLANK SUMMARY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129094</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R129094</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3165611</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129094</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129094</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3165622</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129094</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129094</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3165632</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Advanced Technology Laboratories, Inc.**

**3151 W. Post Rd.  
Las Vegas, NV. 89118  
702-307-2659  
702-307-2691  
[www.atl-labs.com](http://www.atl-labs.com)**

**Time start: 10-08-2018 16:15  
Time end: 10-08-2018 18:28**

		<b>EPA 353.2 NO3 as N</b>		
		ppm	Flags	OD
1	<BLANK>	17:59:13	-0.0198	0.0462
2	<BLANK>	18:00:14	-0.0194	0.0463
3	<CAL1>	18:01:08	-0.0141 [0]	0.0477
4	<CAL2>	18:02:09	0.0307 [0.05]	0.0594
5	<CAL3>	18:03:05	0.0874 [0.1]	0.0742
6	<CAL4>	18:03:59	0.5367 [0.5]	0.1916
7	<CAL5>	18:05:00	1.0346 [1]	0.3217
8	<CAL6>	18:05:56	1.9746 [2]	0.5673
9	,BLANK,BLANK,1,	<b>NOT REPORTED</b>		18:06:51   0.0759
10	,ICV,ICV,1,	18:07:51	0.4923	0.1800
11	,ICB,ICB,1,	18:08:46	0.0116	0.0544
12	,MB-H2O,MBLK,1,	18:09:42	-0.0171	0.0469
13	,LCS-H2O,LCS,1,	18:10:43	0.9833	0.3083
14	,N032299-002A,SAMP,1,	18:11:38	0.1348	0.0866
15	,N032361-001A,SAMP,1,	18:12:39	0.6534	0.2221
16	,N032326-001D,SAMP,5,	18:13:23	0.5256	0.1887
17	,N032326-001DDUP,DUP,5,	18:14:11	0.6423	0.2192
18	,N032326-002D,SAMP,5,	18:14:54	0.5623	0.1983
19	,N032326-002DMS,MS,5,	18:15:42	1.1008	0.3390
20	,N032326-002DMSD,MSD,5,	18:16:26	1.0564	0.3274
21	,BLANK,	<b>NOT REPORTED</b>		18:17:08   0.0426
22	,CCV-1,CCV,1,	18:17:51	0.4873	0.1787
23	,CCB-1,CCB,1,	18:18:41	0.0036	0.0523
24	,N032268-001C,SAMP,20,	18:19:23	0.5696	0.2002
25	,N032268-002C,SAMP,20,	18:20:06	1.0285	0.3201
26	,N032268-003C,SAMP,5,	18:20:54	0.5038	0.1830

		<b>EPA 353.2 NO3 as N</b>		
		ppm	Flags	OD
27	,N032268-004C,SAMP,5,	18:21:37	0.5807	0.2031
28	,N032268-005C,SAMP,5,	18:22:25	0.9650	0.3035
29	,N032268-006C,SAMP,5,	18:23:09	0.9921	0.3106
30	,N032268-007C,SAMP,1,	18:23:51	0.9443	0.2981
31	,N032268-009C,SAMP,20,	18:24:40	0.7151	0.2382
32	,BLANK,	<b>NOT REPORTED</b>		0.0518
33	,CCV-2,CCV,1,	18:26:05	0.4854	0.1782
34	,CCB-2,CCB,1,	18:26:55	0.0043	0.0525

**Nitrate/Nitrite as N by Cadmium Reduction Preparation and Runlog**

<b>Matrix:</b>	
Method: <u>SM 4500-NO3-F/ EPA 353.2</u>	Reagent ID #
Instrument: <u>Easy Chem Analyzer</u>	Ammonium Chloride reagent/Buffer: <u>R181005H</u>
	Color reagent: <u>R181005I</u>
	2% Copper Sulfate: <u>R181005G</u>
Date Analyzed: <u>10/8/2018</u>	Ammonium Hydroxide: <u>CINV-180831A</u>
Time Analyzed: <u>4:15 PM</u>	
Analyzed By: <u>QBM</u>	

Sample ID.	Sample Wt./Vol.	Sample pH	Std Code	Spike Amt Added (mL)	Spike Conc.(PPM)	Final Volume (mL)	Dilution (F/I)	Reading & Calculations (mg/L)	Comments
N032268-001C		7.68							
N032268-002C		7.84							
N032268-003C		7.70							
N032268-004C		6.90							
N032268-005C		7.06							
N032268-006C		8.44							
N032268-007C		8.36							
N032268-009C		7.20							
N032299-002A		7.92							
N032326-001D		7.57							
N032326-002D		8.72							
N032361-001A		8.51							

# MDL STUDY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Nitrate/Nitrite by Cadmium Reduction**  
 Method Number: SM4500NO3F  
 Analysis Date(s): 10/25,2017, 10/26/2017, 10/27/2017  
 Analyst/Technician: Quennie B. Manimtim

Matrix: **Water**  
 Unit: mg/L  
 Spike Conc: 0.05 mg/L

Analyte	#1	#2	#3	#4	#5	#6	#7	Ave	SD	t <sub>(n-1)</sub> value	MDL	PQL
Nitrate/Nitrite as N	0.0573	0.0562	0.0500	0.0730	0.0698	0.0637	0.0564	0.0609	0.0082	3.143	0.0259	0.05
<b>Method Blank</b>												
Nitrate/Nitrite as N	0.0160	0.0067	0.0064	0.0204	0.0173	0.0036	0.0083	0.0112	0.0065	3.143	0.0317	0.05
<b>MDL:</b>	<b>0.0317</b>	<b>mg/L</b>										



# EPA 6020 Dissolved



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70851  
 ASSET #: N032268

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 10/3/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)		X			X	
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits		X			X	
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X		X	X	
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

% RSD of Se in N032268-004D failed. For rerun.  
 % Rec of Cr in N032268-002D PS / MS / MSD failed, high bias. However, LCS passed.  
~~RSD of Se in sample N032268-004 > 15% = CAR 2642~~

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer Thomy 10/11/2018

Date: 10/11/18  
 Date: \_\_\_\_\_



**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70851  
 ASSET #: N032268

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 10/8/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			<del>X</del>		X
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			<del>X</del>		X
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			<del>X</del>		X
24. LCS compounds within control limits.	X			<del>X</del>		X
25. MS/MSD, RPD's are within control limits	X			<del>X</del>		X
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X			X	
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

For Se rerun only of N032268-004 but this run was not reported.

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	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer *Henry* 10/11/2018

Date: 10/11/18  
 Date: \_\_\_\_\_



# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## SAMPLE CALCULATION

**METHOD:** EPA 6020  
**TEST NAME:** Heavy Metals by ICP-MS  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Manganese concentration, in ug/L in the original sample as follows:

$$\text{Manganese , ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration  
DF = Dilution Factor  
PF = Final Volume of Digestate, mL / Amount of Sample, mL

For Sample **N032268-001D**, the concentration in ug/L is calculated as follows:

$$\text{Manganese , ug/L} = 3.13338 * 1 * (25/25)$$

$$\text{Manganese , ug/L} = 3.13338$$

Reporting results in two significant figures,

$$\text{Manganese , ug/L} = 3.1$$

# % RSD SUMMARY



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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PERCENT RSD SUMMARY: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.1	7.97	15	PASS	0.12	10.84	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.52	8.27	15	PASS	0.53	2.88	15	PASS
Std3-5/50 ppb	ICAL	1	5.17	1.17	15	PASS	5.23	1.71	15	PASS
Std4-10/100 ppb	ICAL	1	10.28	1.73	15	PASS	10.15	1.99	15	PASS
Std5-20/200 ppb	ICAL	1	20.4	0.56	15	PASS	20.48	1.09	15	PASS
Std6-40/400 ppb	ICAL	1	40.36	1.48	15	PASS	40.72	0.34	15	PASS
Std7-100/1000 ppb	ICAL	1	101.38	1.27	15	PASS	101.18	1.58	15	PASS
Std8-200/2000 ppb	ICAL	1	199.18	0.95	15	PASS	199.21	0.93	15	PASS
ICV	ICV	1	10.32	0.55	15	PASS	105.84	0.11	15	PASS
ICB	ICB	1	<0.000	N/A	15	<PQL	0.0039	286.71	15	<PQL
LLICV	CCV1	1	1.048	1.44	20	PASS	0.57	5.74	20	PASS
ICSA1	ICSA	1	0.022	13.12	15	PASS	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	21.01	0.93	15	PASS	16.65	1.97	15	PASS
MB-70851	MBLK	1	0.0016	364.46	15	<PQL	0.0054	135.61	15	<PQL
LCS-70851	LCS	1	9.67	0.52	15	PASS	104.81	0.12	15	PASS
N032268-001D	SAMP	1	8760.99	1.18	15	PASS	3.13	2.57	15	PASS
N032268-002D	SAMP	1	453.083	1.32	15	PASS	0.4	13.93	15	PASS
N032268-002D	SAMP	5	89.23	1.69	15	PASS	0.1	19.44	15	<PQL
N032268-002D-PS	PS	1	456.58	1.44	15	PASS	98.97	0.93	15	PASS
N032268-002D-MS	MS	1	458.29	2.17	15	PASS	98.77	1.67	15	PASS
N032268-002D-MSD	MSD	1	457.15	1.55	15	PASS	98.82	1.2	15	PASS
N032268-003D	SAMP	1	169.53	1.27	15	PASS	25.59	0.81	15	PASS
N032268-004D	SAMP	1	172.44	1.21	15	PASS	27.37	1.24	15	PASS
CCV1	CCV	1	19.88	1.39	15	PASS	20.55	1.49	15	PASS
CCB1	CCB	1	0.11	13.65	15	PASS	0.031	18.53	15	<PQL
N032268-005D	SAMP	1	3.27	1.88	15	PASS	47.27	0.79	15	PASS
N032268-006D	SAMP	1	2.8	0.85	15	PASS	49.96	0.89	15	PASS
N032268-007D	SAMP	1	9.55	0.76	15	PASS	285.68	1.27	15	PASS
N032268-009D	SAMP	1	169.46	0.63	15	PASS	46.71	2.33	15	PASS
N032303-001B	SAMP	1	11.088	0.62	15	PASS	<0.000	N/A	15	<PQL
N032303-002B	SAMP	1	3.7	3.23	15	PASS	<0.000	N/A	15	<PQL
N032303-003B	SAMP	1	1.93	3.7	15	PASS	<0.000	N/A	15	<PQL
N032303-004B	SAMP	1	0.42	8.38	15	PASS	52.78	0.37	15	PASS
N032303-005B	SAMP	1	3	2.27	15	PASS	<0.000	N/A	15	<PQL
N032305-001D	SAMP	1	1	2.014	15	PASS	190.56	0.48	15	PASS
CCV2	CCV	1	19.37	1.043	15	PASS	20.19	1.39	15	PASS
CCB2	CCB	1	0.026	43.61	15	<PQL	0.033	43.25	15	<PQL
N032305-002D	SAMP	1	6.99	2.19	15	PASS	16.97	0.46	15	PASS
N032268-001D	SAMP	100	88.95	0.23	15	PASS	0.048	11.8	15	PASS
N032268-002D	SAMP	25	18.4	0.83	15	PASS	0.036	50.96	15	<PQL

PERCENT RSD SUMMARY: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N032268-002D-PS	PS	5	93.11	1.41	15	PASS	20.57	1.47	15	PASS
N032268-002D-MS	MS	5	93.2	0.93	15	PASS	20.83	1.96	15	PASS
N032268-002D-MSD	MSD	5	92.79	1.34	15	PASS	20.59	0.34	15	PASS
N032268-004D	SAMP	1	173.019	0.82	15	PASS	27.57	0.073	15	PASS
N032268-007D	SAMP	1	9.71	1.23	15	PASS	289.17	1.082	15	PASS
N032268-007D	SAMP	5	2.038	3.78	15	PASS	59.46	1.95	15	PASS
N032268-004D	SAMP	1	175.21	0.36	15	PASS	27.32	0.71	15	PASS
CCV3	CCV	1	20.1	0.65	15	PASS	20.62	0.82	15	PASS
CCB3	CCB	1	0.068	17.17	15	<PQL	0.047	9.12	15	PASS
ICSA2	ICSA	1	0.064	30.27	15	<PQL	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	20.6	1.51	15	PASS	16.44	2.58	15	PASS

PERCENT RSD SUMMARY: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	75 As [2]				78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.084	25.65	15	<PQL	0.15	30.43	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.47	2.52	15	PASS	0.57	7.33	15	PASS
Std3-5/50 ppb	ICAL	1	5.073	3.82	15	PASS	5	5.12	15	PASS
Std4-10/100 ppb	ICAL	1	10.23	3.15	15	PASS	9.55	2.28	15	PASS
Std5-20/200 ppb	ICAL	1	20.56	0.85	15	PASS	19.44	4.72	15	PASS
Std6-40/400 ppb	ICAL	1	39.63	1.46	15	PASS	39.54	0.68	15	PASS
Std7-100/1000 ppb	ICAL	1	100.46	1.13	15	PASS	100.34	2.43	15	PASS
Std8-200/2000 ppb	ICAL	1	199.77	1.85	15	PASS	197.73	1.2	15	PASS
ICV	ICV	1	10.26	1.88	15	PASS	10.033	5.88	15	PASS
ICB	ICB	1	0.017	87.15	15	<PQL	<0.000	0	15	PASS
LLICV	CCV1	1	0.097	20.47	20	<PQL	0.59	25.7	20	NR!
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	0.037	89.35	15	<PQL
ICSAB1	ICSAB	1	21.2	0.76	15	PASS	18.95	3.25	15	PASS
MB-70851	MBLK	1	<0.000	N/A	15	<PQL	0.049	78.99	15	<PQL
LCS-70851	LCS	1	9.85	1.019	15	PASS	9.18	5.45	15	PASS
N032268-001D	SAMP	1	3.22	2.28	15	PASS	9.47	6.56	15	PASS
N032268-002D	SAMP	1	2.086	6.28	15	PASS	12.19	4.2	15	PASS
N032268-002D	SAMP	5	0.41	6.7	15	PASS	2.47	1.74	15	PASS
N032268-002D-PS	PS	1	12.2	3.46	15	PASS	22.11	3	15	PASS
N032268-002D-MS	MS	1	12.42	3.69	15	PASS	20.95	6.4	15	PASS
N032268-002D-MSD	MSD	1	12.083	1.34	15	PASS	22.0065	8.15	15	PASS
N032268-003D	SAMP	1	2.93	1.083	15	PASS	1.97	8.14	15	PASS
N032268-004D	SAMP	1	3.06	2.6	15	PASS	2.72	22.24	15	NR!
CCV1	CCV	1	19.69	0.59	15	PASS	18.38	5.29	15	PASS
CCB1	CCB	1	0.017	92.11	15	<PQL	0.04	1.19	15	PASS
N032268-005D	SAMP	1	5.84	0.54	15	PASS	3.38	4.14	15	PASS
N032268-006D	SAMP	1	6.23	3.078	15	PASS	3.21	14.29	15	PASS
N032268-007D	SAMP	1	1.83	1.99	15	PASS	2.1	26.15	15	NR!
N032268-009D	SAMP	1	0.75	5.18	15	PASS	8.89	3.38	15	PASS
N032303-001B	SAMP	1	0.44	0.57	15	PASS	0.36	11.9	15	PASS
N032303-002B	SAMP	1	0.87	1.7	15	PASS	0.94	9.95	15	PASS
N032303-003B	SAMP	1	1.017	5.85	15	PASS	0.66	32.15	15	NR!
N032303-004B	SAMP	1	9.89	1.38	15	PASS	0.0084	186.54	15	<PQL
N032303-005B	SAMP	1	0.59	6.44	15	PASS	0.82	21.088	15	NR!
N032305-001D	SAMP	1	1.6	7.24	15	PASS	0.05	40.6	15	<PQL
CCV2	CCV	1	19.96	2.032	15	PASS	18.59	4.99	15	PASS
CCB2	CCB	1	0.012	162.089	15	<PQL	0.034	44.97	15	<PQL
N032305-002D	SAMP	1	5.39	1.33	15	PASS	0.074	75.31	15	<PQL
N032268-001D	SAMP	100	0.047	16.77	15	<PQL	0.17	25.53	15	<PQL
N032268-002D	SAMP	25	0.11	10.97	15	PASS	0.52	30.19	15	NR!

PERCENT RSD SUMMARY: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	75 As [2]				78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N032268-002D-PS	PS	5	2.42	4.58	15	PASS	4.37	10.84	15	PASS
N032268-002D-MS	MS	5	2.4	3.97	15	PASS	4.31	10.17	15	PASS
N032268-002D-MSD	MSD	5	2.47	6.008	15	PASS	4.76	4.66	15	PASS
N032268-004D	SAMP	1	2.69	4.19	15	PASS	2.48	21.68	15	NR!
N032268-007D	SAMP	1	1.66	4.3	15	PASS	1.75	12.04	15	PASS
N032268-007D	SAMP	5	0.31	12.71	15	PASS	0.38	43.76	15	<PQL
N032268-004D	SAMP	1	2.78	4.68	15	PASS	2.54	16.61	15	NR!
CCV3	CCV	1	19.46	1.38	15	PASS	19.77	3.85	15	PASS
CCB3	CCB	1	0.0026	99.58	15	<PQL	<0.000	N/A	15	<PQL
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	0.00031	5490.7	15	<PQL
ICSAB2	ICSAB	1	20.87	3.064	15	PASS	19.45	2.94	15	PASS

PERCENT RSD SUMMARY: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.074	6.023	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.45	3.39	15	PASS
Std3-5/50 ppb	ICAL	1	4.68	1.45	15	PASS
Std4-10/100 ppb	ICAL	1	9.52	0.61	15	PASS
Std5-20/200 ppb	ICAL	1	19.68	1.42	15	PASS
Std6-40/400 ppb	ICAL	1	39.98	0.6	15	PASS
Std7-100/1000 ppb	ICAL	1	99.54	0.68	15	PASS
Std8-200/2000 ppb	ICAL	1	200.3	0.77	15	PASS
ICV	ICV	1	10.85	0.83	15	PASS
ICB	ICB	1	0.022	50.12	15	<PQL
LLICV	CCV1	1	0.51	4.52	20	PASS
ICSA1	ICSA	1	0.078	7.83	15	PASS
ICSAB1	ICSAB	1	22.21	0.79	15	PASS
MB-70851	MBLK	1	0.16	24.5	15	<PQL
LCS-70851	LCS	1	9.85	0.91	15	PASS
N032268-001D	SAMP	1	33.34	1.3	15	PASS
N032268-002D	SAMP	1	65.37	0.59	15	PASS
N032268-002D	SAMP	5	12.48	0.98	15	PASS
N032268-002D-PS	PS	1	76.88	0.98	15	PASS
N032268-002D-MS	MS	1	77.38	0.15	15	PASS
N032268-002D-MSD	MSD	1	76.64	0.23	15	PASS
N032268-003D	SAMP	1	47.18	0.77	15	PASS
N032268-004D	SAMP	1	47.3	0.14	15	PASS
CCV1	CCV	1	20.14	0.86	15	PASS
CCB1	CCB	1	0.27	15.11	15	<PQL
N032268-005D	SAMP	1	28.78	0.28	15	PASS
N032268-006D	SAMP	1	29.78	1.92	15	PASS
N032268-007D	SAMP	1	24.14	0.95	15	PASS
N032268-009D	SAMP	1	53.8	1.2	15	PASS
N032303-001B	SAMP	1	1.19	0.96	15	PASS
N032303-002B	SAMP	1	1.85	1.6	15	PASS
N032303-003B	SAMP	1	1.098	5.53	15	PASS
N032303-004B	SAMP	1	6.82	2.59	15	PASS
N032303-005B	SAMP	1	1.82	0.46	15	PASS
N032305-001D	SAMP	1	49.3	0.75	15	PASS
CCV2	CCV	1	20.095	1.058	15	PASS
CCB2	CCB	1	0.19	3.91	15	PASS
N032305-002D	SAMP	1	75.46	0.96	15	PASS
N032268-001D	SAMP	100	0.59	2.8	15	PASS
N032268-002D	SAMP	25	2.48	3.26	15	PASS



PERCENT RSD SUMMARY: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment
N032268-002D-PS	PS	5	14.92	2.031	15	PASS
N032268-002D-MS	MS	5	15.21	1.18	15	PASS
N032268-002D-MSD	MSD	5	14.95	0.54	15	PASS
N032268-004D	SAMP	1	47.059	0.26	15	PASS
N032268-007D	SAMP	1	24.22	0.41	15	PASS
N032268-007D	SAMP	5	4.85	3.052	15	PASS
N032268-004D	SAMP	1	47.12	0.44	15	PASS
CCV3	CCV	1	20.37	1.008	15	PASS
CCB3	CCB	1	0.21	22.028	15	<PQL
ICSA2	ICSA	1	0.14	16.57	15	<PQL
ICSAB2	ICSAB	1	22.83	0.48	15	PASS

PERCENT RSD SUMMARY: 181008C

Instrument ID: ICPMS-02

Sample Name	Type	DF	78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.081	36	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.49	2.05	15	PASS
Std3-5/50 ppb	ICAL	1	4.99	7.35	15	PASS
Std4-10/100 ppb	ICAL	1	10.25	3.73	15	PASS
Std5-20/200 ppb	ICAL	1	20.2	2.84	15	PASS
Std6-40/400 ppb	ICAL	1	39.99	4.45	15	PASS
Std7-100/1000 ppb	ICAL	1	101.65	0.95	15	PASS
Std8-200/2000 ppb	ICAL	1	199.15	2.64	15	PASS
ICV	ICV	1	10.12	8.91	15	PASS
ICB	ICB	1	0.017	143.93	15	<PQL
LLICV	CCV1	1	0.55	22.75	20	NR!
ICSA1	ICSA	1	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	19.36	6.73	15	PASS
LLICV	CCV1	1	0.45	9.17	20	PASS
N032268-004D	SAMP	1	2.62	7.32	15	PASS
N032268-004D	SAMP	5	0.63	20.35	15	NR!
CCV1	CCV	1	21.14	2.57	15	PASS
CCB1	CCB	1	0.021	248.07	15	<PQL
CCV2	CCV	1	19.45	1.75	15	PASS
CCB2	CCB	1	0.032	126.29	15	<PQL
CCV3	CCV	1	20.15	1.35	15	PASS
CCB3	CCB	1	<0.000	N/A	15	<PQL
ICSA2	ICSA	1	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	20.46	4.21	15	PASS

this run was not reported

*Nancy* 10/11/2018

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**INJECTION LOG: 181003A**

**Instrument ID: ICPMS-02**

Data File	Sample Name	Type	DF	Acq. Date-Time
A1003001.D	RINSE	RINSE	1	10/03/18 2:02 PM
A1003002.D	Cal Blank	IBLK	1	10/03/18 2:08 PM
A1003003.D	Std1-0.1/1 ppb	ICAL	1	10/03/18 2:13 PM
A1003004.D	Std2-0.5/5 ppb	ICAL	1	10/03/18 2:19 PM
A1003005.D	Std3-5/50 ppb	ICAL	1	10/03/18 2:24 PM
A1003006.D	Std4-10/100 ppb	ICAL	1	10/03/18 2:30 PM
A1003007.D	Std5-20/200 ppb	ICAL	1	10/03/18 2:36 PM
A1003008.D	Std6-40/400 ppb	ICAL	1	10/03/18 2:42 PM
A1003009.D	Std7-100/1000 ppb	ICAL	1	10/03/18 2:47 PM
A1003010.D	Std8-200/2000 ppb	ICAL	1	10/03/18 2:54 PM
A1003011.D	ICV	ICV	1	10/03/18 2:59 PM
A1003012.D	ICB	ICB	1	10/03/18 3:05 PM
A1003013.D	LLICV	CCV1	1	10/03/18 3:11 PM
A1003014.D	ICSA1	ICSA	1	10/03/18 3:17 PM
A1003015.D	ICSAB1	ICSAB	1	10/03/18 3:22 PM
A1003016.D	MB-70851	MBLK	1	10/03/18 3:28 PM
A1003017.D	LCS-70851	LCS	1	10/03/18 3:33 PM
A1003018.D	N032268-001D	SAMP	1	10/03/18 3:40 PM
A1003019.D	N032268-002D	SAMP	1	10/03/18 3:45 PM
A1003020.D	N032268-002D	SAMP	5	10/03/18 3:50 PM
A1003021.D	N032268-002D-PS	PS	1	10/03/18 3:56 PM
A1003022.D	N032268-002D-MS	MS	1	10/03/18 4:02 PM
A1003023.D	N032268-002D-MSD	MSD	1	10/03/18 4:07 PM
A1003024.D	N032268-003D	SAMP	1	10/03/18 4:13 PM
A1003025.D	N032268-004D	SAMP	1	10/03/18 4:18 PM
A1003026.D	CCV1	CCV	1	10/03/18 4:24 PM
A1003027.D	CCB1	CCB	1	10/03/18 4:29 PM
A1003028.D	N032268-005D	SAMP	1	10/03/18 4:35 PM
A1003029.D	N032268-006D	SAMP	1	10/03/18 4:40 PM
A1003030.D	N032268-007D	SAMP	1	10/03/18 4:46 PM
A1003031.D	N032268-009D	SAMP	1	10/03/18 4:51 PM
A1003032.D	N032303-001B	SAMP	1	10/03/18 4:57 PM
A1003033.D	N032303-002B	SAMP	1	10/03/18 5:03 PM
A1003034.D	N032303-003B	SAMP	1	10/03/18 5:09 PM
A1003035.D	N032303-004B	SAMP	1	10/03/18 5:14 PM
A1003036.D	N032303-005B	SAMP	1	10/03/18 5:20 PM
A1003037.D	N032305-001D	SAMP	1	10/03/18 5:25 PM
A1003038.D	CCV2	CCV	1	10/03/18 5:31 PM
A1003039.D	CCB2	CCB	1	10/03/18 5:36 PM
A1003040.D	N032305-002D	SAMP	1	10/03/18 5:42 PM
A1003041.D	N032268-001D	SAMP	100	10/03/18 5:47 PM
A1003042.D	N032268-002D	SAMP	25	10/03/18 5:53 PM

**INJECTION LOG: 181003A**

**Instrument ID: ICPMS-02**

<b>Data File</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq. Date-Time</b>
A1003043.D	N032268-002D-PS	PS	5	10/03/18 5:59 PM
A1003044.D	N032268-002D-MS	MS	5	10/03/18 6:04 PM
A1003045.D	N032268-002D-MSD	MSD	5	10/03/18 6:12 PM
A1003046.D	N032268-004D	SAMP	1	10/03/18 6:18 PM
A1003047.D	N032268-007D	SAMP	1	10/03/18 6:23 PM
A1003048.D	N032268-007D	SAMP	5	10/03/18 6:29 PM
A1003049.D	N032268-004D	SAMP	1	10/03/18 6:34 PM
A1003050.D	CCV3	CCV	1	10/03/18 6:40 PM
A1003051.D	CCB3	CCB	1	10/03/18 6:46 PM
A1003052.D	ICSA2	ICSA	1	10/03/18 6:51 PM
A1003053.D	ICSAB2	ICSAB	1	10/03/18 6:57 PM

**INJECTION LOG: 181008C**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
C1008001.D	RINSE	RINSE	1	10/08/18 6:32 PM
C1008002.D	Cal Blank	IBLK	1	10/08/18 6:37 PM
C1008003.D	Std1-0.1/1 ppb	ICAL	1	10/08/18 6:43 PM
C1008004.D	Std2-0.5/5 ppb	ICAL	1	10/08/18 6:48 PM
C1008005.D	Std3-5/50 ppb	ICAL	1	10/08/18 6:54 PM
C1008006.D	Std4-10/100 ppb	ICAL	1	10/08/18 6:59 PM
C1008007.D	Std5-20/200 ppb	ICAL	1	10/08/18 7:05 PM
C1008008.D	Std6-40/400 ppb	ICAL	1	10/08/18 7:11 PM
C1008009.D	Std7-100/1000 ppb	ICAL	1	10/08/18 7:16 PM
C1008010.D	Std8-200/2000 ppb	ICAL	1	10/08/18 7:22 PM
C1008011.D	ICV	ICV	1	10/08/18 7:29 PM
C1008012.D	ICB	ICB	1	10/08/18 7:34 PM
C1008013.D	LLICV	CCV1	1	10/08/18 7:40 PM
C1008014.D	ICSA1	ICSA	1	10/08/18 7:46 PM
C1008015.D	ICSAB1	ICSAB	1	10/08/18 7:51 PM
C1008016.D	LLICV	CCV1	1	10/08/18 7:57 PM
C1008017.D	N032246-005C	SAMP	1	10/08/18 8:02 PM
C1008018.D	N032246-005C	SAMP	5	10/08/18 8:08 PM
C1008019.D	N032268-004D	SAMP	1	10/08/18 8:13 PM
C1008020.D	N032268-004D	SAMP	5	10/08/18 8:20 PM
C1008021.D	N032304-001B	SAMP	5	10/08/18 8:25 PM
C1008022.D	N032304-001B	SAMP	25	10/08/18 8:30 PM
C1008023.D	N032304-001B-PS	PS	5	10/08/18 8:36 PM
C1008024.D	N032304-001B-MS	MS	5	10/08/18 8:41 PM
C1008025.D	N032304-001B-MSD	MSD	5	10/08/18 8:47 PM
C1008026.D	MB-70865	MBLK	1	10/08/18 8:53 PM
C1008027.D	CCV1	CCV	1	10/08/18 8:58 PM
C1008028.D	CCB1	CCB	1	10/08/18 9:04 PM
C1008029.D	LCS-70865	LCS	1	10/08/18 9:09 PM
C1008030.D	N032317-001B	SAMP	1	10/08/18 9:15 PM
C1008031.D	N032317-001B	SAMP	5	10/08/18 9:21 PM
C1008032.D	N032317-001B-PS	PS	1	10/08/18 9:26 PM
C1008033.D	N032317-001B-MS	MS	1	10/08/18 9:32 PM
C1008034.D	N032317-001B-MSD	MSD	1	10/08/18 9:37 PM
C1008035.D	N032317-002B	SAMP	1	10/08/18 9:43 PM
C1008036.D	N032317-003B	SAMP	1	10/08/18 9:48 PM
C1008037.D	N032317-004B	SAMP	1	10/08/18 9:54 PM
C1008038.D	N032317-005B	SAMP	1	10/08/18 10:00 PM
C1008039.D	CCV2	CCV	1	10/08/18 10:05 PM
C1008040.D	CCB2	CCB	1	10/08/18 10:11 PM
C1008041.D	N032317-006B	SAMP	1	10/08/18 10:16 PM
C1008042.D	N032317-007B	SAMP	1	10/08/18 10:22 PM

**INJECTION LOG: 181008C**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
C1008043.D	N032317-008B	SAMP	1	10/08/18 10:27 PM
C1008044.D	N032317-009B	SAMP	1	10/08/18 10:33 PM
C1008045.D	N032317-010B	SAMP	1	10/08/18 10:39 PM
C1008046.D	N032317-011B	SAMP	1	10/08/18 10:44 PM
C1008047.D	N032317-012B	SAMP	1	10/08/18 10:50 PM
C1008048.D	N032318-001B	SAMP	1	10/08/18 10:55 PM
C1008049.D	N032318-002B	SAMP	1	10/08/18 11:01 PM
C1008050.D	N032318-003B	SAMP	1	10/08/18 11:06 PM
C1008051.D	CCV3	CCV	1	10/08/18 11:12 PM
C1008052.D	CCB3	CCB	1	10/08/18 11:18 PM
C1008053.D	ICSA2	ICSA	1	10/08/18 11:23 PM
C1008054.D	ICSAB2	ICSAB	1	10/08/18 11:29 PM
C1008055.D	N032318-004B	SAMP	1	10/08/18 11:34 PM
C1008056.D	N032318-007B	SAMP	1	10/08/18 11:40 PM
C1008057.D	N032318-008B	SAMP	1	10/08/18 11:45 PM
C1008058.D	N032318-009B	SAMP	1	10/08/18 11:51 PM
C1008059.D	N032318-011B	SAMP	1	10/08/18 11:57 PM
C1008060.D	MB-70882	MBLK	1	10/09/18 12:02 AM
C1008061.D	LCS-70882	LCS	1	10/09/18 12:08 AM
C1008062.D	N032318-013B	SAMP	1	10/09/18 12:13 AM
C1008063.D	N032318-013B	SAMP	5	10/09/18 12:19 AM
C1008064.D	N032318-013B-PS	PS	1	10/09/18 12:24 AM
C1008065.D	CCV4	CCV	1	10/09/18 12:30 AM
C1008066.D	CCB4	CCB	1	10/09/18 12:36 AM
C1008067.D	N032318-013B-MS	MS	1	10/09/18 12:41 AM
C1008068.D	N032318-013B-MSD	MSD	1	10/09/18 12:47 AM
C1008069.D	N032318-014B	SAMP	1	10/09/18 12:52 AM
C1008070.D	N032328-001D	SAMP	1	10/09/18 12:58 AM
C1008071.D	N032328-002D	SAMP	1	10/09/18 1:04 AM
C1008072.D	N032348-001B	SAMP	1	10/09/18 1:09 AM
C1008073.D	N032348-002B	SAMP	1	10/09/18 1:15 AM
C1008074.D	N032348-006B	SAMP	1	10/09/18 1:20 AM
C1008075.D	N032348-007B	SAMP	1	10/09/18 1:26 AM
C1008076.D	N032348-008B	SAMP	1	10/09/18 1:31 AM
C1008077.D	CCV5	CCV	1	10/09/18 1:37 AM
C1008078.D	CCB5	CCB	1	10/09/18 1:43 AM
C1008079.D	N032348-009B	SAMP	1	10/09/18 1:48 AM
C1008080.D	N032348-010B	SAMP	1	10/09/18 1:54 AM
C1008081.D	N032348-011B	SAMP	1	10/09/18 1:59 AM
C1008082.D	N032348-012B	SAMP	1	10/09/18 2:05 AM
C1008083.D	N032348-013B	SAMP	1	10/09/18 2:10 AM
C1008084.D	N032348-014B	SAMP	1	10/09/18 2:16 AM

**INJECTION LOG: 181008C**

**Instrument ID: ICPMS-02**

<b>Data File</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq. Date-Time</b>
C1008085.D	N032348-015B	SAMP	1	10/09/18 2:22 AM
C1008086.D	N032348-016B	SAMP	1	10/09/18 2:27 AM
C1008087.D	CCV6	CCV	1	10/09/18 2:33 AM
C1008088.D	CCB6	CCB	1	10/09/18 2:38 AM
C1008089.D	ICSA3	ICSA	1	10/09/18 2:44 AM
C1008090.D	ICSAB3	ICSAB	1	10/09/18 2:50 AM



# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 10/2/2018 4:00:00

Reviewed/ Date: *Nancy* 10/11/2018

Page: 1 of 2

Prep End Date: 10/2/2018 8:00:00

Initials/ Date: *[Signature]* 10/11/2018

Prep Factor Units  
mL / mL

Temp. (°C):  
94.7

Location:  
01-10

Prep Batch 70851 Prep Code: 3010\_W\_MSDI

Technician Claire Ignacio

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70851	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70851	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N032268-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-002D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-002D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-003D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-004D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-005D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-006D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-007D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-009D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032303-001B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032303-002B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **10/2/2018 4:00:00**

Reviewed/ Date: *MM* 10/11/2018

Page: 2 of 2

Prep End Date: **10/2/2018 8:00:00**

Initials/ Date: *CI* 10/11/2018 Prep Factor Units Temp. (°C): Location:

Prep Batch **70851** Prep Code: **3010\_W\_MSDI** Technician **Claire Ignacio** mL / mL **94.7** **01-10**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N032303-003B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032303-004B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032303-005B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032305-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032305-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

# INSTRUMENT TUNING CHECK



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 3 Oct 2018 08:34:01 am  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	154229.00	0.00	
24 Mg	428023.00	0.00	
25 Mg	55923.80	0.00	
26 Mg	62634.10	0.00	
59 Co	347672.00	0.00	
115 In	560810.00	0.00	
206 Pb	190574.00	0.00	
207 Pb	167099.00	0.00	
208 Pb	412922.00	0.00	

## RSD (%)

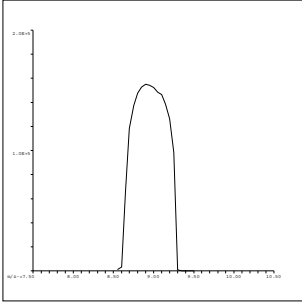
Element	Actual	Required	Flag
9 Be	0.34	5.00	
24 Mg	0.92	5.00	
25 Mg	0.67	5.00	
26 Mg	0.97	5.00	
59 Co	0.97	5.00	
115 In	0.77	5.00	
206 Pb	0.81	5.00	
207 Pb	0.84	5.00	
208 Pb	1.28	5.00	

## Ion Ratio

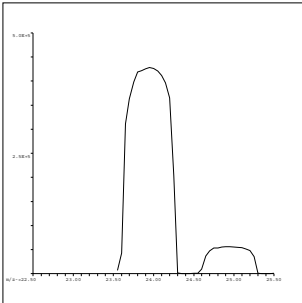
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

## Maximum Bkg. Count (CPS)

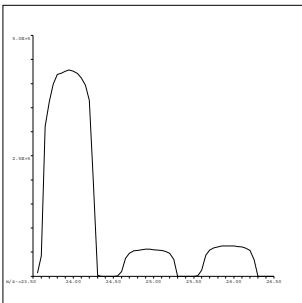
Element	Actual	Required	Flag
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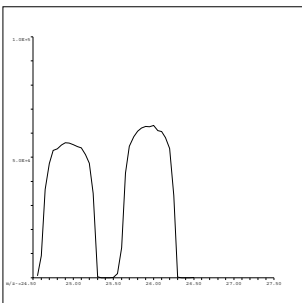
9 Be  
Mass Calib.  
Actual: 8.95  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



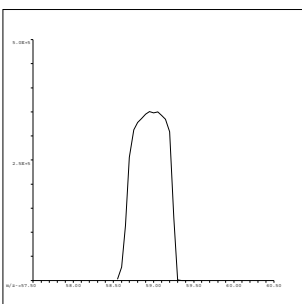
24 Mg  
Mass Calib.  
Actual: 23.95  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



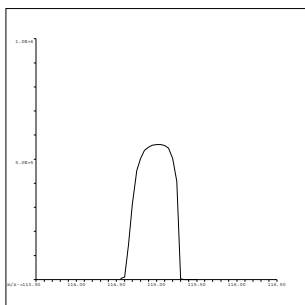
25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



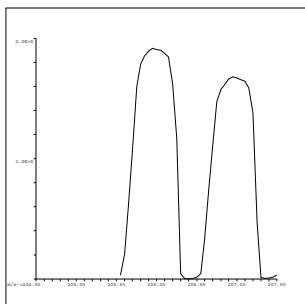
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



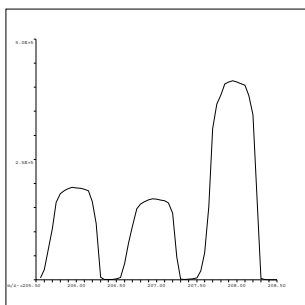
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



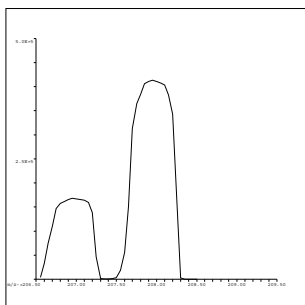
115 In  
Mass Calib.  
Actual: 115.00  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.00  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.00  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 207.95  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

QC Tune Result:Pass

## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 8 Oct 2018 06:08:27 am  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	186995.00	0.00	
24 Mg	558467.00	0.00	
25 Mg	73145.60	0.00	
26 Mg	83642.80	0.00	
59 Co	500963.00	0.00	
115 In	754543.00	0.00	
206 Pb	228866.00	0.00	
207 Pb	200182.00	0.00	
208 Pb	489275.00	0.00	

## RSD (%)

Element	Actual	Required	Flag
9 Be	1.75	5.00	
24 Mg	0.84	5.00	
25 Mg	1.31	5.00	
26 Mg	1.05	5.00	
59 Co	0.34	5.00	
115 In	0.91	5.00	
206 Pb	0.85	5.00	
207 Pb	0.77	5.00	
208 Pb	1.02	5.00	

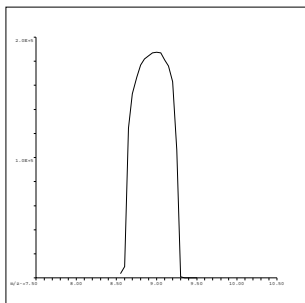
## Ion Ratio

Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

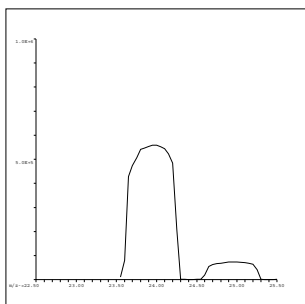
## Maximum Bkg. Count (CPS)

Element	Actual	Required	Flag
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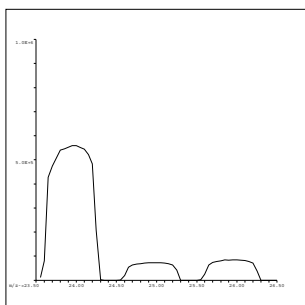




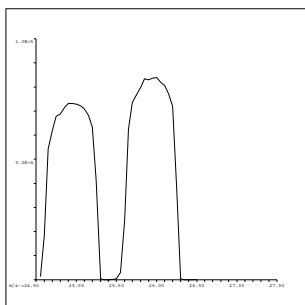
9 Be  
Mass Calib.  
Actual: 8.95  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



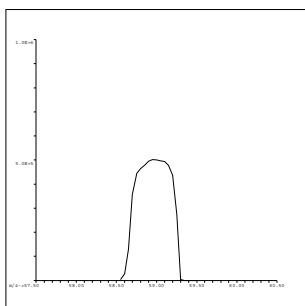
24 Mg  
Mass Calib.  
Actual: 23.95  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



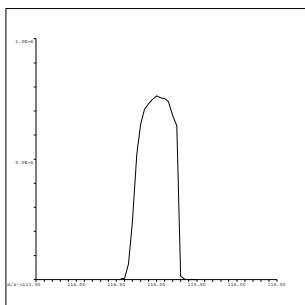
25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



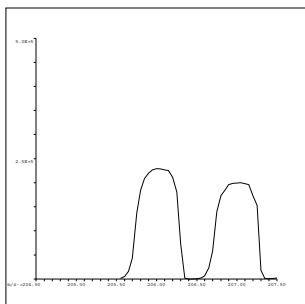
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



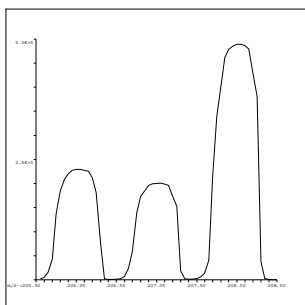
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



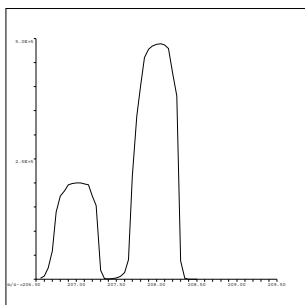
115 In  
Mass Calib.  
Actual: 115.05  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.05  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.05  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 208.05  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

QC Tune Result:Pass

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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INITIAL CALIBRATION SUMMARY: 181003A

Instrument ID: ICPMS-02

Analyte	Data File	A1003002.D	A1003003.D	A1003004.D	A1003005.D	A1003006.D	A1003007.D	A1003008.D	A1003009.D	A1003010.D	R
	Acq. Date-Time	10/03/2018 02:08 PM	10/03/2018 02:13 PM	10/03/2018 02:19 PM	10/03/2018 02:24 PM	10/03/2018 02:30 PM	10/03/2018 02:36 PM	10/03/2018 02:42 PM	10/03/2018 02:47 PM	10/03/2018 02:54 PM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	2	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std1-0.1/1 ppb	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.1/1 ug/L	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L		
45 Sc (ISTD) [ 2 ]	CPS	52776.2		50610.8	50268.6	50898.3	49493.1	49826.2	50332.3	50634.3	
55 Mn [ 2 ]	CPS	44.5		933.6	8854	17368.7	34017.2	68071.7	170769.7	338244.4	1.0000
52 Cr [ 2 ]	CPS	161.1		2039	18785.3	37667.3	72566.4	144415.3	366159.5	723676	1.0000
72 Ge (ISTD) [ 1 ]	CPS	30509.2		29057.6	29058.7	28849.4	28102.6	27867.7	28032.4	28135.9	
78 Se [ 1 ]	CPS	1.1		63.3	548.9	1041.2	2061.3	4158.5	10612.7	20989.6	1.0000
72 Ge (ISTD) [ 2 ]	CPS	32141.2	30714	31193.8	31219.4	30779.7	29827.8	30520.3	30301	30570.4	
75 As [ 2 ]	CPS	30.7	61.3	211.1	1996.1	3941.4	7643.2	15050.6	37835.1	75867.9	1.0000
103 Rh (ISTD) [ 2 ]	CPS	926847.8		898860.6	896529.1	901146.9	876591.5	874117.5	882366.1	872563.2	
95 Mo [ 2 ]	CPS	62.2		980.1	9506.5	19393.4	38936.8	78804.2	197965	393909	1.0000

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MWST-180618C

Calibration Acceptance Criteria: > 0.995 Correlation

INITIAL CALIBRATION SUMMARY: 181008C

Instrument ID: ICPMS-02

Analyte	Data File	C1008002.D	C1008004.D	C1008005.D	C1008006.D	C1008007.D	C1008008.D	C1008009.D	C1008010.D	
	Acq. Date-Time	10/08/2018 06:37 PM	10/08/2018 06:48 PM	10/08/2018 06:54 PM	10/08/2018 06:59 PM	10/08/2018 07:05 PM	10/08/2018 07:11 PM	10/08/2018 07:16 PM	10/08/2018 07:22 PM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L	R	
72 Ge ( ISTD ) [ 1 ]	CPS	45692.2	49378.7	49289.6	49551.3	47425.2	49668.5	46863.4	46670.7	
78 Se [ 1 ]	CPS	4.4	82.2	783.4	1613.5	3038.2	6294.8	15093.1	29439.5	1.0000

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MSST-180618C

Calibration Acceptance Criteria: > 0.995 Correlation

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>		Prep Date:	RunNo: <b>129092</b>					
Client ID: <b>ICV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>			Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165519</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.257	0.10	10.00	0	103	90	110				
Manganese	105.838	0.50	100.0	0	106	90	110				
Molybdenum	10.855	0.50	10.00	0	109	90	110				
Selenium	10.033	0.50	10.00	0	100	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>		Prep Date:	RunNo: <b>129092</b>					
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>			Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165521</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.097	0.10	0.1000	0	96.8	80	120				
Manganese	0.575	0.50	0.5000	0	115	80	120				
Molybdenum	0.506	0.50	0.5000	0	101	80	120				
Selenium	0.586	0.50	0.5000	0	117	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>		Prep Date:	RunNo: <b>129092</b>					
Client ID: <b>CCV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>			Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165534</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.693	0.10	20.00	0	98.5	90	110				
Manganese	20.552	0.50	20.00	0	103	90	110				
Molybdenum	20.138	0.50	20.00	0	101	90	110				
Selenium	18.379	0.50	20.00	0	91.9	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>		Prep Date:	RunNo: <b>129092</b>					
Client ID: <b>CCV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>			Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165546</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.962	0.10	20.00	0	99.8	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165546</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.193	0.50	20.00	0	101	90	110				
Molybdenum	20.095	0.50	20.00	0	100	90	110				
Selenium	18.592	0.50	20.00	0	93.0	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165558</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.460	0.10	20.00	0	97.3	90	110				
Manganese	20.623	0.50	20.00	0	103	90	110				
Molybdenum	20.367	0.50	20.00	0	102	90	110				
Selenium	19.765	0.50	20.00	0	98.8	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168781</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10.339	0.10	10.00	0	103	90	110				
Manganese	106.637	0.50	100.0	0	107	90	110				
Molybdenum	10.886	0.50	10.00	0	109	90	110				
Selenium	10.115	0.50	10.00	0	101	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168783</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	0.094	0.10	0.1000	0	94.1	80	120				
Manganese	0.566	0.50	0.5000	0	113	80	120				
Molybdenum	0.487	0.50	0.5000	0	97.3	80	120				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168786</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.445	0.50	0.5000	0	89.1	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168797</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.314	0.10	20.00	0	102	90	110				
Manganese	20.796	0.50	20.00	0	104	90	110				
Molybdenum	19.085	0.50	20.00	0	95.4	90	110				
Selenium	21.143	0.50	20.00	0	106	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

For Se only but this run was not reported

*Murphy* 10/11/2018

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168809</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.165	0.10	20.00	0	101	90	110				
Manganese	20.894	0.50	20.00	0	104	90	110				
Molybdenum	19.187	0.50	20.00	0	95.9	90	110				
Selenium	19.446	0.50	20.00	0	97.2	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168821</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.052	0.10	20.00	0	100	90	110				
Manganese	21.087	0.50	20.00	0	105	90	110				
Molybdenum	18.970	0.50	20.00	0	94.8	90	110				
Selenium	20.149	0.50	20.00	0	101	90	110				

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168835</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.129	0.10	20.00	0	101	90	110				
Manganese	20.897	0.50	20.00	0	104	90	110				
Molybdenum	19.160	0.50	20.00	0	95.8	90	110				
Selenium	19.751	0.50	20.00	0	98.8	90	110				

Sample ID <b>CCV5</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168847</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.087	0.10	20.00	0	100	90	110				
Manganese	20.718	0.50	20.00	0	104	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCV5</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168847</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	18.975	0.50	20.00	0	94.9	90	110				
Selenium	21.171	0.50	20.00	0	106	90	110				

Sample ID <b>CCV6</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168857</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	20.234	0.10	20.00	0	101	90	110				
Manganese	20.926	0.50	20.00	0	105	90	110				
Molybdenum	19.093	0.50	20.00	0	95.5	90	110				
Selenium	21.288	0.50	20.00	0	106	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165562</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.321	1.0	10.00	0	103	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165564</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.048	1.0	1.000	0	105	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165577</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	19.884	1.0	20.00	0	99.4	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165589</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	19.375	1.0	20.00	0	96.9	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165601</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.103	1.0	20.00	0	101	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL • TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165520</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165535</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	0.265	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165547</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165559</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165559</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>ICB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168782</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168798</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168810</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168822</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

For Se only but this run was not reported

*Nancy* 10/11/2018 **223**



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168822</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168836</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB5</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168848</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB6</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168858</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165563</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165578</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165590</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165602</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

**Qualifiers:**

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  - E Value above quantitation range
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- Calculations are based on raw values

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGISTS

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165522</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165523</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	21.195	0.10	20.00	0	106	80	120				
Manganese	16.651	0.50	20.00	0	83.3	80	120				
Molybdenum	22.212	0.50	20.00	0	111	80	120				
Selenium	18.950	0.50	20.00	0	94.8	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165560</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165561</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	20.873	0.10	20.00	0	104	80	120				
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**Qualifiers:**

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  - ND Not Detected at the Reporting Limit
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- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	ICSAB2	SampType:	ICSAB	TestCode:	6020_DIS	Units:	µg/L	Prep Date:		RunNo:	129092		
Client ID:	ICSAB	Batch ID:	R129092	TestNo:	EPA 6020			Analysis Date:	10/3/2018	SeqNo:	3165561		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		16.441		0.50	20.00	0	82.2	80	120				
Molybdenum		22.829		0.50	20.00	0	114	80	120				
Selenium		19.448		0.50	20.00	0	97.2	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168784</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168785</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	21.191	0.10	20.00	0	106	80	120				
Manganese	20.493	0.50	20.00	0	102	80	120				
Molybdenum	21.682	0.50	20.00	0	108	80	120				
Selenium	19.364	0.50	20.00	0	96.8	80	120				

Sample ID <b>ICSA 2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168823</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	0.218	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168824</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	21.222	0.10	20.00	0	106	80	120				
Manganese	20.891	0.50	20.00	0	104	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
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- Calculations are based on raw values

For Se only but this run was not reported



10/11/2018

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICSAB2</b>	SampType: <b>ICSAB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168824</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	21.943	0.50	20.00	0	110	80	120				
Selenium	20.458	0.50	20.00	0	102	80	120				

Sample ID <b>ICSA3</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168859</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSAB3</b>	SampType: <b>ICSAB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168860</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	21.399	0.10	20.00	0	107	80	120				
Manganese	20.603	0.50	20.00	0	103	80	120				
Molybdenum	21.908	0.50	20.00	0	110	80	120				
Selenium	21.559	0.50	20.00	0	108	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165565</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165565</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	21.010	1.0	20.00	0	105	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165603</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165604</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	20.604	1.0	20.00	0	103	80	120				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

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3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## INTERNAL STANDARD: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	52776.2	52776.2	100	PASS	70-125	32141.2	32141.2	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	51272.9	52776.2	97.15	PASS	70-125	30714	32141.2	95.56	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	50610.8	52776.2	95.9	PASS	70-125	31193.8	32141.2	97.052	PASS	70-125
Std3-5/50 ppb	ICAL	1	50268.6	52776.2	95.25	PASS	70-125	31219.4	32141.2	97.13	PASS	70-125
Std4-10/100 ppb	ICAL	1	50898.3	52776.2	96.44	PASS	70-125	30779.7	32141.2	95.76	PASS	70-125
Std5-20/200 ppb	ICAL	1	49493.1	52776.2	93.78	PASS	70-125	29827.8	32141.2	92.8	PASS	70-125
Std6-40/400 ppb	ICAL	1	49826.2	52776.2	94.41	PASS	70-125	30520.3	32141.2	94.96	PASS	70-125
Std7-100/1000 ppb	ICAL	1	50332.3	52776.2	95.37	PASS	70-125	30301	32141.2	94.27	PASS	70-125
Std8-200/2000 ppb	ICAL	1	50634.3	52776.2	95.94	PASS	70-125	30570.4	32141.2	95.11	PASS	70-125
ICV	ICV	1	59393	52776.2	112.54	PASS	70-125	36316.6	32141.2	112.99	PASS	70-125
ICB	ICB	1	50159.3	52776.2	95.042	PASS	70-125	31044.6	32141.2	96.59	PASS	70-125
LLICV	CCV1	1	55032.6	52776.2	104.28	PASS	70-125	32968.4	32141.2	102.57	PASS	70-125
ICSA1	ICSA	1	58379.3	52776.2	110.62	PASS	70-125	33875.9	32141.2	105.4	PASS	70-125
ICSAB1	ICSAB	1	60161.2	52776.2	113.99	PASS	70-125	35492.7	32141.2	110.43	PASS	70-125
MB-70851	MBLK	1	57799.8	52776.2	109.52	PASS	70-125	35409.1	32141.2	110.17	PASS	70-125
LCS-70851	LCS	1	57874.2	52776.2	109.66	PASS	70-125	34735.4	32141.2	108.07	PASS	70-125
N032268-001D	SAMP	1	49460.7	52776.2	93.72	PASS	70-125	28623.5	32141.2	89.055	PASS	70-125
N032268-002D	SAMP	1	53590	52776.2	101.54	PASS	70-125	31199.4	32141.2	97.07	PASS	70-125
N032268-002D	SAMP	5	58020.4	52776.2	109.94	PASS	70-125	34383.5	32141.2	106.98	PASS	70-125
N032268-002D-PS	PS	1	55552.1	52776.2	105.26	PASS	70-125	32622.1	32141.2	101.5	PASS	70-125
N032268-002D-MS	MS	1	55494	52776.2	105.15	PASS	70-125	32165.7	32141.2	100.08	PASS	70-125
N032268-002D-MSD	MSD	1	57535.3	52776.2	109.02	PASS	70-125	33675.4	32141.2	104.77	PASS	70-125
N032268-003D	SAMP	1	52029.7	52776.2	98.59	PASS	70-125	28890.7	32141.2	89.89	PASS	70-125
N032268-004D	SAMP	1	54099.4	52776.2	102.51	PASS	70-125	29099.9	32141.2	90.54	PASS	70-125
CCV1	CCV	1	65198.9	52776.2	123.54	PASS	70-125	39055	32141.2	121.51	PASS	70-125
CCB1	CCB	1	61049	52776.2	115.68	PASS	70-125	36670.7	32141.2	114.09	PASS	70-125
N032268-005D	SAMP	1	56310.3	52776.2	106.7	PASS	70-125	33270.2	32141.2	103.51	PASS	70-125
N032268-006D	SAMP	1	58170.9	52776.2	110.22	PASS	70-125	34097.4	32141.2	106.09	PASS	70-125
N032268-007D	SAMP	1	55587.8	52776.2	105.33	PASS	70-125	31275	32141.2	97.31	PASS	70-125
N032268-009D	SAMP	1	61041.2	52776.2	115.66	PASS	70-125	34914.6	32141.2	108.63	PASS	70-125
N032303-001B	SAMP	1	60264	52776.2	114.19	PASS	70-125	35658.5	32141.2	110.94	PASS	70-125
N032303-002B	SAMP	1	55944.5	52776.2	106	PASS	70-125	31843.9	32141.2	99.075	PASS	70-125
N032303-003B	SAMP	1	52658.1	52776.2	99.78	PASS	70-125	30804.1	32141.2	95.84	PASS	70-125
N032303-004B	SAMP	1	55033.5	52776.2	104.28	PASS	70-125	33050.9	32141.2	102.83	PASS	70-125
N032303-005B	SAMP	1	51801.2	52776.2	98.15	PASS	70-125	30655.1	32141.2	95.38	PASS	70-125
N032305-001D	SAMP	1	48803.4	52776.2	92.47	PASS	70-125	27521.6	32141.2	85.63	PASS	70-125
CCV2	CCV	1	58810.9	52776.2	111.43	PASS	70-125	35192	32141.2	109.49	PASS	70-125
CCB2	CCB	1	55849.8	52776.2	105.82	PASS	70-125	33437.1	32141.2	104.03	PASS	70-125
N032305-002D	SAMP	1	49554.3	52776.2	93.9	PASS	70-125	28000.3	32141.2	87.12	PASS	70-125
N032268-001D	SAMP	100	59369.5	52776.2	112.49	PASS	70-125	35267.7	32141.2	109.73	PASS	70-125
N032268-002D	SAMP	25	57548.7	52776.2	109.04	PASS	70-125	34380.3	32141.2	106.97	PASS	70-125

INTERNAL STANDARD: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
N032268-002D-PS	PS	5	55058.2	52776.2	104.32	PASS	70-125	32779.2	32141.2	101.98	PASS	70-125
N032268-002D-MS	MS	5	54370.6	52776.2	103.02	PASS	70-125	32357.2	32141.2	100.67	PASS	70-125
N032268-002D-MSD	MSD	5	54722.5	52776.2	103.69	PASS	70-125	32210.2	32141.2	100.21	PASS	70-125
N032268-004D	SAMP	1	45699.9	52776.2	86.59	PASS	70-125	25138.8	32141.2	78.21	PASS	70-125
N032268-007D	SAMP	1	48282.8	52776.2	91.49	PASS	70-125	27590.6	32141.2	85.84	PASS	70-125
N032268-007D	SAMP	5	53259.9	52776.2	100.92	PASS	70-125	31586.7	32141.2	98.27	PASS	70-125
N032268-004D	SAMP	1	44667.3	52776.2	84.64	PASS	70-125	24794.9	32141.2	77.14	PASS	70-125
CCV3	CCV	1	53207.6	52776.2	100.82	PASS	70-125	32616.6	32141.2	101.48	PASS	70-125
CCB3	CCB	1	51686.3	52776.2	97.93	PASS	70-125	31110.3	32141.2	96.79	PASS	70-125
ICSA2	ICSA	1	51574.9	52776.2	97.72	PASS	70-125	30107.3	32141.2	93.67	PASS	70-125
ICSAB2	ICSAB	1	52094.4	52776.2	98.71	PASS	70-125	30296.5	32141.2	94.26	PASS	70-125

## INTERNAL STANDARD: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]					103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	30509.2	30509.2	100	PASS	70-125	926847.8	926847.8	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	29443.9	30509.2	96.51	PASS	70-125	900375.7	926847.8	97.14	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	29057.6	30509.2	95.24	PASS	70-125	898860.6	926847.8	96.98	PASS	70-125
Std3-5/50 ppb	ICAL	1	29058.7	30509.2	95.25	PASS	70-125	896529.1	926847.8	96.73	PASS	70-125
Std4-10/100 ppb	ICAL	1	28849.4	30509.2	94.56	PASS	70-125	901146.9	926847.8	97.23	PASS	70-125
Std5-20/200 ppb	ICAL	1	28102.6	30509.2	92.11	PASS	70-125	876591.5	926847.8	94.58	PASS	70-125
Std6-40/400 ppb	ICAL	1	27867.7	30509.2	91.34	PASS	70-125	874117.5	926847.8	94.31	PASS	70-125
Std7-100/1000 ppb	ICAL	1	28032.4	30509.2	91.88	PASS	70-125	882366.1	926847.8	95.2	PASS	70-125
Std8-200/2000 ppb	ICAL	1	28135.9	30509.2	92.22	PASS	70-125	872563.2	926847.8	94.14	PASS	70-125
ICV	ICV	1	33410.4	30509.2	109.51	PASS	70-125	1049177.4	926847.8	113.2	PASS	70-125
ICB	ICB	1	27821	30509.2	91.19	PASS	70-125	880720.3	926847.8	95.023	PASS	70-125
LLICV	CCV1	1	31651.3	30509.2	103.74	PASS	70-125	948121.3	926847.8	102.3	PASS	70-125
ICSA1	ICSA	1	31516.6	30509.2	103.3	PASS	70-125	902383.5	926847.8	97.36	PASS	70-125
ICSAB1	ICSAB	1	33743.3	30509.2	110.6	PASS	70-125	923638	926847.8	99.65	PASS	70-125
MB-70851	MBLK	1	34937	30509.2	114.51	PASS	70-125	984394.7	926847.8	106.21	PASS	70-125
LCS-70851	LCS	1	35561.7	30509.2	116.56	PASS	70-125	951084.4	926847.8	102.61	PASS	70-125
N032268-001D	SAMP	1	26364.1	30509.2	86.41	PASS	70-125	751163.4	926847.8	81.045	PASS	70-125
N032268-002D	SAMP	1	28267.4	30509.2	92.65	PASS	70-125	799587.4	926847.8	86.27	PASS	70-125
N032268-002D	SAMP	5	34310	30509.2	112.46	PASS	70-125	906124.3	926847.8	97.76	PASS	70-125
N032268-002D-PS	PS	1	31936.4	30509.2	104.68	PASS	70-125	826748.5	926847.8	89.2	PASS	70-125
N032268-002D-MS	MS	1	31879.4	30509.2	104.49	PASS	70-125	822639.1	926847.8	88.76	PASS	70-125
N032268-002D-MSD	MSD	1	32026.5	30509.2	104.97	PASS	70-125	849198.3	926847.8	91.62	PASS	70-125
N032268-003D	SAMP	1	25889	30509.2	84.86	PASS	70-125	713979.6	926847.8	77.033	PASS	70-125
N032268-004D	SAMP	1	25759.8	30509.2	84.43	PASS	70-125	726279.3	926847.8	78.36	PASS	70-125
CCV1	CCV	1	38632	30509.2	126.62	PASS	70-125	1054507	926847.8	113.77	PASS	70-125
CCB1	CCB	1	35836.6	30509.2	117.46	PASS	70-125	983598.3	926847.8	106.12	PASS	70-125
N032268-005D	SAMP	1	32612.1	30509.2	106.89	PASS	70-125	845249.3	926847.8	91.2	PASS	70-125
N032268-006D	SAMP	1	33489.5	30509.2	109.77	PASS	70-125	862187.6	926847.8	93.024	PASS	70-125
N032268-007D	SAMP	1	28581.2	30509.2	93.68	PASS	70-125	778630.5	926847.8	84.009	PASS	70-125
N032268-009D	SAMP	1	33193.2	30509.2	108.8	PASS	70-125	871103	926847.8	93.99	PASS	70-125
N032303-001B	SAMP	1	34477	30509.2	113.01	PASS	70-125	877686.8	926847.8	94.7	PASS	70-125
N032303-002B	SAMP	1	29482.8	30509.2	96.64	PASS	70-125	791771.6	926847.8	85.43	PASS	70-125
N032303-003B	SAMP	1	29210.1	30509.2	95.74	PASS	70-125	770416.1	926847.8	83.12	PASS	70-125
N032303-004B	SAMP	1	32399.4	30509.2	106.2	PASS	70-125	846739.6	926847.8	91.36	PASS	70-125
N032303-005B	SAMP	1	30504.8	30509.2	99.99	PASS	70-125	775698	926847.8	83.69	PASS	70-125
N032305-001D	SAMP	1	24688.2	30509.2	80.92	PASS	70-125	689036	926847.8	74.34	PASS	70-125
CCV2	CCV	1	35130.8	30509.2	115.15	PASS	70-125	945859.1	926847.8	102.05	PASS	70-125
CCB2	CCB	1	33999.5	30509.2	111.44	PASS	70-125	907965.5	926847.8	97.96	PASS	70-125
N032305-002D	SAMP	1	24712.6	30509.2	81	PASS	70-125	692149	926847.8	74.68	PASS	70-125
N032268-001D	SAMP	100	35098.4	30509.2	115.04	PASS	70-125	951387.3	926847.8	102.65	PASS	70-125
N032268-002D	SAMP	25	34219.8	30509.2	112.16	PASS	70-125	915184.4	926847.8	98.74	PASS	70-125

INTERNAL STANDARD: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]					103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
N032268-002D-PS	PS	5	31807.1	30509.2	104.25	PASS	70-125	857020.7	926847.8	92.47	PASS	70-125
N032268-002D-MS	MS	5	31848.4	30509.2	104.39	PASS	70-125	844968.7	926847.8	91.17	PASS	70-125
N032268-002D-MSD	MSD	5	33244.4	30509.2	108.97	PASS	70-125	850114	926847.8	91.72	PASS	70-125
N032268-004D	SAMP	1	22226.8	30509.2	72.85	PASS	70-125	634001.7	926847.8	68.4	NR!	70-125
N032268-007D	SAMP	1	25580.6	30509.2	83.85	PASS	70-125	698811.8	926847.8	75.4	PASS	70-125
N032268-007D	SAMP	5	30485.8	30509.2	99.92	PASS	70-125	803831.1	926847.8	86.73	PASS	70-125
N032268-004D	SAMP	1	21682.8	30509.2	71.07	PASS	70-125	621860.5	926847.8	67.094	NR!	70-125
CCV3	CCV	1	31633.6	30509.2	103.69	PASS	70-125	881904	926847.8	95.15	PASS	70-125
CCB3	CCB	1	31329.5	30509.2	102.69	PASS	70-125	857775.2	926847.8	92.55	PASS	70-125
ICSA2	ICSA	1	30171.8	30509.2	98.89	PASS	70-125	781258.5	926847.8	84.29	PASS	70-125
ICSAB2	ICSAB	1	29727.8	30509.2	97.44	PASS	70-125	780115.2	926847.8	84.17	PASS	70-125

INTERNAL STANDARD: 181008C

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	45692.2	45692.2	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	53180.7	45692.2	116.39	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	49378.7	45692.2	108.07	PASS	70-125
Std3-5/50 ppb	ICAL	1	49289.6	45692.2	107.87	PASS	70-125
Std4-10/100 ppb	ICAL	1	49551.3	45692.2	108.45	PASS	70-125
Std5-20/200 ppb	ICAL	1	47425.2	45692.2	103.79	PASS	70-125
Std6-40/400 ppb	ICAL	1	49668.5	45692.2	108.7	PASS	70-125
Std7-100/1000 ppb	ICAL	1	46863.4	45692.2	102.56	PASS	70-125
Std8-200/2000 ppb	ICAL	1	46670.7	45692.2	102.14	PASS	70-125
ICV	ICV	1	41589.2	45692.2	91.02	PASS	70-125
ICB	ICB	1	44382.1	45692.2	97.13	PASS	70-125
LLICV	CCV1	1	45146.3	45692.2	98.81	PASS	70-125
ICSA1	ICSA	1	48581.8	45692.2	106.32	PASS	70-125
ICSAB1	ICSAB	1	51646.7	45692.2	113.03	PASS	70-125
LLICV	CCV1	1	50852	45692.2	111.29	PASS	70-125
N032268-004D	SAMP	1	20368.8	45692.2	44.58	NR!	70-125
N032268-004D	SAMP	5	26157.2	45692.2	57.25	NR!	70-125
CCV1	CCV	1	45916.4	45692.2	100.49	PASS	70-125
CCB1	CCB	1	40454.2	45692.2	88.54	PASS	70-125
CCV2	CCV	1	46173.8	45692.2	101.05	PASS	70-125
CCB2	CCB	1	38739.9	45692.2	84.78	PASS	70-125
CCV3	CCV	1	46992.7	45692.2	102.85	PASS	70-125
CCB3	CCB	1	40287.1	45692.2	88.17	PASS	70-125
ICSA2	ICSA	1	42008.1	45692.2	91.94	PASS	70-125
ICSAB2	ICSAB	1	44756.3	45692.2	97.95	PASS	70-125

this run was not reported

*Nancy* 10/11/2018

# SERIAL DILUTION/ POST DIGESTION SPIKE



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N032268  
Test Method: EPA 6020  
Analysis Date: 10/3/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70851

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to several analytes. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032268-002D DT 5X	Arsenic	ug/L	2.031854	NA	2.085943	2.59%	10
N032268-002D DT 25X	Chromium	ug/L	460.0147	PASS	446.1504	3.11%	10
N032268-002D DT 5X	Manganese	ug/L	0	NA	0.401962	100.00%	10
N032268-002D DT 5X	Molybdenum	ug/L	62.37609	PASS	65.3735	4.59%	10

Note: NA - Not applicable



**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N032268  
Test Method: EPA 6020  
Analysis Date: ~~10/8/2018~~  
10/3/18

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70851

Comments:


Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Se. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
<u>N032304-001B DT 5X</u>	Selenium	ug/L	12.355	N.A.	12.19296	1.33%	10

N032268-002D DT 5x

Note: NA - Not applicable

 10/11/2018

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>N032268-002D-PS</b>	SampType: <b>PS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165529</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	12.195	0.10	10.00	2.086	101	80	120				
Manganese	98.968	0.50	100.0	0.4020	98.6	80	120				
Molybdenum	76.879	0.50	10.00	65.37	115	80	120				
Selenium	22.112	0.50	10.00	12.19	99.2	80	120				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032268  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID	N032268-002D-PS	SampType:	PS	TestCode:	6020DIS_CrP		Units:	µg/L		Prep Date:	RunNo: 129092		
Client ID:	ZZZZZZ	Batch ID:	70851	TestNo:	EPA 6020	EPA 3010A		Analysis Date:	10/3/2018		SeqNo: 3165594		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium		465.568		5.0	10.00	446.2	194	80	120				S

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# CORRECTIVE ACTION DOCUMENTATION



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## ASSET Laboratories

### Corrective Action Report (CAR)

**Date Initiated:** 11-Oct-18

**Corrective Action Report ID:** 2642

**Initiated By:** Claire Ignacio

**Department:** ME-3(ICPMS)

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#### Corrective Action Description

**CAR Summary:** RSD failed criteria.

**Description of Nonconformance:** RSD of Selenium for sample N032268-004 is greater than 15% criteria.

**Description of Corrective Action:** The sample was injected/analyzed for several times. The three injections @ 1x dilution from the first analysis have RSD >15% and passing IS while the two injections @ 1x & 5x dilutions from the second run have passing RSD but failing IS. All readings were comparable. Reported the result with the lowest RSD at 16.6%.

**Performed By:** Claire Ignacio

**Completion Date:**

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#### Client Notification

**Client Notification Required:** ~~No~~

**Notified By:**

**Comment:**

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#### Quality Assurance Review

**Corrective Action:** Deficiency

**Further Action required by QA:** none

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#### Approval and Closure

CAR Closed By: \_\_\_\_\_

Close Date:

QA Reviewed By:  10/11/2018

QA Date:

# MDL STUDY



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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Amount of Sample:** 25 mL  
**Units:** ug/L

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	LOD	PQL
ANTIMONY	0.50	0.525	0.514	0.473	0.500	0.492	0.486	0.530	0.0210	0.0660	0.100	0.50
ARSENIC	0.10	0.099	0.104	0.087	0.048	0.060	0.069	0.120	0.0259	0.0813	0.080	0.10
BARIUM	1.00	1.041	1.059	1.052	1.011	0.967	0.957	1.023	0.0403	0.1264	0.250	1.00
BERYLLIUM	0.50	0.469	0.476	0.473	0.495	0.480	0.488	0.507	0.0135	0.0424	0.100	0.50
CADMIUM	0.50	0.515	0.513	0.492	0.534	0.499	0.483	0.508	0.0168	0.0527	0.100	0.50
CHROMIUM	1.00	0.979	0.986	0.940	0.990	0.946	0.978	0.977	0.0197	0.0618	0.250	1.00
COBALT	0.50	0.499	0.489	0.486	0.488	0.465	0.502	0.505	0.0135	0.0424	0.100	0.50
COPPER	1.00	1.110	0.667	1.039	1.060	1.006	1.099	1.075	0.1544	0.4850	0.500	1.00
IRON	10.00	10.873	10.802	10.142	9.991	9.846	9.852	10.596	0.4463	1.4014	2.500	10.00
LEAD	1.00	0.928	0.931	0.899	0.996	0.990	0.987	0.997	0.0406	0.1274	0.250	1.00
MANGANESE	0.50	0.577	0.588	0.561	0.566	0.517	0.541	0.520	0.0276	0.0866	0.100	0.50
MOLYBDENUM	0.50	0.514	0.504	0.467	0.478	0.456	0.433	0.527	0.0338	0.1061	0.250	0.50
NICKEL	1.00	0.961	0.965	0.977	0.907	0.914	0.962	1.075	0.0551	0.1731	0.250	1.00
SELENIUM	0.50	0.450	0.478	0.419	0.693	0.707	0.495	0.555	0.1155	0.3628	0.400	0.50
SILVER	0.50	0.558	0.511	0.490	0.542	0.458	0.490	0.684	0.0745	0.2340	0.250	0.50
THALLIUM	0.50	0.437	0.428	0.408	0.538	0.446	0.438	0.525	0.0504	0.1583	0.250	0.50
URANIUM	0.50	0.478	0.467	0.461	0.517	0.510	0.521	0.521	0.0267	0.0838	0.100	0.50
VANADIUM	1.00	0.950	0.969	0.900	0.844	0.829	0.848	1.053	0.0820	0.2574	0.500	1.00
ZINC	10.00	11.259	11.279	10.915	9.620	9.849	9.745	10.241	0.7235	2.2717	2.500	10.00



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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Units:** ug/L

Analyte	MDLs	MDLb	MDL	LOD	PQL
ANTIMONY	0.0660	0.1564	0.1564	0.300	0.50
ARSENIC	0.0813	0.0387	0.0813	0.080	0.10
BARIUM	0.1264	0.1497	0.1497	0.300	1.00
BERYLLIUM	0.0424	0.0153	0.0424	0.100	0.50
CADMIUM	0.0527	0.0060	0.0527	0.100	0.50
CHROMIUM	0.0618	0.1298	0.1298	0.300	1.00
COBALT	0.0424	0.0339	0.0424	0.100	0.50
COPPER	0.4850	0.5459	0.5459	0.600	1.00
IRON	1.4014	4.3484	4.3484	5.000	10.00
LEAD	0.1274	0.1008	0.1274	0.300	1.00
MANGANESE	0.0866	0.2552	0.2552	0.300	0.50
MOLYBDENUM	0.1061	0.2149	0.2149	0.300	0.50
NICKEL	0.1731	0.2606	0.2606	0.300	1.00
SELENIUM	0.3628	0.0953	0.3628	0.400	0.50
SILVER	0.2340	0.2023	0.2340	0.250	0.50
THALLIUM	0.1583	0.1924	0.1924	0.300	0.50
URANIUM	0.0838	0.0020	0.0838	0.100	0.50
VANADIUM	0.2574	0.2768	0.2768	0.600	1.00
ZINC	2.2717	0.4511	2.2717	3.000	10.00





October 22, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032305

RE: PG&E Topock - GMP, RC000753.801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on October 01, 2018 by ASSET Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Nancy Libucaw* TOR

Quennie Manimtim  
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories - Las Vegas.



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032305

---

**CASE NARRATIVE****SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

**Analytical Comments for EPA 218.6:**

Dilution was necessary for samples N032305-001 and -002 due to matrix interference. Samples were analyzed at lower dilution however matrix spike recovery and retention time criteria were not met indicating possible matrix interference. Samples were reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.

**Analytical Comments for EPA 6020\_Dissolved:**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Chromium in QC samples N032268-002D-MS and N032268-002D-MSD since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

**Analytical Comments for SM 4500-NO3F:**

Result for sample N032305-001(MW-34-100-Q318) doesn't follow historical results. Sample was analyzed twice at 1x and 5x dilution and results agree with each other. General minerals bottle was analyzed by EPA 300.0 and gave ND results. Client was informed. Please see attached correspondence.



**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032305  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032305-001A	MW-34-100-Q318	Groundwater	10/1/2018 2:15:00 PM	10/1/2018	10/22/2018
N032305-001B	MW-34-100-Q318	Groundwater	10/1/2018 2:15:00 PM	10/1/2018	10/22/2018
N032305-001C	MW-34-100-Q318	Groundwater	10/1/2018 2:15:00 PM	10/1/2018	10/22/2018
N032305-001D	MW-34-100-Q318	Groundwater	10/1/2018 2:15:00 PM	10/1/2018	10/22/2018
N032305-002A	MW-44-115-Q318	Groundwater	10/1/2018 4:18:00 PM	10/1/2018	10/22/2018
N032305-002B	MW-44-115-Q318	Groundwater	10/1/2018 4:18:00 PM	10/1/2018	10/22/2018
N032305-002C	MW-44-115-Q318	Groundwater	10/1/2018 4:18:00 PM	10/1/2018	10/22/2018
N032305-002D	MW-44-115-Q318	Groundwater	10/1/2018 4:18:00 PM	10/1/2018	10/22/2018
N032305-003A	MW-704-Q318	Groundwater	10/1/2018 4:40:00 PM	10/1/2018	10/22/2018



**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-001

**Client Sample ID:** MW-34-100-Q318  
**Collection Date:** 10/1/2018 2:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_181002C</b>	QC Batch: <b>R128957</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	10000	0.10	0.10		umhos/cm	1	10/2/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-002

**Client Sample ID:** MW-44-115-Q318  
**Collection Date:** 10/1/2018 4:18:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_181002C</b>	QC Batch: <b>R128957</b>						Analyst: <b>LR</b>
Specific Conductance	11000	0.10	0.10		umhos/cm	1	10/2/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID <b>N032305-001BDUP</b>	SampType: <b>DUP</b>	TestCode: <b>120.1_WPGE</b>	Units: <b>umhos/cm</b>	Prep Date:	RunNo: <b>128957</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128957</b>	TestNo: <b>EPA 120.1</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3157085</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	10510.000	0.10						10470	0.381		2

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-001

**Client Sample ID:** MW-34-100-Q318  
**Collection Date:** 10/1/2018 2:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_181002A	QC Batch: R129015			PrepDate	Analyst: RAB		
Hexavalent Chromium	ND	0.17	1.0	µg/L	5	10/2/2018 12:52 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI	
Chromium	ND	0.13	1.0	µg/L	1	10/3/2018 05:25 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-002

**Client Sample ID:** MW-44-115-Q318  
**Collection Date:** 10/1/2018 4:18:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_181002A	QC Batch: R129015			PrepDate	Analyst: RAB		
Hexavalent Chromium	6.4	0.17	1.0	µg/L	5	10/2/2018 01:11 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI	
Chromium	7.0	0.13	1.0	µg/L	1	10/3/2018 05:42 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-003

**Client Sample ID:** MW-704-Q318  
**Collection Date:** 10/1/2018 4:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181002A</b>	QC Batch: <b>R129015</b>			PrepDate			Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20	µg/L	1		10/2/2018 01:58 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>MB-R129015</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161762</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>LCS-R129015</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161763</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.290	0.20	5.000	0	106 90 110

Sample ID <b>N032305-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161780</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.091	1.0	5.000	0	102 90 110

Sample ID <b>N032305-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161782</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	31.949	1.0	25.00	6.448	102 90 110

Sample ID <b>N032305-002AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161783</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	31.595	1.0	25.00	6.448	101 90 110 31.95 1.11 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032305-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161787</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.013	0.20	1.000	0	101	90	110				

Sample ID <b>N032304-008ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161788</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2.937	0.20						2.900	1.26	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>MB-70851</b>	SampType: <b>MBLK</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165567</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>LCS-70851</b>	SampType: <b>LCS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165568</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	9.668	1.0	10.00	0	96.7	85	115				
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Sample ID <b>N032268-002D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165595</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	466.015	5.0	10.00	446.2	199	75	125				S
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Sample ID <b>N032268-002D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165596</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	463.944	5.0	10.00	446.2	178	75	125	466.0	0.445	20	S
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-001

**Client Sample ID:** MW-34-100-Q318  
**Collection Date:** 10/1/2018 2:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181012A</b>	QC Batch: <b>R129235</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	3.6	0.16	0.25		mg/L	5	10/12/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-002

**Client Sample ID:** MW-44-115-Q318  
**Collection Date:** 10/1/2018 4:18:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181012A</b>	QC Batch: <b>R129235</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	ND	0.032	0.050		mg/L	1	10/12/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R129235</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171932</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R129235</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171933</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.505	0.050	0.5000	0	101 85 115

Sample ID <b>N032329-002CMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171937</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	5.200	0.25	2.500	2.636	103 75 125

Sample ID <b>N032329-002CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171938</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	4.553	0.25	2.500	2.636	76.7 75 125 5.200 13.3 20

Sample ID <b>N032305-001CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171940</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	3.630	0.25			3.570 1.68 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
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- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-001

**Client Sample ID:** MW-34-100-Q318  
**Collection Date:** 10/1/2018 2:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	1.6	0.081	0.10	µg/L	1	10/3/2018 05:25 PM
Manganese	200	1.3	2.5	µg/L	5	10/9/2018 12:43 PM
Molybdenum	49	0.21	0.50	µg/L	1	10/3/2018 05:25 PM
Selenium	ND	0.36	0.50	µg/L	1	10/3/2018 05:25 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-002

**Client Sample ID:** MW-44-115-Q318  
**Collection Date:** 10/1/2018 4:18:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	5.4	0.081	0.10	µg/L	1	10/3/2018 05:42 PM
Manganese	17	0.26	0.50	µg/L	1	10/3/2018 05:42 PM
Molybdenum	75	0.21	0.50	µg/L	1	10/3/2018 05:42 PM
Selenium	ND	0.36	0.50	µg/L	1	10/3/2018 05:42 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>MB-70851</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>
Client ID: <b>PBW</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165524</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>LCS-70851</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165525</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	9.851	0.10	10.00	0	98.5 85 115
Manganese	104.806	0.50	100.0	0	105 85 115
Molybdenum	9.850	0.50	10.00	0	98.5 85 115
Selenium	9.178	0.50	10.00	0	91.8 85 115

Sample ID <b>N032268-002D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165530</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	12.420	0.10	10.00	2.086	103 75 125
Manganese	98.768	0.50	100.0	0.4020	98.4 75 125
Molybdenum	77.378	0.50	10.00	65.37	120 75 125
Selenium	20.950	0.50	10.00	12.19	87.6 75 125

Sample ID <b>N032268-002D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165531</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	12.083	0.10	10.00	2.086	100 75 125 12.42 2.75 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	<b>N032268-002D-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>10/2/2018</b>	RunNo:	<b>129092</b>		
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70851</b>	TestNo:	<b>EPA 6020</b>	<b>EPA 3010A</b>		Analysis Date:	<b>10/3/2018</b>	SeqNo:	<b>3165531</b>		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		98.819		0.50	100.0	0.4020	98.4	75	125	98.77	0.0516	20	
Molybdenum		76.638		0.50	10.00	65.37	113	75	125	77.38	0.961	20	
Selenium		22.007		0.50	10.00	12.19	98.1	75	125	20.95	4.92	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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## CHAIN OF CUSTODY RECORD

Page 1 of 1

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 California: 11060 Artesia Blvd., Ste C, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 www.assetlaboratories.com

Client: Arcadis		Report to: Dan Bush		Bill to: Marty Bloes		EDD Requirement		QA/QC		Sample Receipt Condition	
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis		Address:		Excel EDD		RTNE		1. Chilled	
Address: Roseville, CA 95661		Email: dan.bush@arcadis.com daniel.moore@crittleno.com		Address:		Geotracker		RWQCB		2. Headspace	
Phone: 916-786-3302		Address: 1410 Rocky Ridge Dr # 330		Email to: mbloes@pivox.com		Labspec		CalTrans		3. Container Intact	
Fax: 916-786-3302		Roseville, CA 95661		P.O.#		Others		LEVEL III		4. Seal Present	
Submitted By: Gantt Jeffers		Phone: 949-727-1400, ext 200		Fax:		Specify:		LEVEL IV		5. IR number	
Title: Geologist II		Phone: 916-786-3302		Fax:		RWQCB		Regulatory		6. Method of Cooling:	
Signature:		Sampled By: Spencer Doolittle		Matrix		Global ID:		Specify State:		Sample Temp: ICE 4.8°C	
Date: 10/1/2018		I attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action.		Ground		Turn Around Time		Tracking No.:		Remarks	
Project Name: PG&E Topock - GMP		Signature:		Date: 10/1/2018		Potable		Soil			
Project Number: RC000753.801D		Surface		NPDES		Other Solid					
Item No.		Laboratory Work Order No.		Sample ID/Location		Sample Date		Sample Time		Others	
1		N032305 - 01		MW-34-100-Q318		10/1/2018		14:15		Cr(VI) FF (E218.6) (NH4)2 SO4, NH4, OH	
2		- 02		MW-44-115-Q318		10/1/2018		16:18		Alkalinity, Total as CaCO3 (SM2320B)	
3		- 03		MW-704-Q318		10/1/2018		16:40		Bromide, Sulfate, Chloride (EPA 300.0)	
4										Specific Conductance (EPA 120.1)	
5										Total Dissolved Solids (SM2540C)	
6										Nitrate/Nitrite (SM4500NO3 F) Nitrate, H2SO4	
7										Metals Dissolved (SW6020A FF) (As, Cr, Mn, Mo, Se); HNO3	
8										Dissolved metals (SW6010B FF) (Cr, Mo, Se); HNO3	
9										Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3	
10											
Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 16:40		Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 16:40		Turn Around Time (TAT)		Special Instruction:	
Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 16:40		Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 16:40		A < 24 Hrs or Same Day TAT		Title 22 Metals - Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Ti, V, Zn, K, Na	
Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 16:40		Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 16:40		B = Next Workday			
								C = 2 Workdays			
								D = 3 Workdays			
								E = Routine 5-7 Workdays			
Terms		5. Trip Blanks and Equipment Blanks are billable samples.		6. Asset Laboratories is not responsible for samples collected using incorrect methodology.		7. Terms are net 30 days.		TAT Starts at 8 AM the following day if samples received after 3:00PM.		Container Type:	
1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report.		8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed.		9. For subcontracted analysis, TAT and Surcharges will vary.		Preservatives:		H=HCL		N=HNO3	
2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis.		Less than 24 Hrs=200% Next Day=100% 2 Workdays=50% 3 Workdays=35% 4 Workdays=20%				Z=Zn(AC)2		O=NaOH		S=H2SO4	
3. Custom EDD formats will be an additional 5% of the total project price.						Others/Specify:		T=Na2S2O3		C=4°C	
4. Add 10% surcharge for Level II Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.						B		(NH4)2SO4/NH4OH		T=Tube	
										V=VOA	
										P=Plint	
										J=Jar	
										B=Tedlar	
										G=Glass	
										M=Metal	
										C=Can	

White=Laboratory Copy

Yellow=Customer's Copy

Final QC: 10.1.18

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.


If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 10/1/2018 Workorder: N032305  
 Rep sample Temp (Deg C): 4.8 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |  |  |  |
|---|--|--|--|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>   |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                                  |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                                  |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 11. All samples received within holding time?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>   |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input type="checkbox"/><br>Yes <input type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input checked="" type="checkbox"/><br>NA <input checked="" type="checkbox"/> |

Comments:

Checklist Completed By: YR  10/4/2018

Reviewed By:  LG 100418

Subject: RE: MW-34-100-Q318  
From: "Quennie Manimtim" <[quennie@assetlaboratories.com](mailto:quennie@assetlaboratories.com)>  
Date: 10/15/2018 12:24 PM  
To: ""Daniel Moore"" <[Daniel.Moore@critigen.com](mailto:Daniel.Moore@critigen.com)>, ""Marlon B. Cartin"" <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>, ""Bush, Dan"" <[Dan.Bush@arcadis.com](mailto:Dan.Bush@arcadis.com)>, ""Madsen, Laura"" <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
CC: ""Nancy Sibucão"" <[nancy@assetlaboratories.com](mailto:nancy@assetlaboratories.com)>

Noted. Thanks!

---

From: Daniel Moore [<mailto:Daniel.Moore@critigen.com>]  
Sent: Monday, October 15, 2018 12:24 PM  
To: Quennie Manimtim; 'Marlon B. Cartin'; 'Bush, Dan'; 'Madsen, Laura'  
Cc: 'Nancy Sibucão'  
Subject: RE: MW-34-100-Q318

If you could put in the case narrative I would appreciate it.

---

From: Quennie Manimtim <[quennie@assetlaboratories.com](mailto:quennie@assetlaboratories.com)>  
Sent: Monday, October 15, 2018 2:20 PM  
To: Daniel Moore <[Daniel.Moore@critigen.com](mailto:Daniel.Moore@critigen.com)>; 'Marlon B. Cartin' <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>; 'Bush, Dan' <[Dan.Bush@arcadis.com](mailto:Dan.Bush@arcadis.com)>; 'Madsen, Laura' <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>  
Cc: 'Nancy Sibucão' <[nancy@assetlaboratories.com](mailto:nancy@assetlaboratories.com)>  
Subject: RE: MW-34-100-Q318

Yes, the analysis using the IC method was done just last Friday, 11 days after collection. I agree, we should have still seen the nitrate.

Do we just put the note in the checklist or do you want us to put it in the case narrative?

---

From: Daniel Moore [<mailto:Daniel.Moore@critigen.com>]  
Sent: Monday, October 15, 2018 12:16 PM  
To: Quennie Manimtim; 'Marlon B. Cartin'; 'Bush, Dan'; Madsen, Laura  
Subject: RE: MW-34-100-Q318

Thanks - No need to reanalyze the sample again. I am assuming the IC analysis was performed 2-3 weeks after sample collection? I still think we would have seen nitrate in there though...

I don't think you have a choice but to report the data and note what you have done to verify that data.

Laura, can you take a peek at the field notes and let us know if you see anything unusual in the sample collection/handling?

---

From: Quennie Manimtim <[quennie@assetlaboratories.com](mailto:quennie@assetlaboratories.com)>  
Sent: Monday, October 15, 2018 2:09 PM  
To: Daniel Moore <[Daniel.Moore@critigen.com](mailto:Daniel.Moore@critigen.com)>; 'Marlon B. Cartin' <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>; 'Bush, Dan' <[Dan.Bush@arcadis.com](mailto:Dan.Bush@arcadis.com)>  
Subject: RE: MW-34-100-Q318

Hi Dan,

The analysis at 1X and 5X were done different days. The aliquot used for analysis at 1X is different from the one used to analyzed at 5X.

Thanks,  
Quennie

---

**From:** Daniel Moore [<mailto:Daniel.Moore@critigen.com>]  
**Sent:** Monday, October 15, 2018 12:00 PM  
**To:** Marlon B. Cartin; 'Bush, Dan'  
**Cc:** [quennie@assetlaboratories.com](mailto:quennie@assetlaboratories.com)  
**Subject:** RE: MW-34-100-Q318

Is there sample remaining to reprep and analyze by SM 4500?

---

**From:** Marlon B. Cartin <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>  
**Sent:** Monday, October 15, 2018 1:56 PM  
**To:** Daniel Moore <[Daniel.Moore@critigen.com](mailto:Daniel.Moore@critigen.com)>; 'Bush, Dan' <[Dan.Bush@arcadis.com](mailto:Dan.Bush@arcadis.com)>  
**Cc:** [quennie@assetlaboratories.com](mailto:quennie@assetlaboratories.com)  
**Subject:** MW-34-100-Q318

Hi Dan and Dan,

Were having detection of NO<sub>3</sub>/NO<sub>2</sub> by SM 4500 for MW-34-100-Q318 Topock sample which is historically ND. Below are the initial data;

1X - 3.4  
5X - 3.6

However, we scanned the sample using EPA 300.0 at 5X and result came out ND.

Please advise how you want us to proceed.

Thanks,

**Marlon Cartin**

Project Manager

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# ASSET Laboratories

## WORK ORDER Summary

02-Oct-18

WorkOrder: N032305

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801D

QC Level: Level IV

Date Received: 10/1/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032305-001A	MW-34-100-Q318	10/1/2018 2:15:00 PM	10/15/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-001B			10/15/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-001C			10/15/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-001D			10/15/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/15/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/15/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-002A	MW-44-115-Q318	10/1/2018 4:18:00 PM	10/15/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-002B			10/15/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-002C			10/15/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-002D			10/15/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/15/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/15/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-003A	MW-704-Q318	10/1/2018 4:40:00 PM	10/15/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-004A	FOLDER	10/15/2018	10/15/2018		EDD	RWQCB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/15/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/15/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

# ***ARCADIS***

Project: PG&E Topock - GMP

Project No.: RC000753.801D

ASSET Laboratories Work Order:  
N032305

## ***ANALYTICAL and QC RESULTS SAMPLE RECEIVING ITEMS***

***PRIVILEGED AND CONFIDENTIAL***



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NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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October 22, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032305

RE: PG&E Topock - GMP, RC000753.801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on October 01, 2018 by ASSET Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Nancy Libucaw* TOR

Quennie Manimtim  
Laboratory Director

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---

**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032305

---

**CASE NARRATIVE**

**SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

**Analytical Comments for EPA 218.6:**

Dilution was necessary for samples N032305-001 and -002 due to matrix interference. Samples were analyzed at lower dilution however matrix spike recovery and retention time criteria were not met indicating possible matrix interference. Samples were reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.

**Analytical Comments for EPA 6020\_Dissolved:**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Chromium in QC samples N032268-002D-MS and N032268-002D-MSD since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

**Analytical Comments for SM 4500-NO3F:**

Result for sample N032305-001(MW-34-100-Q318) doesn't follow historical results. Sample was analyzed twice at 1x and 5x dilution and results agree with each other. General minerals bottle was analyzed by EPA 300.0 and gave ND results. Client was informed. Please see attached correspondence.



**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032305  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032305-001A	MW-34-100-Q318	Groundwater	10/1/2018 2:15:00 PM	10/1/2018	10/22/2018
N032305-001B	MW-34-100-Q318	Groundwater	10/1/2018 2:15:00 PM	10/1/2018	10/22/2018
N032305-001C	MW-34-100-Q318	Groundwater	10/1/2018 2:15:00 PM	10/1/2018	10/22/2018
N032305-001D	MW-34-100-Q318	Groundwater	10/1/2018 2:15:00 PM	10/1/2018	10/22/2018
N032305-002A	MW-44-115-Q318	Groundwater	10/1/2018 4:18:00 PM	10/1/2018	10/22/2018
N032305-002B	MW-44-115-Q318	Groundwater	10/1/2018 4:18:00 PM	10/1/2018	10/22/2018
N032305-002C	MW-44-115-Q318	Groundwater	10/1/2018 4:18:00 PM	10/1/2018	10/22/2018
N032305-002D	MW-44-115-Q318	Groundwater	10/1/2018 4:18:00 PM	10/1/2018	10/22/2018
N032305-003A	MW-704-Q318	Groundwater	10/1/2018 4:40:00 PM	10/1/2018	10/22/2018



**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-001

**Client Sample ID:** MW-34-100-Q318  
**Collection Date:** 10/1/2018 2:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_181002C</b>	QC Batch: <b>R128957</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	10000	0.10	0.10		umhos/cm	1	10/2/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-002

**Client Sample ID:** MW-44-115-Q318  
**Collection Date:** 10/1/2018 4:18:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_181002C</b>	QC Batch: <b>R128957</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	11000	0.10	0.10		umhos/cm	1	10/2/2018 11:20 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID <b>N032305-001BDUP</b>	SampType: <b>DUP</b>	TestCode: <b>120.1_WPGE</b>	Units: <b>umhos/cm</b>	Prep Date:	RunNo: <b>128957</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128957</b>	TestNo: <b>EPA 120.1</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3157085</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	10510.000	0.10						10470	0.381	2	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-001

**Client Sample ID:** MW-34-100-Q318  
**Collection Date:** 10/1/2018 2:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_181002A	QC Batch: R129015			PrepDate	Analyst: RAB		
Hexavalent Chromium	ND	0.17	1.0	µg/L	5	10/2/2018 12:52 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI	
Chromium	ND	0.13	1.0	µg/L	1	10/3/2018 05:25 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-002

**Client Sample ID:** MW-44-115-Q318  
**Collection Date:** 10/1/2018 4:18:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_181002A	QC Batch: R129015			PrepDate	Analyst: RAB		
Hexavalent Chromium	6.4	0.17	1.0	µg/L	5	10/2/2018 01:11 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI	
Chromium	7.0	0.13	1.0	µg/L	1	10/3/2018 05:42 PM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-003

**Client Sample ID:** MW-704-Q318  
**Collection Date:** 10/1/2018 4:40:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181002A</b>	QC Batch: <b>R129015</b>			PrepDate			Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20	µg/L	1		10/2/2018 01:58 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>MB-R129015</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161762</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>LCS-R129015</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161763</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.290	0.20	5.000	0	106 90 110

Sample ID <b>N032305-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161780</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.091	1.0	5.000	0	102 90 110

Sample ID <b>N032305-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161782</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	31.949	1.0	25.00	6.448	102 90 110

Sample ID <b>N032305-002AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161783</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	31.595	1.0	25.00	6.448	101 90 110 31.95 1.11 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032305-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161787</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.013	0.20	1.000	0	101	90	110				

Sample ID <b>N032304-008ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161788</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2.937	0.20						2.900	1.26	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>MB-70851</b>	SampType: <b>MBLK</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165567</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	ND	1.0									

Sample ID <b>LCS-70851</b>	SampType: <b>LCS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165568</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	9.668	1.0	10.00	0	96.7	85	115				

Sample ID <b>N032268-002D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165595</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	466.015	5.0	10.00	446.2	199	75	125				S

Sample ID <b>N032268-002D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165596</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	463.944	5.0	10.00	446.2	178	75	125	466.0	0.445	20	S

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-001

**Client Sample ID:** MW-34-100-Q318  
**Collection Date:** 10/1/2018 2:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181012A</b>	QC Batch: <b>R129235</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	3.6	0.16	0.25		mg/L	5	10/12/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-002

**Client Sample ID:** MW-44-115-Q318  
**Collection Date:** 10/1/2018 4:18:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181012A</b>	QC Batch: <b>R129235</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	ND	0.032	0.050		mg/L	1	10/12/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 3151 W. Post Rd., Las Vegas, NV 89118  
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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R129235</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171932</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R129235</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171933</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.505	0.050	0.5000	0	101 85 115

Sample ID <b>N032329-002CMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171937</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	5.200	0.25	2.500	2.636	103 75 125

Sample ID <b>N032329-002CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171938</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	4.553	0.25	2.500	2.636	76.7 75 125 5.200 13.3 20

Sample ID <b>N032305-001CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171940</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	3.630	0.25			3.570 1.68 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-001

**Client Sample ID:** MW-34-100-Q318  
**Collection Date:** 10/1/2018 2:15:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	1.6	0.081	0.10	µg/L	1	10/3/2018 05:25 PM
Manganese	200	1.3	2.5	µg/L	5	10/9/2018 12:43 PM
Molybdenum	49	0.21	0.50	µg/L	1	10/3/2018 05:25 PM
Selenium	ND	0.36	0.50	µg/L	1	10/3/2018 05:25 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032305-002

**Client Sample ID:** MW-44-115-Q318  
**Collection Date:** 10/1/2018 4:18:00 PM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: NV00922-ICP7_181003A	QC Batch: 70851			PrepDate	10/2/2018	Analyst: CEI
Arsenic	5.4	0.081	0.10	µg/L	1	10/3/2018 05:42 PM
Manganese	17	0.26	0.50	µg/L	1	10/3/2018 05:42 PM
Molybdenum	75	0.21	0.50	µg/L	1	10/3/2018 05:42 PM
Selenium	ND	0.36	0.50	µg/L	1	10/3/2018 05:42 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>MB-70851</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>
Client ID: <b>PBW</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165524</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>LCS-70851</b>	SampType: <b>LCS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165525</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	9.851	0.10	10.00	0	98.5 85 115
Manganese	104.806	0.50	100.0	0	105 85 115
Molybdenum	9.850	0.50	10.00	0	98.5 85 115
Selenium	9.178	0.50	10.00	0	91.8 85 115

Sample ID <b>N032268-002D-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165530</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	12.420	0.10	10.00	2.086	103 75 125
Manganese	98.768	0.50	100.0	0.4020	98.4 75 125
Molybdenum	77.378	0.50	10.00	65.37	120 75 125
Selenium	20.950	0.50	10.00	12.19	87.6 75 125

Sample ID <b>N032268-002D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/2/2018</b>	RunNo: <b>129092</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165531</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	12.083	0.10	10.00	2.086	100 75 125 12.42 2.75 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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3151 W. Post Rd., Las Vegas, NV 89118  
ELAP Cert 2676 | NV Cert NVO0922  
ORELAP/NELAP Cert 4046

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	<b>N032268-002D-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>10/2/2018</b>	RunNo:	<b>129092</b>		
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70851</b>	TestNo:	<b>EPA 6020</b>	<b>EPA 3010A</b>		Analysis Date:	<b>10/3/2018</b>	SeqNo:	<b>3165531</b>		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese		98.819		0.50	100.0	0.4020	98.4	75	125	98.77	0.0516	20	
Molybdenum		76.638		0.50	10.00	65.37	113	75	125	77.38	0.961	20	
Selenium		22.007		0.50	10.00	12.19	98.1	75	125	20.95	4.92	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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# SAMPLE RECEIVING ITEMS



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

## CHAIN OF CUSTODY RECORD

Page 1 of 1

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California: 11060 Artesia Blvd., Ste C, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436  
www.assetlaboratories.com

Client: Arcadis		Report to: Dan Bush		Bill to: Marty Bloes		EDD Requirement		QA/QC		Sample Receipt Condition	
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis		Address:		Excel EDD		RTNE		1. Chilled	
Address: Roseville, CA 95661		Email: dan.bush@arcadis.com daniel.moore@critiqueo.com		Address:		Geotracker		RWQCB		2. Headspace	
Phone: 916-786-3302		Fax:		Address: 1410 Rocky Ridge Dr # 330 Roseville, CA 95661		Labspec		CalTrans		3. Container Intact	
Submitted By: Gantt Jeffers		Title: Geologist II		Email to: mbloes@pivox.com		Others		LEVEL III		4. Seal Present	
Phone: 916-786-3302		Fax:		P.O.#		Specify:		LEVEL IV		5. IR number	
Submitted By: Gantt Jeffers		Title: Geologist II		Phone: 949-727-1400, ext 200		RWQCB		Regulatory		6. Method of Cooling:	
Signature:		Date: 10/1/2018		Sampled By: Spencer Doolittle		Global ID:		Specify State:		Sample Temp: ICE	
I hereby authorize ASSET Labs to perform the tests indicated below.		I attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action.		Signature:		Date: 10/1/2018		Matrix		Tracking No.:	
Project Name: PG&E Topock - GMP		Project Number: RC000753.801D		Ground		x		Sediment		Remarks	
Item No.		Laboratory Work Order No.		Sample ID/Location		Sample Date		Sample Time		Others	
1		N032305 - 01		MW-34-100-Q318		10/1/2018		14:15		Cr(VI) FF (E218.6) (NH4)2 SO4, NH4, OH	
2		- 02		MW-44-115-Q318		10/1/2018		16:18		Alkalinity, Total as CaCO3 (SM2320B)	
3		- 03		MW-704-Q318		10/1/2018		16:40		Bromide, Sulfate, Chloride (EPA 300.0)	
4											
5											
6											
7											
8											
9											
10											
Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 16:40		Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 16:40		Turn Around Time (TAT)		Special Instruction:	
Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 17:40		Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 17:40		A < 24 Hrs or Same Day TAT		Title 22 Metals - Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Ti, V, Zn, K, Na	
Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 17:40		Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 17:40		B = Next Workday			
Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 17:40		Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 17:40		C = 2 Workdays			
Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 17:40		Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 17:40		D = 3 Workdays			
Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 17:40		Relinquished by (Signature and Printed Name):		Date/Time: 10/1/18 17:40		E = Routine 5-7 Workdays			
Terms		5. Trip Blanks and Equipment Blanks are billable sample.		6. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed.		7. Terms are net 30 days.		TAT Starts at 8 AM the following day if samples received after 3:00PM.		Container Type:	
1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report.		8. Asset Laboratories is not responsible for samples collected using incorrect methodology.		9. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed.		Preservatives:		H=HCL		T=Tube	
2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis.		10. For subcontracted analysis, TAT and Surcharges will vary.		11. For subcontracted analysis, TAT and Surcharges will vary.		N=HNO3		S=H2SO4		V=VOA	
3. Custom EDD formats will be an additional 5% of the total project price.		12. For subcontracted analysis, TAT and Surcharges will vary.		13. For subcontracted analysis, TAT and Surcharges will vary.		O=NaOH		C=4°C		P=Plint	
4. Acid 10% surcharge for Level II Data Packages, 15% for Level IV Data Packages. Surcharges applied on total project price.		14. For subcontracted analysis, TAT and Surcharges will vary.		15. For subcontracted analysis, TAT and Surcharges will vary.		Z=Zn(AC)2		T=Na2S2O3		J=Jar	
						Others/Specify:		(NH4)2SO4/NH4OH		B=Tedlar	
										G=Glass	
										M=Metal	
										C=Can	

White=Laboratory Copy

Yellow=Customer's Copy

Final QC: 10.1.18



# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 10/1/2018 Workorder: N032305  
 Rep sample Temp (Deg C): 4.8 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |   |                             |   |
|---|---|-----------------------------|---|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Not Present <input type="checkbox"/>            |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | Not Present <input checked="" type="checkbox"/> |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 11. All samples received within holding time?   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |   |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/>                     |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/>          |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/>                     |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/>                     |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/>          |
|   | Yes <input type="checkbox"/>            | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/>          |

Comments:

Checklist Completed By: YR  10/4/2018

Reviewed By:  LG 100418

Subject: RE: MW-34-100-Q318

From: "Quennie Manimtim" <[quennie@assetlaboratories.com](mailto:quennie@assetlaboratories.com)>

Date: 10/15/2018 12:24 PM

To: ""Daniel Moore"" <[Daniel.Moore@critigen.com](mailto:Daniel.Moore@critigen.com)>, ""Marlon B. Cartin"" <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>, ""Bush, Dan"" <[Dan.Bush@arcadis.com](mailto:Dan.Bush@arcadis.com)>, ""Madsen, Laura"" <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>

CC: ""Nancy Sibucão"" <[nancy@assetlaboratories.com](mailto:nancy@assetlaboratories.com)>

Noted. Thanks!

---

From: Daniel Moore [<mailto:Daniel.Moore@critigen.com>]

Sent: Monday, October 15, 2018 12:24 PM

To: Quennie Manimtim; 'Marlon B. Cartin'; 'Bush, Dan'; 'Madsen, Laura'

Cc: 'Nancy Sibucão'

Subject: RE: MW-34-100-Q318

If you could put in the case narrative I would appreciate it.

---

From: Quennie Manimtim <[quennie@assetlaboratories.com](mailto:quennie@assetlaboratories.com)>

Sent: Monday, October 15, 2018 2:20 PM

To: Daniel Moore <[Daniel.Moore@critigen.com](mailto:Daniel.Moore@critigen.com)>; 'Marlon B. Cartin' <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>; 'Bush, Dan' <[Dan.Bush@arcadis.com](mailto:Dan.Bush@arcadis.com)>; 'Madsen, Laura' <[Laura.Madsen@arcadis.com](mailto:Laura.Madsen@arcadis.com)>

Cc: 'Nancy Sibucão' <[nancy@assetlaboratories.com](mailto:nancy@assetlaboratories.com)>

Subject: RE: MW-34-100-Q318

Yes, the analysis using the IC method was done just last Friday, 11 days after collection. I agree, we should have still seen the nitrate.

Do we just put the note in the checklist or do you want us to put it in the case narrative?

---

From: Daniel Moore [<mailto:Daniel.Moore@critigen.com>]

Sent: Monday, October 15, 2018 12:16 PM

To: Quennie Manimtim; 'Marlon B. Cartin'; 'Bush, Dan'; Madsen, Laura

Subject: RE: MW-34-100-Q318

Thanks - No need to reanalyze the sample again. I am assuming the IC analysis was performed 2-3 weeks after sample collection? I still think we would have seen nitrate in there though...

I don't think you have a choice but to report the data and note what you have done to verify that data.

Laura, can you take a peek at the field notes and let us know if you see anything unusual in the sample collection/handling?

---

From: Quennie Manimtim <[quennie@assetlaboratories.com](mailto:quennie@assetlaboratories.com)>

Sent: Monday, October 15, 2018 2:09 PM

To: Daniel Moore <[Daniel.Moore@critigen.com](mailto:Daniel.Moore@critigen.com)>; 'Marlon B. Cartin' <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>; 'Bush, Dan' <[Dan.Bush@arcadis.com](mailto:Dan.Bush@arcadis.com)>

Subject: RE: MW-34-100-Q318

Hi Dan,

The analysis at 1X and 5X were done different days. The aliquot used for analysis at 1X is different from the one used to analyzed at 5X.

Thanks,  
Quennie

---

**From:** Daniel Moore [<mailto:Daniel.Moore@critigen.com>]  
**Sent:** Monday, October 15, 2018 12:00 PM  
**To:** Marlon B. Cartin; 'Bush, Dan'  
**Cc:** [quennie@assetlaboratories.com](mailto:quennie@assetlaboratories.com)  
**Subject:** RE: MW-34-100-Q318

Is there sample remaining to reprep and analyze by SM 4500?

---

**From:** Marlon B. Cartin <[marlon@assetlaboratories.com](mailto:marlon@assetlaboratories.com)>  
**Sent:** Monday, October 15, 2018 1:56 PM  
**To:** Daniel Moore <[Daniel.Moore@critigen.com](mailto:Daniel.Moore@critigen.com)>; 'Bush, Dan' <[Dan.Bush@arcadis.com](mailto:Dan.Bush@arcadis.com)>  
**Cc:** [quennie@assetlaboratories.com](mailto:quennie@assetlaboratories.com)  
**Subject:** MW-34-100-Q318

Hi Dan and Dan,

Were having detection of NO3/NO2 by SM 4500 for MW-34-100-Q318 Topock sample which is historically ND. Below are the initial data;

1X - 3.4  
5X - 3.6

However, we scanned the sample using EPA 300.0 at 5X and result came out ND.

Please advise how you want us to proceed.

Thanks,

**Marlon Cartin**

Project Manager

California: 11110 Artesia Blvd., Ste. B, Cerritos, CA 90703 | P: 562.219.7435 | F: 562.219.7436

Nevada: 3151 W. Post Road, Las Vegas, NV 89118 | P: 702.307.2659 Ext. 410 | F: 702.307.2691 | M: 702.439.0421

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# ASSET Laboratories

## WORK ORDER Summary

02-Oct-18

WorkOrder: N032305

Client ID: ARCUS02

Project: PG&E Topock - GMP, RC000753.801D

QC Level: Level IV

Date Received: 10/1/2018

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032305-001A	MW-34-100-Q318	10/1/2018 2:15:00 PM	10/15/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-001B			10/15/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-001C			10/15/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-001D			10/15/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/15/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/15/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-002A	MW-44-115-Q318	10/1/2018 4:18:00 PM	10/15/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-002B			10/15/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-002C			10/15/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-002D			10/15/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/15/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/15/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-003A	MW-704-Q318	10/1/2018 4:40:00 PM	10/15/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032305-004A	FOLDER	10/15/2018	10/15/2018		EDD	RWQCB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/15/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/15/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

## List of Analysts

### ASSET Laboratories Work Order: N032305

NAME	TEST METHOD
Quennie Manimtim	SM 4500-NO3F
Claire Ignacio	EPA 6020_Dissolved
Ria Abes	EPA 218.6
Lilia Ramit	EPA 120.1



# EPA 120.1



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

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**Wet Chemistry Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

**FIRST LEVEL REVIEW:**

QC Batch Number: R128957

Analyst: LSR

ASSET #: N032305

Date Analyzed: 2-Oct

Method: EPA 120.1

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.			X			X
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			X
3. ICV within ± 15% of expected value.			X			X
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.			X			X
5. CCV within ± 15% of expected value.			X			X
6. Calibration blanks run after ICV and CCV?			X			X
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			X
<b>Sample Information</b>						
8. All samples are within linear range.			X			X
9. Are all samples analyzed within hold time.	X			X		
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.			X			X
11. LCS compounds within control limits.			X			X
12. MS/MSD, RPD's are within control limits	X			X		
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			X
14. Runlog complete and included in package.	X			X		
15. Spectrophotometer tape included (Spec work only)			X			X
16. Digestion log complete and included in package (if applicable)			X			X
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X			X		
18. Are analytical results correct?	X			X		
19. Is the QC summary report present and complete?	X			X		

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed	X		
2. Matrix / units correct	X		
3. Does batch meet QC requirements?	X		
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)	X		
5. Is first level review correct and complete?	X		

1st Level Reviewer Julia Ramit

Date: 10/11/2018

2nd Level Reviewer 2 10/20/2018

Date: \_\_\_\_\_

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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# Conductivity Logbook

Date: 9/28/18 120

Analyst: LR

Standard	Std ID	Reading	Comments
9.91 $\mu\text{S}/\text{cm}$	CMV - 1807316	9.96 @ 23.0°C	% Rec: (90-110%)
1413	1805150	1427 @ 22.6°C	
9988	1807314	10190 @ 22.8°C	
99922	1809145	99600 @ 23.0°C	

Sample ID	Matrix	Reading	Comments
1 NO32268-001B	HW	3330 @ 22.6°C	
2 2B		8230 @ 22.5°C	
3 3B		14750 @ 22.7°C	
4 3B Dup		14770 @ 22.5°C	
5 4B		14760 @ 22.7°C	
6 5B		1712 @ 22.6°C	
7 6B		1709 @ 22.5°C	
8 7B		8250 @ 22.5°C	
9 9B		3560 @ 22.7°C	
10 1413 $\mu\text{S}/\text{cm}$	CMV - 180417B	1413 @ 23.0°C	22.9 $\mu\text{S}/\text{cm}$ LR
Dup 10000	180516A	10020 @ 23.4°C	Accept: 10% water, 20% soil
Std Chk: 94601	180521B	99500 @ 23.4°C	% Rec: (90-110%)

Date: 10/2/18 120

Analyst: LR

Standard	Std ID	Reading	Comments
9.91 $\mu\text{S}/\text{cm}$	CMV - 1807316	9.73 @ 24.3°C	% Rec: (90-110%)
1413	1805150	1408 @ 24.4°C	
9988	1807314	10040 @ 24.4°C	
99922	1809145	99700 @ 24.3°C	

Sample ID	Matrix	Reading	Comments
1 NO32305-001B	HW	10470 @ 23.9°C	
2 1B Dup		10510 @ 23.7°C	
3 2B		10900 @ 23.9°C	
4			
5			
6			
7 1413 $\mu\text{S}/\text{cm}$	CMV - 180417B	1444 @ 23.9°C	
8 10000	180516A	10120 @ 24.0°C	
9			
10			
Dup Julia Ramit	10/11/2018		Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Logbook # 6

# EPA 218.6



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IC Technical Batch Review Checklist (ARCUS02)  
ASSET LABORATORIES - LAS VEGAS

IC ARCUS  
REV 2.0  
011416

QC Batch Number: R129015  
ASSET #: N032305

Instrument ID: IC-07  
Analyst: RBA  
Date Analyzed: 10/2/2018

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)	X					
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?	X					
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?	X					
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)	X					
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X					
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?	X					
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)	X					
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X					
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments:

Dilution was necessary for N032305-001A/002A due to failed RT criteria. at 1X.

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer RBA

Date: 10/13/2018

2nd Level Reviewer Thomy 10/26/2018

Date: \_\_\_\_\_

# SAMPLE CALCULATION



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## Sample Calculation

**METHOD:** EPA 218.6  
**TEST NAME:** HEXAVALENT CHROMIUM BY IC  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Hexavalent Chromium concentration, in  $\mu\text{g/L}$ , in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

A =  $\mu\text{g/L}$ , IC Cr+6 calculated concentration  
DF = dilution factor

For Sample **N032305-002A**, the concentration in  $\mu\text{g/L}$  is calculated as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = 1.2896 * 5$$

$$\text{Cr}^{+6}, \mu\text{g/L} = 6.4480$$

Reporting results in two significant figures,

$$\text{Cr}^{+6}, \mu\text{g/L} = 6.4$$

*rba* 10/13/2018

# ANALYSIS RUN LOG



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
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**INJECTION LOG: 180921A**

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	ICV	ICV	1	Hexavalent Chromium	09/21/18 4:09 PM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/21/18 4:18 PM	Reported
11	ICB	ICB	1	Hexavalent Chromium	09/21/18 4:28 PM	Reported

## Injection Log Summary

### Sequence Details

Name:	IC-07_180921A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	25/Sep/18 09:28:56
No. of Injections:	14	Updated By:	ics 5000

### Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	ICV.ICV,1,	10	1000	Unknown		09/21/2018 16:09	Finished	ICV @5ppb, IWST-180622B
10	PQL@0.2ppb.CCV2,	11	1000	Unknown		09/21/2018 16:18	Finished	PQL @ 0.2ppb
11	ICB.ICB,1,	12	1000	Unknown		09/21/2018 16:28	Finished	ICB R180919A
12	SHUTDOWN	14	1000	Unknown		09/21/2018 16:45	Finished	
13	Eluent: R180917A	14	1000	Unknown		n.a.	Finished	Eluent
14	PCR: R180921A	15	1000	Unknown		n.a.	Finished	Post-Column Reagent



**INJECTION LOG: 181002A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	10/02/18 8:44 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	10/02/18 8:55 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	10/02/18 9:05 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	10/02/18 9:14 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	10/02/18 9:23 AM	Reported
14	MB-R129015	MBLK	1	Hexavalent Chromium	10/02/18 9:33 AM	Reported
15	LCS-R129015	LCS	1	Hexavalent Chromium	10/02/18 9:42 AM	Reported
16	N032304-001A	SAMP	1	Hexavalent Chromium	10/02/18 10:22 AM	Reported
17	N032304-002A	SAMP	1	Hexavalent Chromium	10/02/18 10:32 AM	Reported
18	N032304-003A	SAMP	1	Hexavalent Chromium	10/02/18 10:42 AM	Reported
19	N032304-004A	SAMP	1	Hexavalent Chromium	10/02/18 10:51 AM	Reported
20	N032304-005A	SAMP	1	Hexavalent Chromium	10/02/18 11:06 AM	Reported
21	N032304-006A	SAMP	1	Hexavalent Chromium	10/02/18 11:18 AM	Reported
22	N032304-007A	SAMP	1	Hexavalent Chromium	10/02/18 11:27 AM	Reported
23	N032304-008A	SAMP	1	Hexavalent Chromium	10/02/18 11:36 AM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	10/02/18 11:46 AM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	10/02/18 11:55 AM	Reported
26	N032304-009A	SAMP	1	Hexavalent Chromium	10/02/18 12:05 PM	Reported
27	N032304-010A	SAMP	1	Hexavalent Chromium	10/02/18 12:14 PM	Reported
28	N032304-011A	SAMP	1	Hexavalent Chromium	10/02/18 12:24 PM	Reported
29	N032304-012A	SAMP	1	Hexavalent Chromium	10/02/18 12:33 PM	Reported
30	N032304-013A	SAMP	1	Hexavalent Chromium	10/02/18 12:43 PM	Reported
31	N032305-001A	SAMP	5	Hexavalent Chromium	10/02/18 12:52 PM	Reported
32	N032305-001AMS	MS	5	Hexavalent Chromium	10/02/18 1:02 PM	Reported
33	N032305-002A	SAMP	5	Hexavalent Chromium	10/02/18 1:11 PM	Reported
34	N032305-002AMS	MS	5	Hexavalent Chromium	10/02/18 1:21 PM	Reported
35	N032305-002AMSD	MSD	5	Hexavalent Chromium	10/02/18 1:30 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	10/02/18 1:39 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	10/02/18 1:49 PM	Reported
38	N032305-003A	SAMP	1	Hexavalent Chromium	10/02/18 1:58 PM	Reported
39	N032305-003AMS	MS	1	Hexavalent Chromium	10/02/18 2:08 PM	Reported
40	N032305-001A	SAMP	1	Hexavalent Chromium	10/02/18 2:17 PM	Not Reported
41	N032305-001AMS	MS	1	Hexavalent Chromium	10/02/18 2:27 PM	Not Reported
42	N032304-008ADUP	DUP	1	Hexavalent Chromium	10/02/18 2:36 PM	Reported

**INJECTION LOG: 181002A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N032305-002A	SAMP	1	Hexavalent Chromium	10/02/18 2:46 PM	Not Reported
44	N032305-002AMS	MS	1	Hexavalent Chromium	10/02/18 3:13 PM	Not Reported
45	CCV-4	CCV1	1	Hexavalent Chromium	10/02/18 3:24 PM	Reported
46	CCB-4	CCB	1	Hexavalent Chromium	10/02/18 3:33 PM	Reported
47	LCS-R129016	LCS	1	Hexavalent Chromium	10/02/18 3:57 PM	Reported
48	MB-R129016	MBLK	1	Hexavalent Chromium	10/02/18 4:08 PM	Reported
49	N032303-001A	SAMP	1	Hexavalent Chromium	10/02/18 4:17 PM	Reported
50	N032303-002A	SAMP	1	Hexavalent Chromium	10/02/18 4:27 PM	Reported
51	N032303-003A	SAMP	1	Hexavalent Chromium	10/02/18 4:36 PM	Not Reported
52	N032303-004A	SAMP	1	Hexavalent Chromium	10/02/18 4:46 PM	Not Reported
53	N032303-005A	SAMP	1	Hexavalent Chromium	10/02/18 4:55 PM	Reported
54	N032303-002AMS	MS	1	Hexavalent Chromium	10/02/18 5:05 PM	Reported
55	N032303-002AMSD	MSD	1	Hexavalent Chromium	10/02/18 5:14 PM	Reported
56	N032303-005ADUP	DUP	1	Hexavalent Chromium	10/02/18 5:24 PM	Reported
57	CCV-5	CCV	1	Hexavalent Chromium	10/02/18 5:33 PM	Reported
58	CCB-5	CCB	1	Hexavalent Chromium	10/02/18 5:43 PM	Reported
59	N032303-003A	SAMP	1	Hexavalent Chromium	10/02/18 5:52 PM	Reported
60	N032303-004A	SAMP	1	Hexavalent Chromium	10/02/18 6:01 PM	Reported
61	N032303-006A	SAMP	1	Hexavalent Chromium	10/02/18 6:11 PM	Reported
62	N032303-007A	SAMP	1	Hexavalent Chromium	10/02/18 6:20 PM	Reported
63	N032303-008A	SAMP	1	Hexavalent Chromium	10/02/18 6:30 PM	Reported
64	CCV-6	CCV1	1	Hexavalent Chromium	10/02/18 6:39 PM	Reported
65	CCB-6	CCB	1	Hexavalent Chromium	10/02/18 6:49 PM	Reported

### Injection Log Summary

**Sequence Details**

Name:	IC-07_181002A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	04/Oct/18 18:04:59
No. of Injections:	68	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	BLANK	1	1000	Unknown		10/02/2018 08:44	Finished	BLANK
10	BLANK	2	1000	Unknown		10/02/2018 08:55	Finished	BLANK
11	CCV-1,CCV,1,	3	1000	Unknown		10/02/2018 09:05	Finished	CCV @5ppb, IWST-180622A
12	PQL@0.2ppb,CCV2,	4	1000	Unknown		10/02/2018 09:14	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		10/02/2018 09:23	Finished	CCB R180919A
14	MB-H2O,MBLK,1,	6	1000	Unknown		10/02/2018 09:33	Finished	MB R180919A
15	LCS-H2O,LCS,1,	7	1000	Unknown		10/02/2018 09:42	Finished	LCS @5ppb, IWST-180622B
16	N032304-001A,SAMP	1	1000	Unknown		10/02/2018 10:22	Finished	SAMP,10mL
17	N032304-002A,SAMP	2	1000	Unknown		10/02/2018 10:32	Finished	SAMP,10mL
18	N032304-003A,SAMP	3	1000	Unknown		10/02/2018 10:42	Finished	SAMP,10mL
19	N032304-004A,SAMP	4	1000	Unknown		10/02/2018 10:51	Finished	SAMP,10mL
20	N032304-005A,SAMP	6	1000	Unknown		10/02/2018 11:06	Finished	SAMP,10mL
21	N032304-006A,SAMP	7	1000	Unknown		10/02/2018 11:18	Finished	SAMP,10mL
22	N032304-007A,SAMP	8	1000	Unknown		10/02/2018 11:27	Finished	SAMP,10mL
23	N032304-008A,SAMP	9	1000	Unknown		10/02/2018 11:36	Finished	SAMP,10mL
24	CCV-2,CCV1,1,	11	1000	Unknown		10/02/2018 11:46	Finished	CCV @10ppb, IWST-180622A
25	CCB-2,CCB,1,	12	1000	Unknown		10/02/2018 11:55	Finished	CCB R180919A
26	N032304-009A,SAMP	13	1000	Unknown		10/02/2018 12:05	Finished	MS (1ppb), IWST-180622B,10
27	N032304-010A,SAMP	14	1000	Unknown		10/02/2018 12:14	Finished	SAMP,10mL
28	N032304-011A,SAMP	15	1000	Unknown		10/02/2018 12:24	Finished	MS (1ppb), IWST-180622B,10
29	N032304-012A,SAMP	16	1000	Unknown		10/02/2018 12:33	Finished	SAMP,10mL
30	N032304-013A,SAMP	17	1000	Unknown		10/02/2018 12:43	Finished	MS (5ppb), IWST-180622B,10
31	N032305-001A,SAMP	18	1000	Unknown		10/02/2018 12:52	Finished	SAMP,2>10mL
32	N032305-001AMS,MS	19	1000	Unknown		10/02/2018 13:02	Finished	MS (1ppb), IWST-180622B,2>
33	N032305-002A,SAMP	20	1000	Unknown		10/02/2018 13:11	Finished	SAMP,2>10mL
34	N032305-002AMS,MS	21	1000	Unknown		10/02/2018 13:21	Finished	MS (5ppb), IWST-180622B,2>
35	N032305-002AMSD,MS	22	1000	Unknown		10/02/2018 13:30	Finished	MSD (5ppb), IWST-180622B,2>
36	CCV-3,CCV,1,	23	1000	Unknown		10/02/2018 13:39	Finished	CCV @5ppb, IWST-180622A
37	CCB-3,CCB,1,	24	1000	Unknown		10/02/2018 13:49	Finished	CCB R180919A
38	N032305-003A,SAMP	25	1000	Unknown		10/02/2018 13:58	Finished	SAMP,10mL
39	N032305-003AMS,MS	26	1000	Unknown		10/02/2018 14:08	Finished	MS (1ppb), IWST-180622B,10
40	N032305-001A,SAMP	27	1000	Unknown		10/02/2018 14:17	Finished	SAMP,10mL
41	N032305-001AMS,MS	28	1000	Unknown		10/02/2018 14:27	Finished	MS (1ppb), IWST-180622B,10
42	N032304-008ADUP,DU	29	1000	Unknown		10/02/2018 14:36	Finished	DUP,10mL
43	N032305-002A,SAMP	30	1000	Unknown		10/02/2018 14:46	Finished	SAMP,10mL
44	N032305-002AMS,MS	32	1000	Unknown		10/02/2018 15:13	Finished	MS (5ppb), IWST-180622B,10
45	CCV-4,CCV1,1,	33	1000	Unknown		10/02/2018 15:24	Finished	CCV @10ppb, IWST-180622A
46	CCB-4,CCB,1,	34	1000	Unknown		10/02/2018 15:33	Finished	CCB R180919A
47	LCS-2,LCS,1,	1	1000	Unknown		10/02/2018 15:57	Finished	LCS @5ppb, IWST-180622B
48	MB-2,MBLK,1,	2	1000	Unknown		10/02/2018 16:08	Finished	MB R180919A
49	N032303-001A,SAMP	3	1000	Unknown		10/02/2018 16:17	Finished	SAMP,10mL
50	N032303-002A,SAMP	4	1000	Unknown		10/02/2018 16:27	Finished	SAMP,10mL
51	N032303-003A,SAMP	5	1000	Unknown		10/02/2018 16:36	Finished	SAMP,10mL
52	N032303-004A,SAMP	6	1000	Unknown		10/02/2018 16:46	Finished	SAMP,10mL
53	N032303-005A,SAMP	7	1000	Unknown		10/02/2018 16:55	Finished	SAMP,10mL
54	N032303-002AMS,MS	8	1000	Unknown		10/02/2018 17:05	Finished	MS (5ppb), IWST-180622B,10
55	N032303-002AMSD,MS	9	1000	Unknown		10/02/2018 17:14	Finished	MSD (5ppb), IWST-180622B,10
56	N032303-005ADUP,DU	10	1000	Unknown		10/02/2018 17:24	Finished	DUP,10mL
57	CCV-5,CCV,1,	11	1000	Unknown		10/02/2018 17:33	Finished	CCV @5ppb, IWST-180622A
58	CCB-5,CCB,1,	12	1000	Unknown		10/02/2018 17:43	Finished	CCB R180919A
59	N032303-003A,SAMP	13	1000	Unknown		10/02/2018 17:52	Finished	SAMP,10mL
60	N032303-004A,SAMP	14	1000	Unknown		10/02/2018 18:01	Finished	SAMP,10mL

61	N032303-006A,SAMF	15	1000	Unknown	10/02/2018 18:11	Finished	SAMP,10mL
62	N032303-007A,SAMF	16	1000	Unknown	10/02/2018 18:20	Finished	SAMP,10mL
63	N032303-008A,SAMF	17	1000	Unknown	10/02/2018 18:30	Finished	SAMP,10mL
64	CCV-6,CCV1.1,	18	1000	Unknown	10/02/2018 18:39	Finished	CCV @10ppb, IWST-180622A
65	CCB-6,CCB.1,	19	1000	Unknown	10/02/2018 18:49	Finished	CCB R180919A
66	SHUTDOWN	20	1000	Unknown	10/02/2018 18:58	Finished	
67	Eluent: R181002A	21	1000	Unknown	n.a.	Finished	Eluent
68	PCR: R181001B	22	1000	Unknown	n.a.	Finished	Post-Column Reagent



# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

### Hexavalent Chromium Preparation and Runlog

#### Sample Preparation

Date Prepared: 10/2/18 Reagent ID: \_\_\_\_\_  
 Time Prepared: 12:10H Sulfuric Acid: 10704 Gen NAM: \_\_\_\_\_  
 Prepared By: MJA Diphenylcarbazide: CANV-1805160 MS0911C  
 NH4OH + NH4SO4 eluent: MS0903A  
 NH4OH + NH4SO4 buffer: MS0919A

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N072304-9A	9.72	-	~200µl	~200µl		
2)	10A	9.24	9.45			+ 3 drops water	
3)	11A	9.49	-				
4)	12A	9.11	9.79			+ 4 " "	
5)	13A	9.43	-				
6)	N072305-1A	9.17	9.76			+ 3 " "	
7)	2A	9.73	-				
8)	3A	9.62	-				
9)							
10)							
11)							
12)							
13)							
14)							
15)							

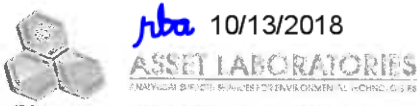
#### Sample Preparation

Date Prepared: 10/2/18 Reagent ID: \_\_\_\_\_  
 Time Prepared: 1:00H Sulfuric Acid: 10704 Gen NAM: \_\_\_\_\_  
 Prepared By: MJA Diphenylcarbazide: CANV-1805160 MS0911C  
 NH4OH + NH4SO4 eluent: MS0903A  
 NH4OH + NH4SO4 buffer: MS0919A

Sme: 97.6h  
 pH: 4.01 @ 25°C  
 7: 7.2 @ 25°C  
 1: 10.00 @ 25°C

	Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1)	N072316-00A	9.15	9.40	~200µl	~200µl	+ 3 drops water	
2)	2A	9.11	9.32			+ 7 " "	
3)	N072317-1A	9.10	9.33			+ 4 drops water	
4)	2A	9.02	9.32			+ 4 " "	
5)	3A	9.09	9.38			+ 4 " "	
6)	4A	9.03	9.34			+ 4 " "	
7)	5A	9.04	9.39			+ 4 " "	
8)	6A	9.12	9.42			+ 3 " "	
9)	7A	9.21	-				
10)	8A	9.14	9.44			+ 3 " "	
11)	9A	9.32	-				
12)	10A	9.34	-				
13)	11A	9.11	9.40			+ 4 " "	
14)	12A	9.11	9.43			+ 4 " "	
15)	N072318-1A	9.23	9.41			+ 3 drops "	
	2A	9.25	9.26			+ 3 drops "	

Logbook No. 15



CALIFORNIA | P: 562.219.7435 F: 562.219.7436  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 ELAP Cert 2921  
 12 of 100 ID CA01638

NEVADA | P: 702.307.2659 F: 702.307.2691  
 3151 W. Post Rd., Las Vegas, NV 89118  
 ELAP Cert 2676 | NV Cert 145922  
 ORELAP/NELAP Cert 4046

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07  
Date Calibrated: 9/21/2018

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R <sup>2</sup>
Area,mAU*min	0.0462	0.2400	1.2761	2.5253	3.8020	5.0460	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST-170814H	IWST-180622A

Calibration Acceptance Criteria: > 0.999 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.



# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3161756</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.047	0.20	5.000	0	101	90	110				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3161757</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.187	0.20	0.2000	0	93.2	80	120				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161759</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.096	0.20	5.000	0	102	95	105				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161760</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.209	0.20	0.2000	0	105	80	120				

Sample ID <b>CCV-2</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161772</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.269	0.20	10.00	0	103	95	105				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161784</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.193	0.20	5.000	0	104	95	105				

Sample ID <b>CCV-4</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161789</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.295	0.20	10.00	0	103	95	105				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>
Client ID: <b>ICB</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3161758</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161761</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161773</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161785</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129015</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129015</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/2/2018</b>	SeqNo: <b>3161790</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
MULTI-PHASE CHEMISTRY SURVEILLANCE FOR ENVIRONMENTAL TECHNOLOGISTS

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 10/2/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.115	
CCV-1	4.123	
CCV-2	4.131	
CCV-3	4.140	
CCV-4	4.140	
CCV-5	4.131	
CCV-6	4.131	

**Average** 4.133

**Actual RT Window** 4.053 - 4.213

**Applied RT Window** 3.933 - 4.333

MB-R129015	N.A.	N.A.
LCS-R129015	4.131	PASS
N032304-001A	N.A.	N.A.
N032304-002A	4.115	PASS
N032304-003A	4.115	PASS
N032304-004A	4.106	PASS
N032304-005A	4.065	PASS
N032304-006A	4.073	PASS
N032304-007A	4.098	PASS
N032304-008A	4.073	PASS
N032304-009A	4.106	PASS
N032304-010A	4.115	PASS
N032304-011A	4.131	PASS
N032304-012A	4.123	PASS
N032304-013A	N.A.	N.A.
N032305-001A	N.A.	N.A.
N032305-001AMS	4.098	PASS
N032305-002A	4.098	PASS
N032305-002AMS	4.098	PASS
N032305-002AMSD	4.073	PASS
N032305-003A	N.A.	N.A.

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 10/2/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.115	
CCV-1	4.123	
CCV-2	4.131	
CCV-3	4.140	
CCV-4	4.140	
CCV-5	4.131	
CCV-6	4.131	

**Average** 4.133

**Actual RT Window** 4.053 - 4.213

**Applied RT Window** 3.933 - 4.333

N032305-003AMS	4.131	PASS
N032305-001A	N.A.	N.A.
N032305-001AMS	3.906	FAIL
N032304-008ADUP	4.090	PASS
N032305-002A	3.906	FAIL
N032305-002AMS	3.906	FAIL
LCS-R129016	4.131	PASS
MB-R129016	N.A.	N.A.
N032303-001A	4.115	PASS
N032303-002A	4.048	PASS
N032303-003A	N.A.	N.A.
N032303-004A	4.140	PASS
N032303-005A	4.123	PASS
N032303-002AMS	4.048	PASS
N032303-002AMSD	4.048	PASS
N032303-005ADUP	4.123	PASS
N032303-003A	4.065	PASS
N032303-004A	4.131	PASS
N032303-006A	N.A.	N.A.
N032303-007A	N.A.	N.A.
N032303-008A	N.A.	N.A.



# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**  
 Method Number: EPA 218.6  
 Analysis Date(s): 5/5/2017, 5/8/2017, 5/9/2017, 5/10/2017, 5/11/2017, 5/12/2017, 5/15/2017  
 Analyst: Ria Abes

Matrix: **WATER**  
 Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

	Datafile	170505	170508	170509	170510	170511	170512	170515						
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	t <sub>(n-1)</sub> value	MDL	PQL	Remarks	
Hexavalent Chromium	0.1949	0.2135	0.1840	0.1828	0.2011	0.1936	0.1911	0.20	0.0105	3.143	<b>0.0331</b>	<b>0.20</b>	OK,meets criteria	

Students' t Values at 99% CL

#	t <sub>(n-1)</sub>
10	2.821
9	2.896
8	2.998
7	3.143



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL • CHEMISTRY • METALLURGY

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

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## LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Hexavalent Chromium by IC**                      Matrix: **WATER**  
 Method Number: EPA Method 218.6/7199                      Unit:  $\mu\text{g/L}$   
 Analysis Date(s): 3/21/2018  
 Analyst: Ria Abes  
  
 Instrument Name: **IC-07**

Compound	MDL	LOD Spike Conc., $\mu\text{g/L}$	LOD actual Conc., $\mu\text{g/L}$
Hexavalent Chromium	0.0331	0.100	0.116

Compound	PQL	PQL Spike Conc., $\mu\text{g/L}$	PQL actual Conc., $\mu\text{g/L}$	% Recovery
Hexavalent Chromium	0.200	0.200	0.201	<u>100</u>



# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436



NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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# INITIAL CALIBRATION



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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INJECTION LOG: 180921A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	ICV	ICV	1	Hexavalent Chromium	09/21/18 4:09 PM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/21/18 4:18 PM	Reported
11	ICB	ICB	1	Hexavalent Chromium	09/21/18 4:28 PM	Reported

*rba* 9/30/2018

*Nancy* 10/8/2018

IC7 RBA 9/26/2018 8:55 AM

## Injection Log Summary

## Sequence Details

Name:	IC-07_180921A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	25/Sep/18 09:28:56
No. of Injections:	14	Updated By:	ics 5000

## Injection Details

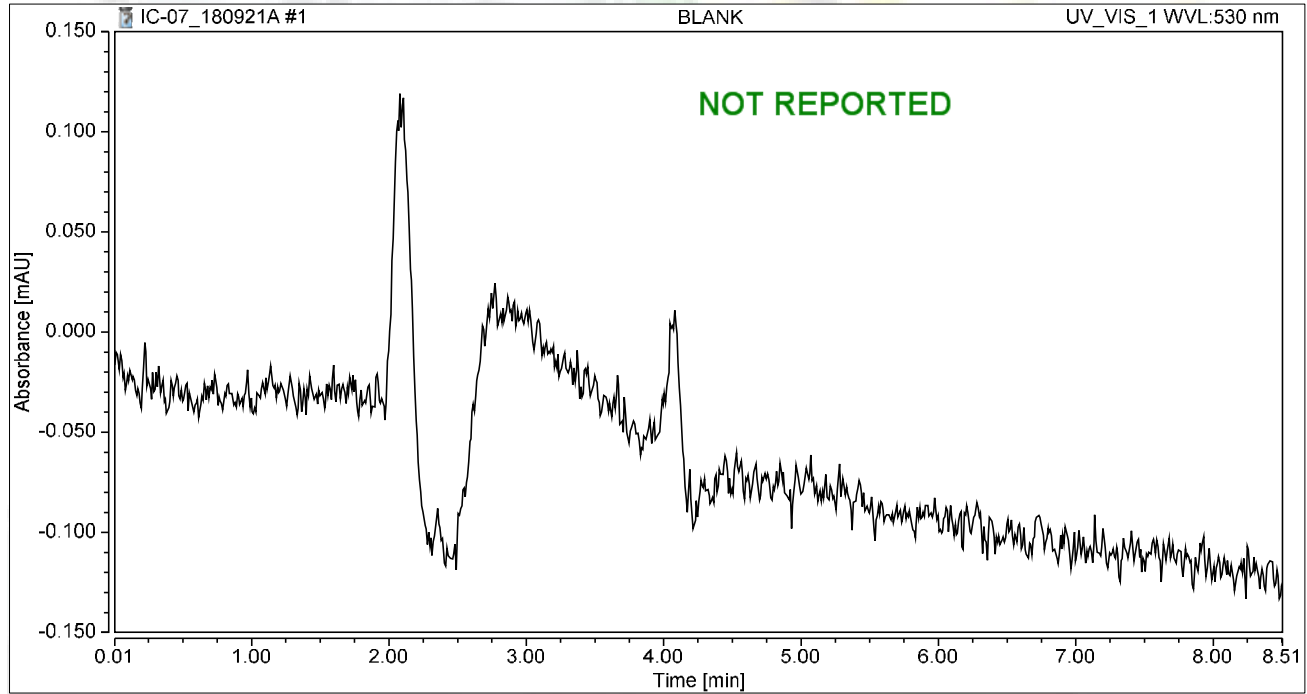
No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	ICV.ICV,1,	10	1000	Unknown		09/21/2018 16:09	Finished	ICV @5ppb, IWST-180622B
10	PQL@0.2ppb,CCV2,	11	1000	Unknown		09/21/2018 16:18	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	12	1000	Unknown		09/21/2018 16:28	Finished	ICB R180919A
12	SHUTDOWN	14	1000	Unknown		09/21/2018 16:45	Finished	
13	Eluent: R180917A	14	1000	Unknown		n.a.	Finished	Eluent
14	PCR: R180921A	15	1000	Unknown		n.a.	Finished	Post-Column Reagent

### Chromatogram and Results

**Injection Details**

Injection Name:	<b>BLANK</b>	Run Time (min):	<b>8.50</b>
Vial Number:	<b>1</b>	Injection Volume:	<b>1000.00</b>
Injection Type:	<b>Unknown</b>	Channel:	<b>UV_VIS_1</b>
Calibration Level:		Wavelength:	<b>530.0</b>
Instrument Method:	<b>Hex Chrom 4 mm</b>	Bandwidth:	<b>n.a.</b>
Processing Method:	<b>180921_IC-07_Cr6_218_6_HIGH</b>	Dilution Factor:	<b>1.0000</b>
Injection Date/Time:	<b>21/Sep/18 14:18</b>	Sample Weight:	<b>1.0000</b>

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

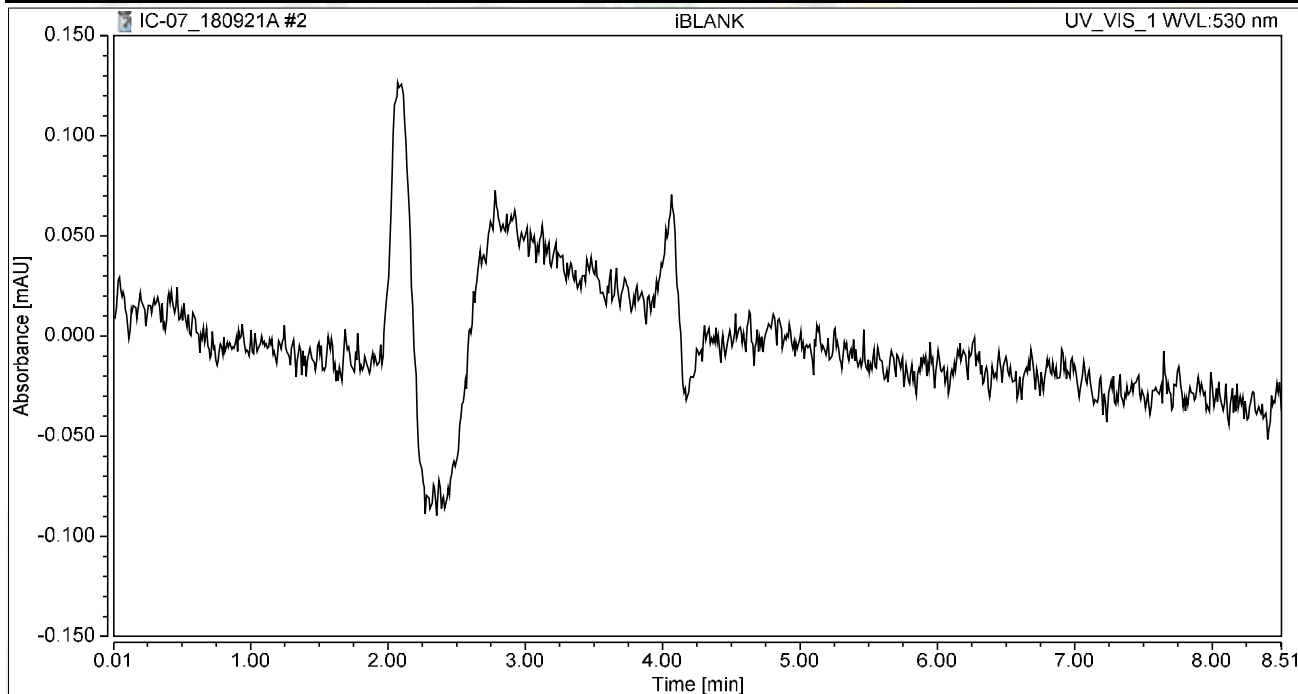


### Chromatogram and Results

**Injection Details**

Injection Name:	iBLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

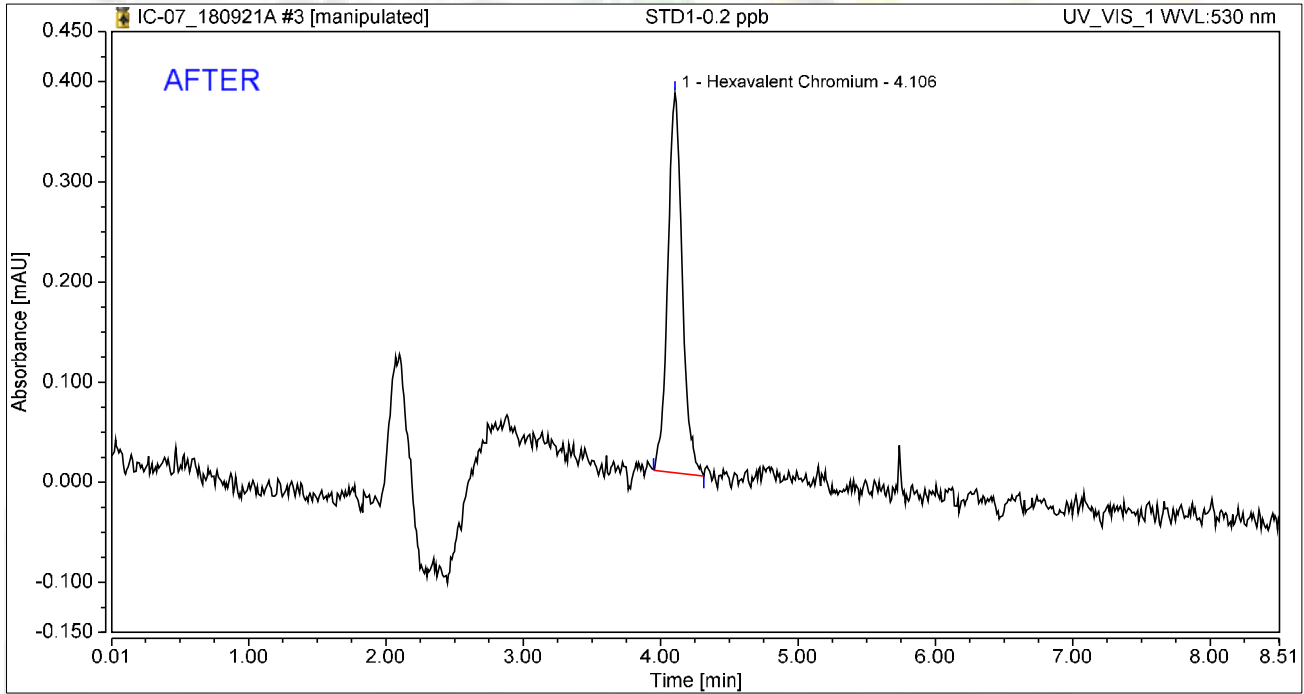
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.046	0.379	100.00	100.00	0.1830
<b>Total:</b>			<b>0.046</b>	<b>0.379</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/30/2018

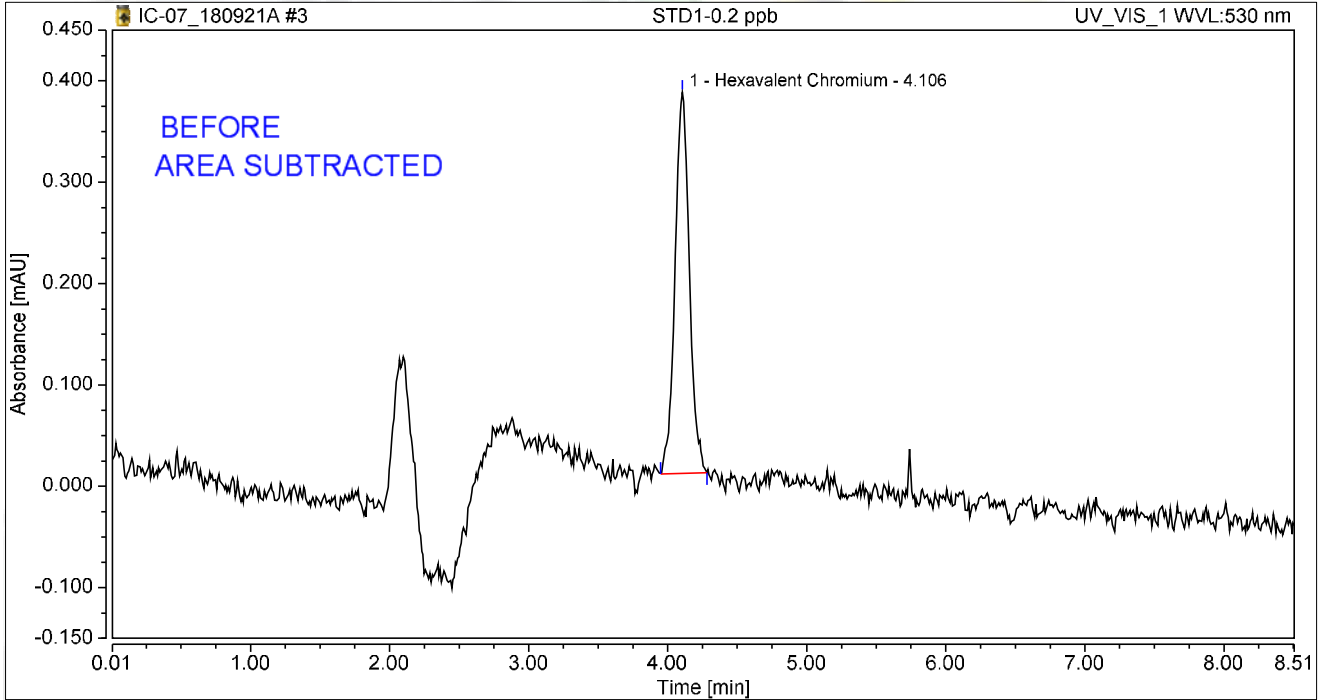
Reviewed by:  
*Murray* 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.045	0.376	100.00	100.00	0.1723
<b>Total:</b>			<b>0.045</b>	<b>0.376</b>	<b>100.00</b>	<b>100.00</b>	

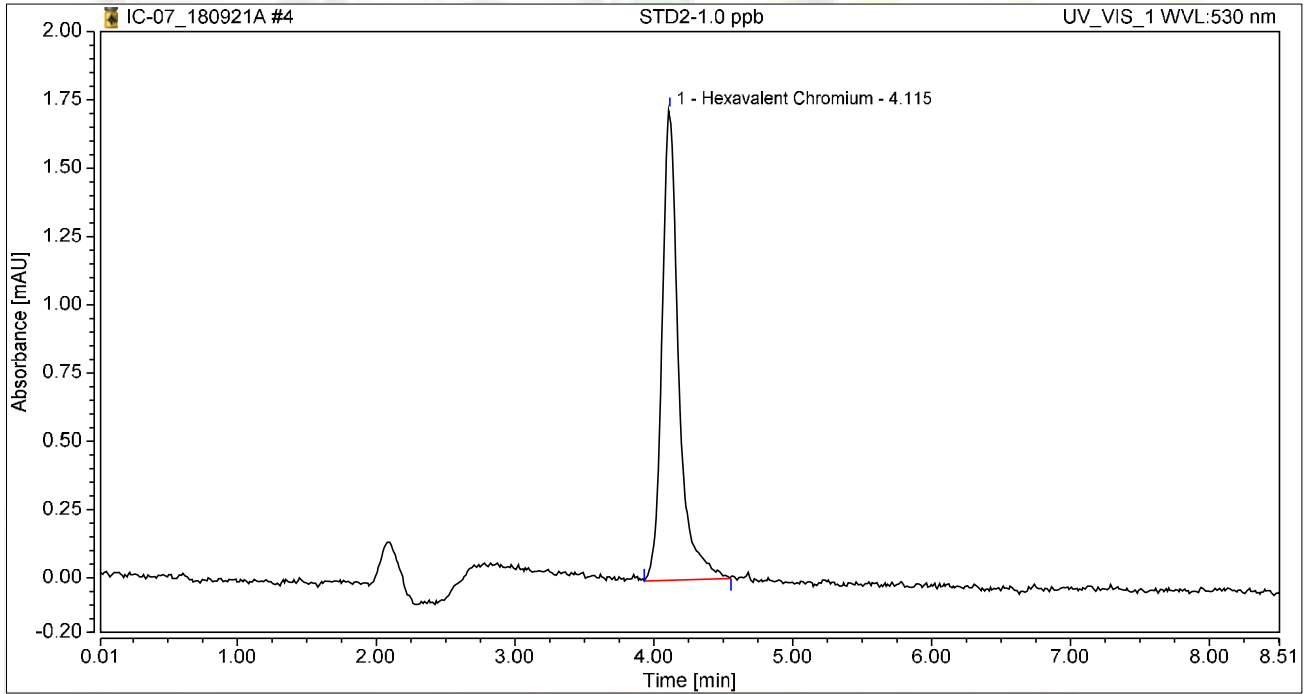
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD2-1.0 ppb	Run Time (min):	8.49
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	02	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:47	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

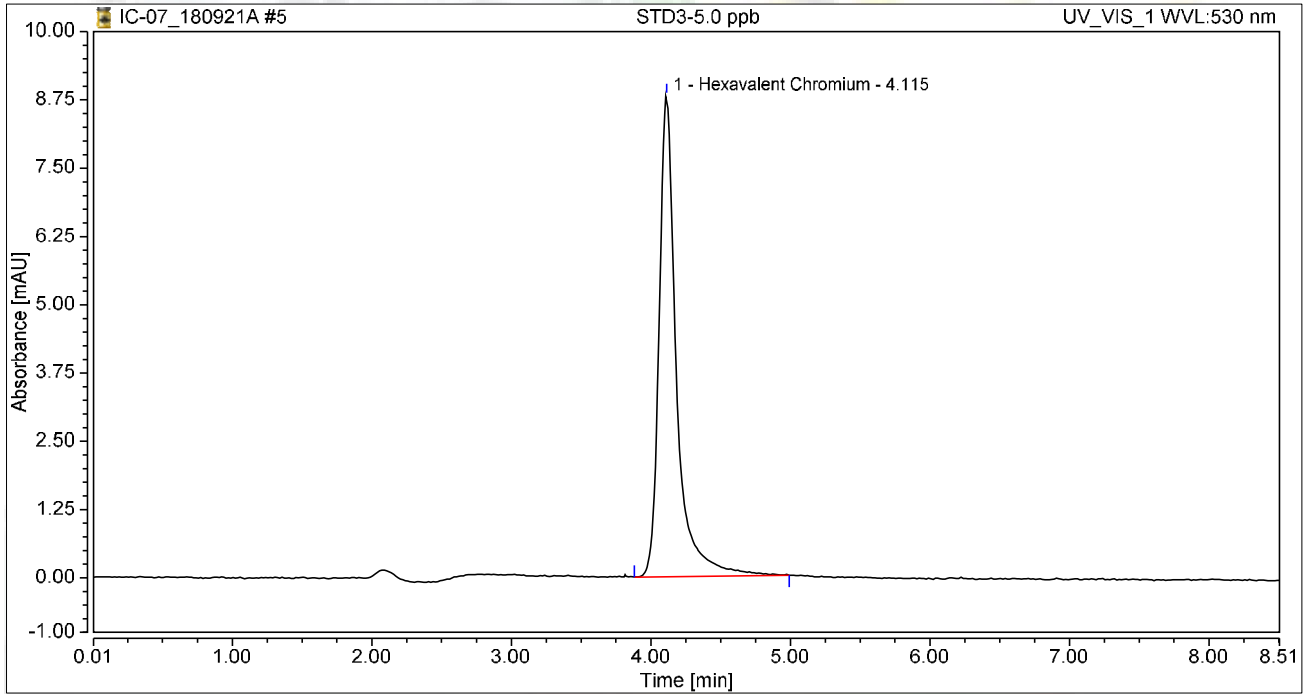
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.240	1.724	100.00	100.00	0.9494
<b>Total:</b>			<b>0.240</b>	<b>1.724</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD3-5.0 ppb	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	03	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

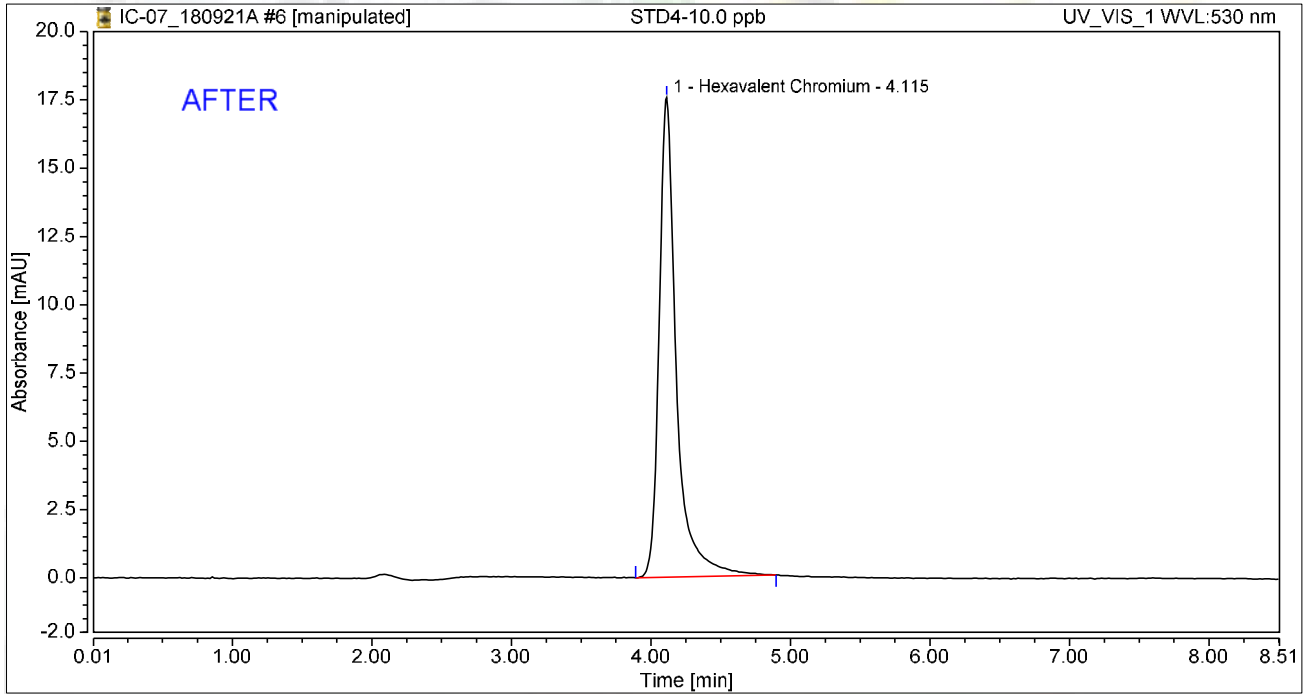
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.276	8.809	100.00	100.00	5.0487
<b>Total:</b>			<b>1.276</b>	<b>8.809</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.525	17.564	100.00	100.00	9.9908
<b>Total:</b>			<b>2.525</b>	<b>17.564</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Reviewed by:

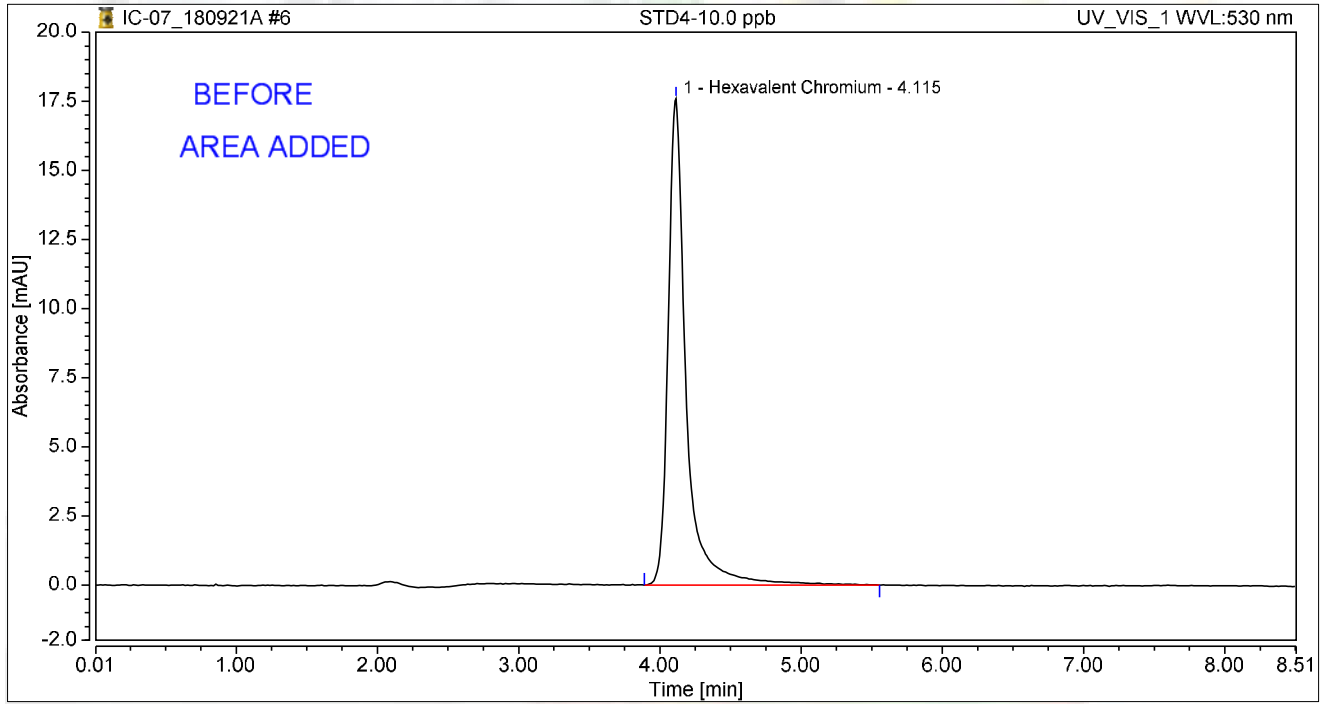
My first report integration  
Mony 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.611	17.589	100.00	100.00	10.0182
<b>Total:</b>			<b>2.611</b>	<b>17.589</b>	<b>100.00</b>	<b>100.00</b>	

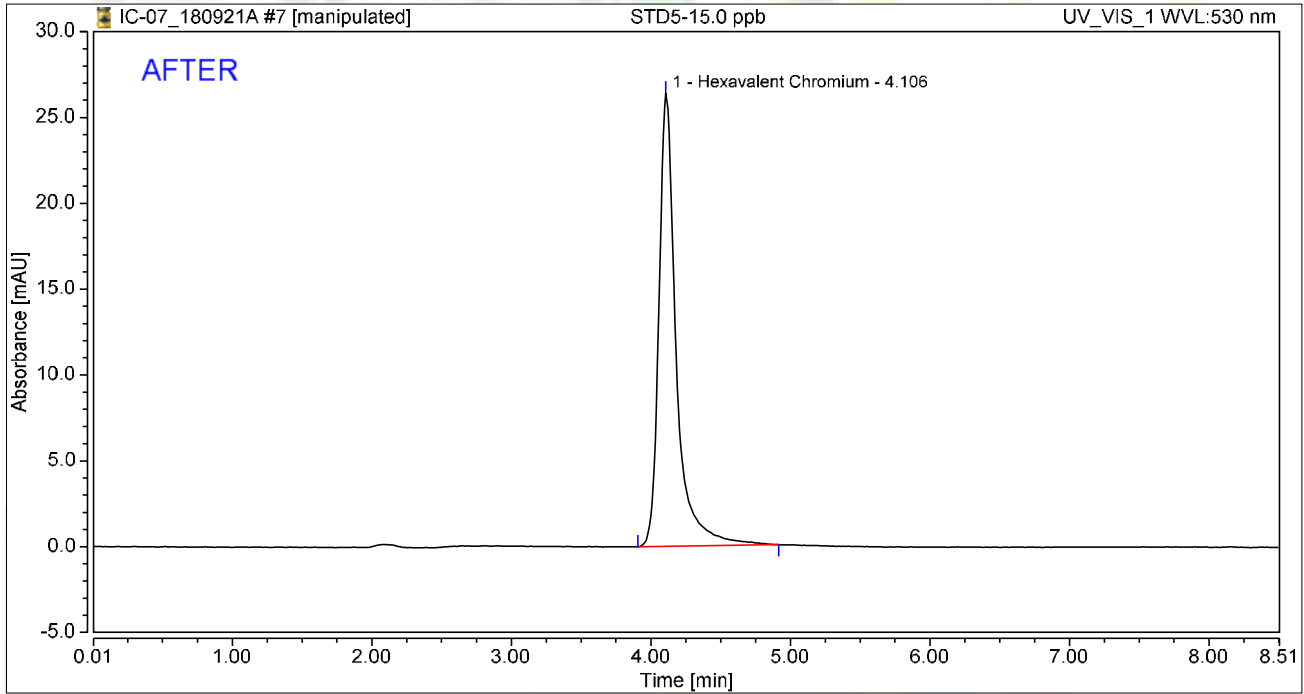
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	3.802	26.404	100.00	100.00	15.0421
<b>Total:</b>			<b>3.802</b>	<b>26.404</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Reviewed by:  
 Nancy 10/8/2018  
 My first report/integration

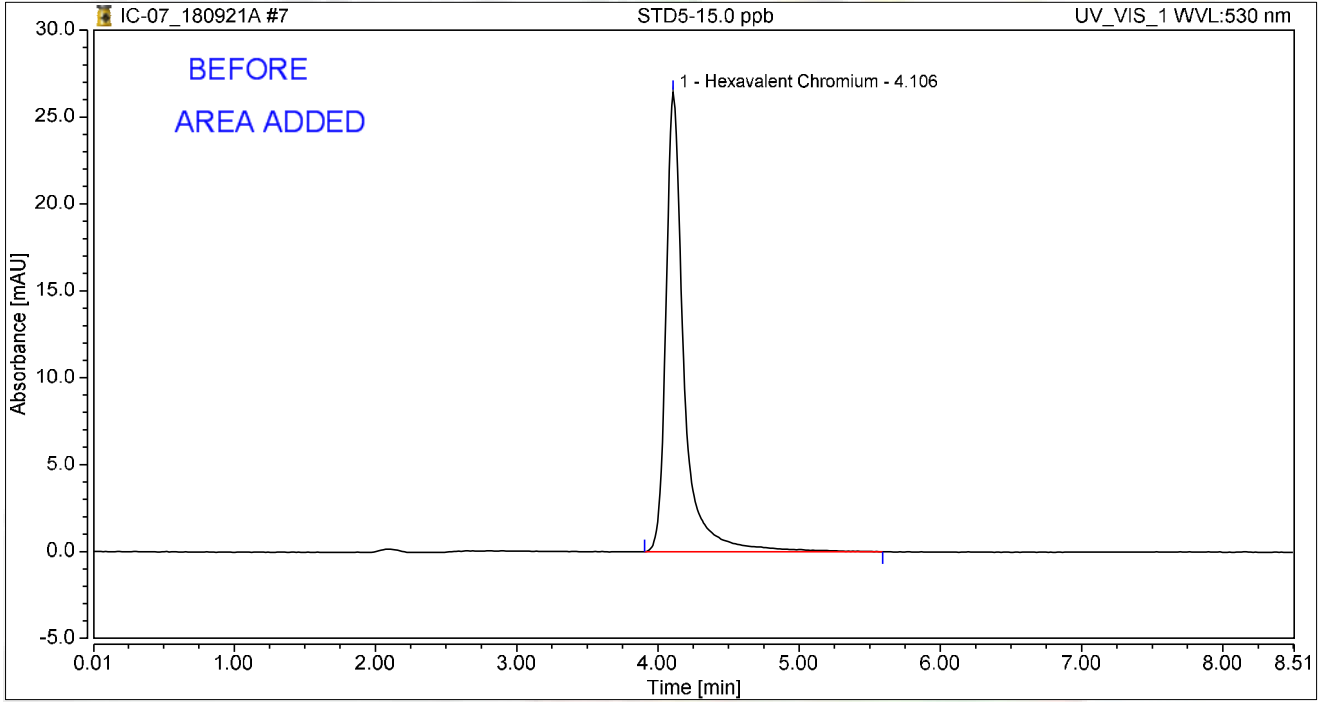


### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	3.918	26.433	100.00	100.00	15.0352
<b>Total:</b>			<b>3.918</b>	<b>26.433</b>	<b>100.00</b>	<b>100.00</b>	

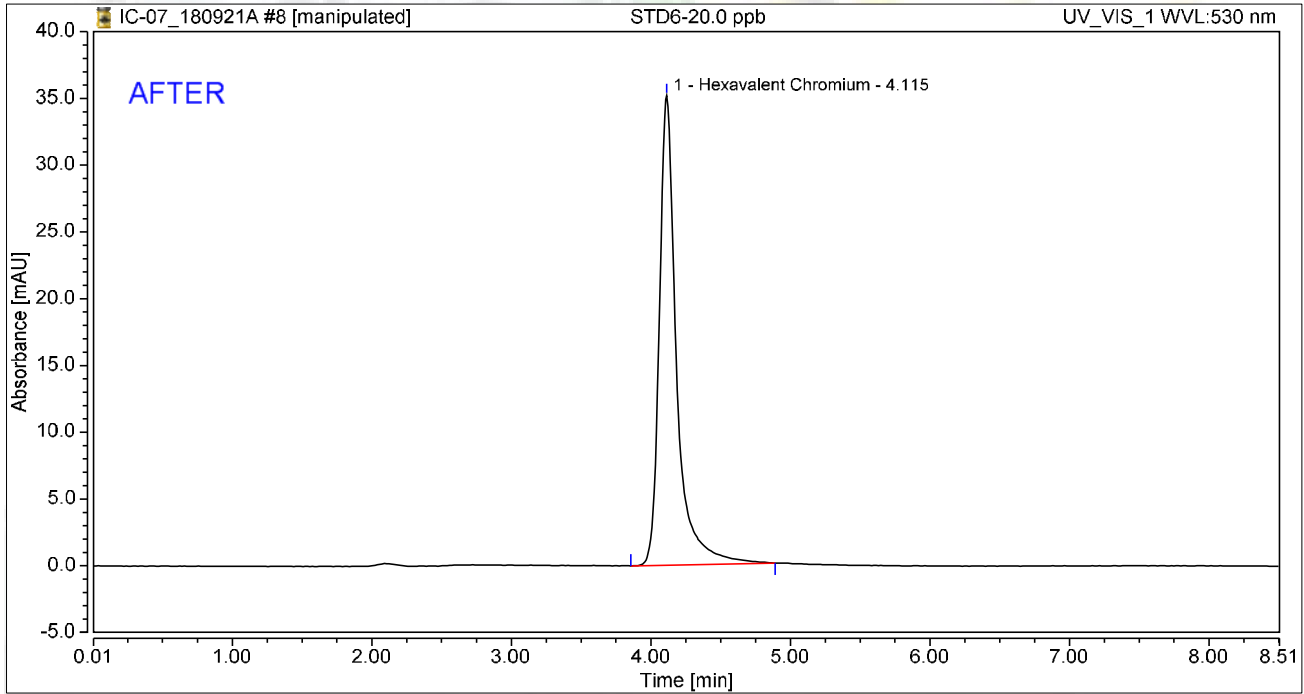
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:25	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	5.046	35.157	100.00	100.00	19.9635
<b>Total:</b>			<b>5.046</b>	<b>35.157</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/30/2018

Reviewed by:  
*Arney* 10/8/2018

My first report/Integration

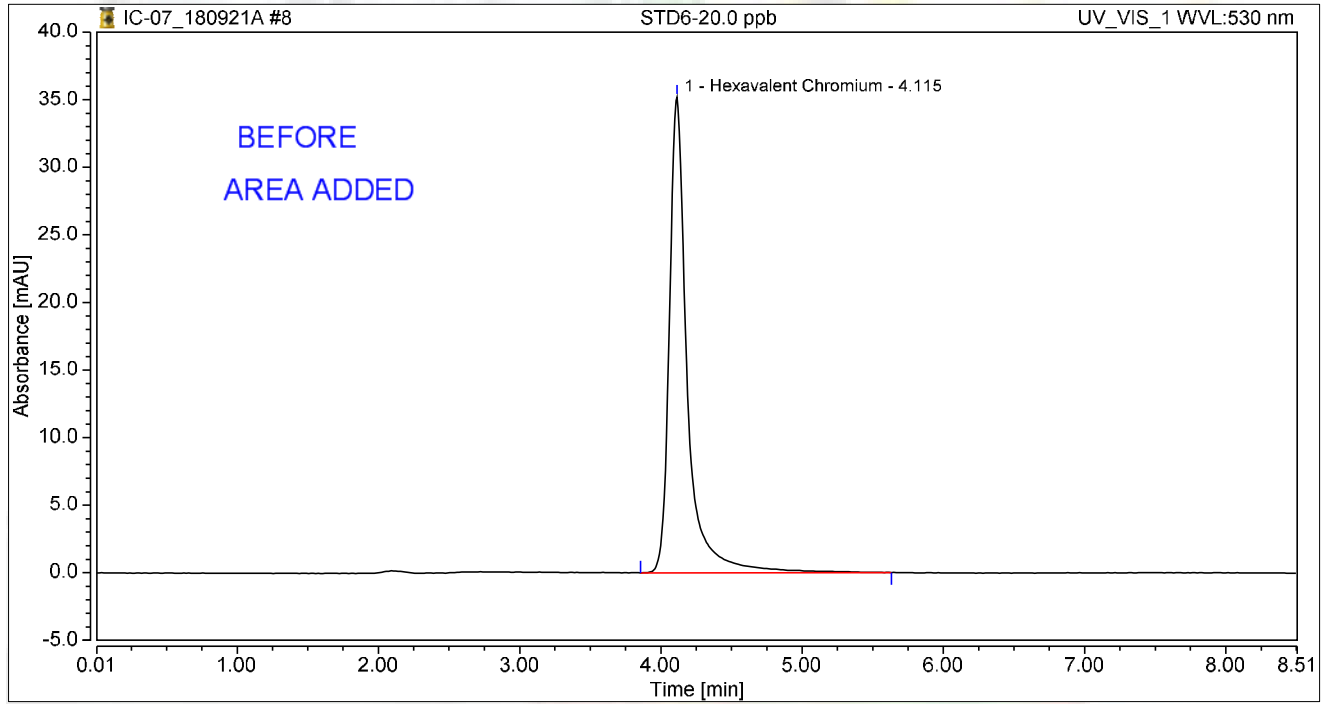
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:25	Sample Weight:	1.0000

**Chromatogram**

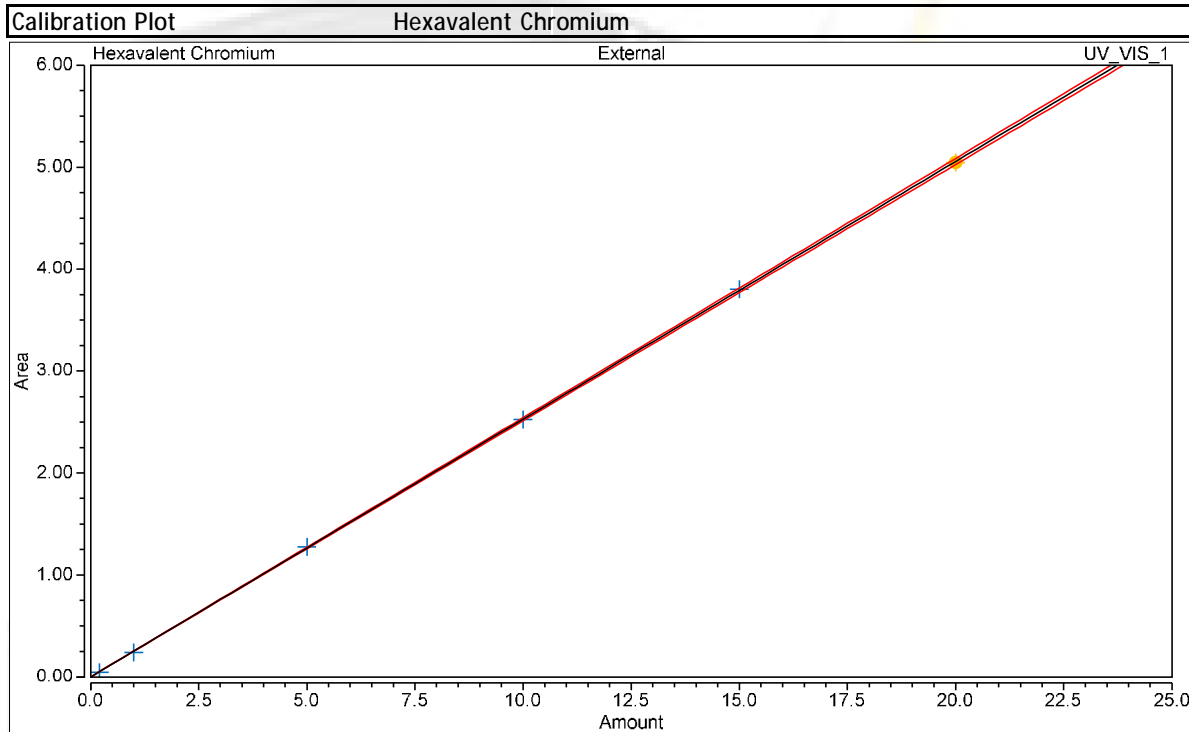


**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	5.210	35.207	100.00	100.00	19.9945
<b>Total:</b>			<b>5.210</b>	<b>35.207</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Initial Calibration Summary			
Calibration Details		Hexavalent Chromium	
Calibration Type	Lin	Offset (C0)	0.0000
Evaluation Type	Area	Slope (C1)	0.2528
Number of Calibration Points	6	Curve (C2)	0.0000
Number of disabled Calibration Points	0	R-Square	0.99997



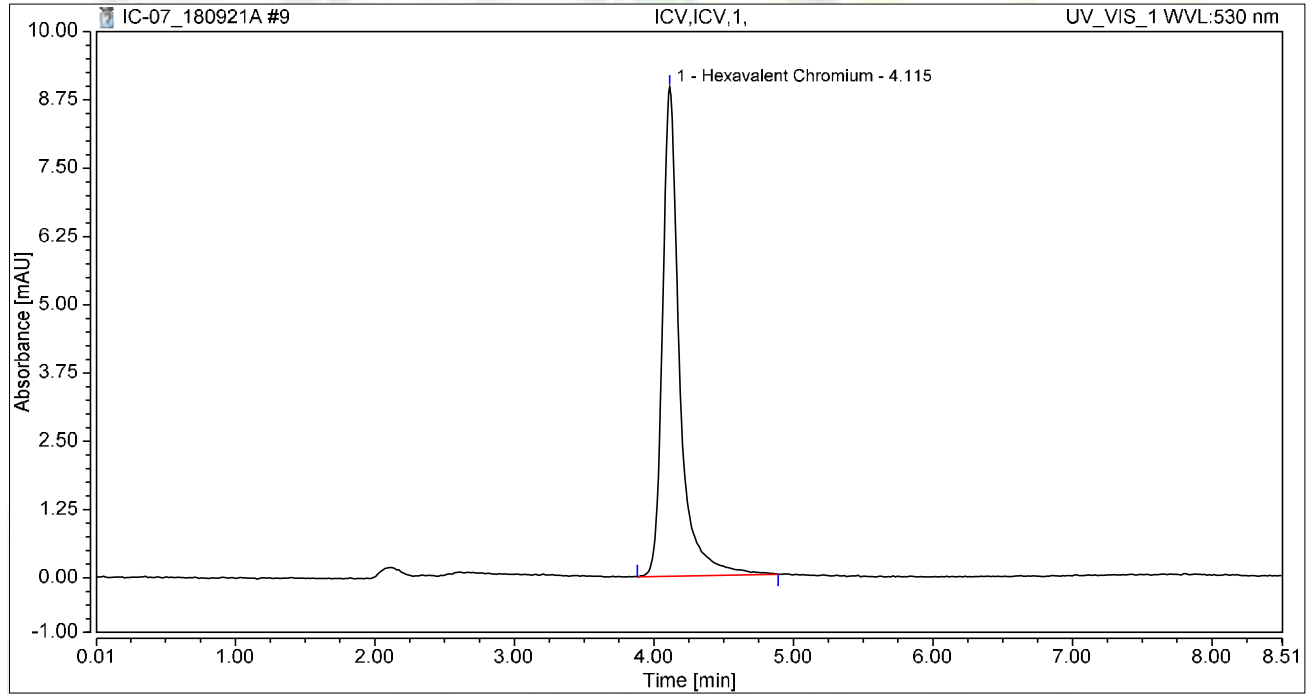
Calibration Results		Hexavalent Chromium				
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
3	STD1-0.2 ppb	01	0.2000	0.0462	0.046	0.379
4	STD2-1.0 ppb	02	1.0000	0.2400	0.240	1.724
5	STD3-5.0 ppb	03	5.0000	1.2761	1.276	8.809
6	STD4-10.0 ppb	04	10.0000	2.5253	2.525	17.564
7	STD5-15.0 ppb	05	15.0000	3.8020	3.802	26.404
8	STD6-20.0 ppb	06	20.0000	5.0460	5.046	35.157

### Chromatogram and Results

**Injection Details**

Injection Name:	ICV,ICV,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

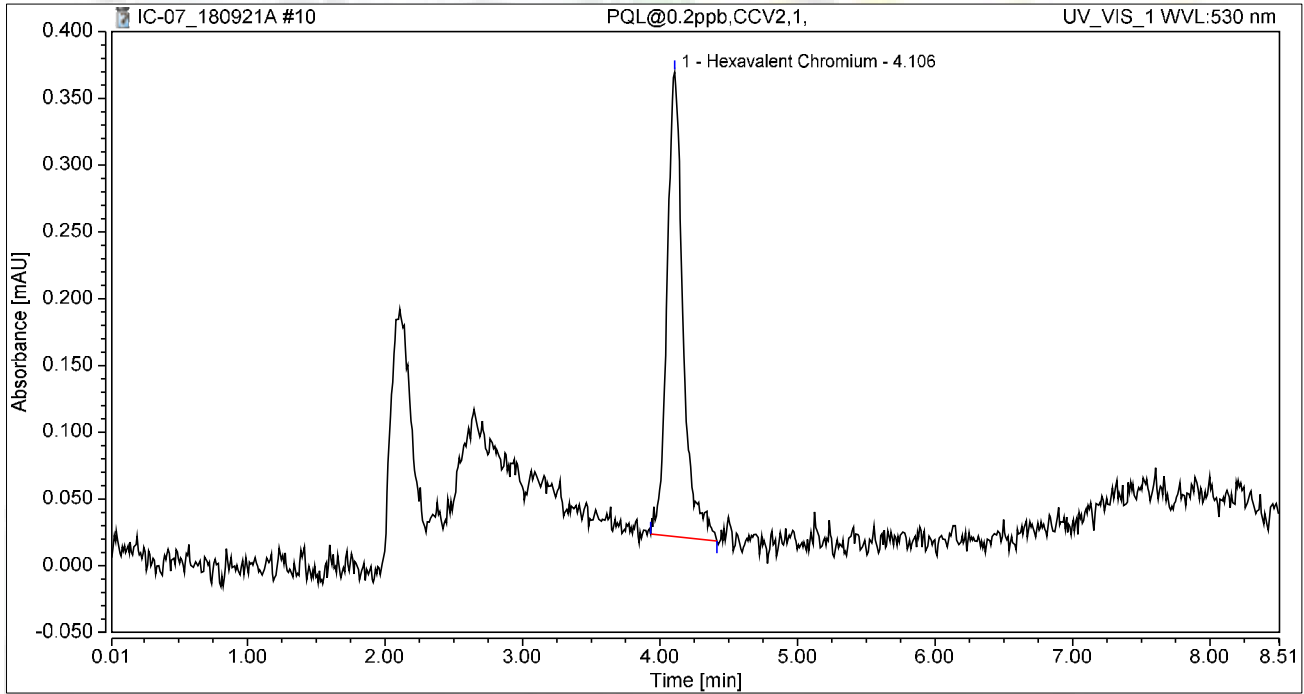
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.276	8.956	100.00	100.00	5.0467
<b>Total:</b>			<b>1.276</b>	<b>8.956</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

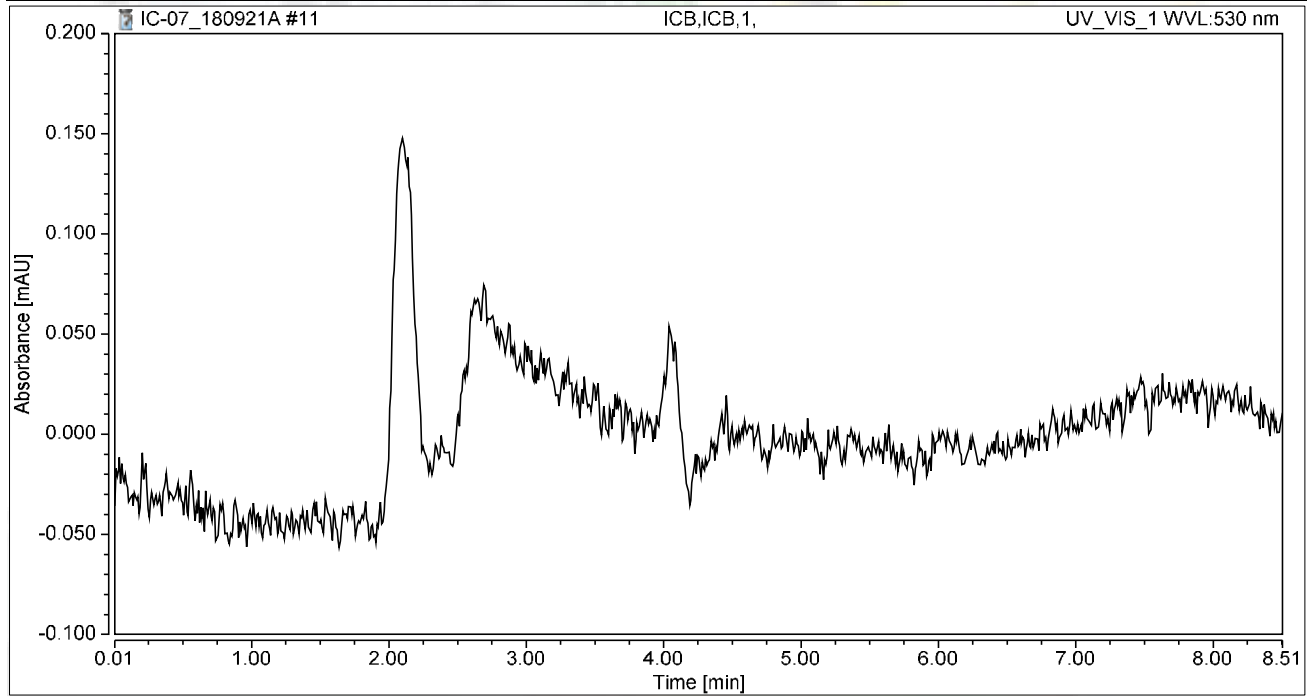
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.047	0.348	100.00	100.00	0.1865
<b>Total:</b>			<b>0.047</b>	<b>0.348</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	ICB,ICB,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691





**INJECTION LOG: 181002A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	10/02/18 8:44 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	10/02/18 8:55 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	10/02/18 9:05 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	10/02/18 9:14 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	10/02/18 9:23 AM	Reported
14	MB-R129015	MBLK	1	Hexavalent Chromium	10/02/18 9:33 AM	Reported
15	LCS-R129015	LCS	1	Hexavalent Chromium	10/02/18 9:42 AM	Reported
16	N032304-001A	SAMP	1	Hexavalent Chromium	10/02/18 10:22 AM	Reported
17	N032304-002A	SAMP	1	Hexavalent Chromium	10/02/18 10:32 AM	Reported
18	N032304-003A	SAMP	1	Hexavalent Chromium	10/02/18 10:42 AM	Reported
19	N032304-004A	SAMP	1	Hexavalent Chromium	10/02/18 10:51 AM	Reported
20	N032304-005A	SAMP	1	Hexavalent Chromium	10/02/18 11:06 AM	Reported
21	N032304-006A	SAMP	1	Hexavalent Chromium	10/02/18 11:18 AM	Reported
22	N032304-007A	SAMP	1	Hexavalent Chromium	10/02/18 11:27 AM	Reported
23	N032304-008A	SAMP	1	Hexavalent Chromium	10/02/18 11:36 AM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	10/02/18 11:46 AM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	10/02/18 11:55 AM	Reported
26	N032304-009A	SAMP	1	Hexavalent Chromium	10/02/18 12:05 PM	Reported
27	N032304-010A	SAMP	1	Hexavalent Chromium	10/02/18 12:14 PM	Reported
28	N032304-011A	SAMP	1	Hexavalent Chromium	10/02/18 12:24 PM	Reported
29	N032304-012A	SAMP	1	Hexavalent Chromium	10/02/18 12:33 PM	Reported
30	N032304-013A	SAMP	1	Hexavalent Chromium	10/02/18 12:43 PM	Reported
31	N032305-001A	SAMP	5	Hexavalent Chromium	10/02/18 12:52 PM	Reported
32	N032305-001AMS	MS	5	Hexavalent Chromium	10/02/18 1:02 PM	Reported
33	N032305-002A	SAMP	5	Hexavalent Chromium	10/02/18 1:11 PM	Reported
34	N032305-002AMS	MS	5	Hexavalent Chromium	10/02/18 1:21 PM	Reported
35	N032305-002AMSD	MSD	5	Hexavalent Chromium	10/02/18 1:30 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	10/02/18 1:39 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	10/02/18 1:49 PM	Reported
38	N032305-003A	SAMP	1	Hexavalent Chromium	10/02/18 1:58 PM	Reported
39	N032305-003AMS	MS	1	Hexavalent Chromium	10/02/18 2:08 PM	Reported
40	N032305-001A	SAMP	1	Hexavalent Chromium	10/02/18 2:17 PM	Not Reported
41	N032305-001AMS	MS	1	Hexavalent Chromium	10/02/18 2:27 PM	Not Reported
42	N032304-008ADUP	DUP	1	Hexavalent Chromium	10/02/18 2:36 PM	Reported

**INJECTION LOG: 181002A**

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N032305-002A	SAMP	1	Hexavalent Chromium	10/02/18 2:46 PM	Not Reported
44	N032305-002AMS	MS	1	Hexavalent Chromium	10/02/18 3:13 PM	Not Reported
45	CCV-4	CCV1	1	Hexavalent Chromium	10/02/18 3:24 PM	Reported
46	CCB-4	CCB	1	Hexavalent Chromium	10/02/18 3:33 PM	Reported
47	LCS-R129016	LCS	1	Hexavalent Chromium	10/02/18 3:57 PM	Reported
48	MB-R129016	MBLK	1	Hexavalent Chromium	10/02/18 4:08 PM	Reported
49	N032303-001A	SAMP	1	Hexavalent Chromium	10/02/18 4:17 PM	Reported
50	N032303-002A	SAMP	1	Hexavalent Chromium	10/02/18 4:27 PM	Reported
51	N032303-003A	SAMP	1	Hexavalent Chromium	10/02/18 4:36 PM	Not Reported
52	N032303-004A	SAMP	1	Hexavalent Chromium	10/02/18 4:46 PM	Not Reported
53	N032303-005A	SAMP	1	Hexavalent Chromium	10/02/18 4:55 PM	Reported
54	N032303-002AMS	MS	1	Hexavalent Chromium	10/02/18 5:05 PM	Reported
55	N032303-002AMSD	MSD	1	Hexavalent Chromium	10/02/18 5:14 PM	Reported
56	N032303-005ADUP	DUP	1	Hexavalent Chromium	10/02/18 5:24 PM	Reported
57	CCV-5	CCV	1	Hexavalent Chromium	10/02/18 5:33 PM	Reported
58	CCB-5	CCB	1	Hexavalent Chromium	10/02/18 5:43 PM	Reported
59	N032303-003A	SAMP	1	Hexavalent Chromium	10/02/18 5:52 PM	Reported
60	N032303-004A	SAMP	1	Hexavalent Chromium	10/02/18 6:01 PM	Reported
61	N032303-006A	SAMP	1	Hexavalent Chromium	10/02/18 6:11 PM	Reported
62	N032303-007A	SAMP	1	Hexavalent Chromium	10/02/18 6:20 PM	Reported
63	N032303-008A	SAMP	1	Hexavalent Chromium	10/02/18 6:30 PM	Reported
64	CCV-6	CCV1	1	Hexavalent Chromium	10/02/18 6:39 PM	Reported
65	CCB-6	CCB	1	Hexavalent Chromium	10/02/18 6:49 PM	Reported

### Injection Log Summary

**Sequence Details**

Name:	IC-07_181002A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	04/Oct/18 18:04:59
No. of Injections:	68	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	BLANK	1	1000	Unknown		10/02/2018 08:44	Finished	BLANK
10	BLANK	2	1000	Unknown		10/02/2018 08:55	Finished	BLANK
11	CCV-1,CCV,1,	3	1000	Unknown		10/02/2018 09:05	Finished	CCV @5ppb, IWST-180622A
12	PQL@0.2ppb,CCV2,	4	1000	Unknown		10/02/2018 09:14	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		10/02/2018 09:23	Finished	CCB R180919A
14	MB-H2O,MBLK,1,	6	1000	Unknown		10/02/2018 09:33	Finished	MB R180919A
15	LCS-H2O,LCS,1,	7	1000	Unknown		10/02/2018 09:42	Finished	LCS @5ppb, IWST-180622B
16	N032304-001A,SAMP	1	1000	Unknown		10/02/2018 10:22	Finished	SAMP,10mL
17	N032304-002A,SAMP	2	1000	Unknown		10/02/2018 10:32	Finished	SAMP,10mL
18	N032304-003A,SAMP	3	1000	Unknown		10/02/2018 10:42	Finished	SAMP,10mL
19	N032304-004A,SAMP	4	1000	Unknown		10/02/2018 10:51	Finished	SAMP,10mL
20	N032304-005A,SAMP	6	1000	Unknown		10/02/2018 11:06	Finished	SAMP,10mL
21	N032304-006A,SAMP	7	1000	Unknown		10/02/2018 11:18	Finished	SAMP,10mL
22	N032304-007A,SAMP	8	1000	Unknown		10/02/2018 11:27	Finished	SAMP,10mL
23	N032304-008A,SAMP	9	1000	Unknown		10/02/2018 11:36	Finished	SAMP,10mL
24	CCV-2,CCV1,1,	11	1000	Unknown		10/02/2018 11:46	Finished	CCV @10ppb, IWST-180622A
25	CCB-2,CCB,1,	12	1000	Unknown		10/02/2018 11:55	Finished	CCB R180919A
26	N032304-009A,SAMP	13	1000	Unknown		10/02/2018 12:05	Finished	MS (1ppb), IWST-180622B,10
27	N032304-010A,SAMP	14	1000	Unknown		10/02/2018 12:14	Finished	SAMP,10mL
28	N032304-011A,SAMP	15	1000	Unknown		10/02/2018 12:24	Finished	MS (1ppb), IWST-180622B,10
29	N032304-012A,SAMP	16	1000	Unknown		10/02/2018 12:33	Finished	SAMP,10mL
30	N032304-013A,SAMP	17	1000	Unknown		10/02/2018 12:43	Finished	MS (5ppb), IWST-180622B,10
31	N032305-001A,SAMP	18	1000	Unknown		10/02/2018 12:52	Finished	SAMP,2>10mL
32	N032305-001AMS,MS	19	1000	Unknown		10/02/2018 13:02	Finished	MS (1ppb), IWST-180622B,2>10
33	N032305-002A,SAMP	20	1000	Unknown		10/02/2018 13:11	Finished	SAMP,2>10mL
34	N032305-002AMS,MS	21	1000	Unknown		10/02/2018 13:21	Finished	MS (5ppb), IWST-180622B,2>10
35	N032305-002AMSD,MS	22	1000	Unknown		10/02/2018 13:30	Finished	MSD (5ppb), IWST-180622B,2>10
36	CCV-3,CCV,1,	23	1000	Unknown		10/02/2018 13:39	Finished	CCV @5ppb, IWST-180622A
37	CCB-3,CCB,1,	24	1000	Unknown		10/02/2018 13:49	Finished	CCB R180919A
38	N032305-003A,SAMP	25	1000	Unknown		10/02/2018 13:58	Finished	SAMP,10mL
39	N032305-003AMS,MS	26	1000	Unknown		10/02/2018 14:08	Finished	MS (1ppb), IWST-180622B,10
40	N032305-001A,SAMP	27	1000	Unknown		10/02/2018 14:17	Finished	SAMP,10mL
41	N032305-001AMS,MS	28	1000	Unknown		10/02/2018 14:27	Finished	MS (1ppb), IWST-180622B,10
42	N032304-008ADUP,DU	29	1000	Unknown		10/02/2018 14:36	Finished	DUP,10mL
43	N032305-002A,SAMP	30	1000	Unknown		10/02/2018 14:46	Finished	SAMP,10mL
44	N032305-002AMS,MS	32	1000	Unknown		10/02/2018 15:13	Finished	MS (5ppb), IWST-180622B,10
45	CCV-4,CCV1,1,	33	1000	Unknown		10/02/2018 15:24	Finished	CCV @10ppb, IWST-180622A
46	CCB-4,CCB,1,	34	1000	Unknown		10/02/2018 15:33	Finished	CCB R180919A
47	LCS-2,LCS,1,	1	1000	Unknown		10/02/2018 15:57	Finished	LCS @5ppb, IWST-180622B
48	MB-2,MBLK,1,	2	1000	Unknown		10/02/2018 16:08	Finished	MB R180919A
49	N032303-001A,SAMP	3	1000	Unknown		10/02/2018 16:17	Finished	SAMP,10mL
50	N032303-002A,SAMP	4	1000	Unknown		10/02/2018 16:27	Finished	SAMP,10mL
51	N032303-003A,SAMP	5	1000	Unknown		10/02/2018 16:36	Finished	SAMP,10mL
52	N032303-004A,SAMP	6	1000	Unknown		10/02/2018 16:46	Finished	SAMP,10mL
53	N032303-005A,SAMP	7	1000	Unknown		10/02/2018 16:55	Finished	SAMP,10mL
54	N032303-002AMS,MS	8	1000	Unknown		10/02/2018 17:05	Finished	MS (5ppb), IWST-180622B,10
55	N032303-002AMSD,MS	9	1000	Unknown		10/02/2018 17:14	Finished	MSD (5ppb), IWST-180622B,10
56	N032303-005ADUP,DU	10	1000	Unknown		10/02/2018 17:24	Finished	DUP,10mL
57	CCV-5,CCV,1,	11	1000	Unknown		10/02/2018 17:33	Finished	CCV @5ppb, IWST-180622A
58	CCB-5,CCB,1,	12	1000	Unknown		10/02/2018 17:43	Finished	CCB R180919A
59	N032303-003A,SAMP	13	1000	Unknown		10/02/2018 17:52	Finished	SAMP,10mL
60	N032303-004A,SAMP	14	1000	Unknown		10/02/2018 18:01	Finished	SAMP,10mL

61	N032303-006A,SAMP	15	1000	Unknown	10/02/2018 18:11	Finished	SAMP,10mL
62	N032303-007A,SAMP	16	1000	Unknown	10/02/2018 18:20	Finished	SAMP,10mL
63	N032303-008A,SAMP	17	1000	Unknown	10/02/2018 18:30	Finished	SAMP,10mL
64	CCV-6,CCV1,1,	18	1000	Unknown	10/02/2018 18:39	Finished	CCV @10ppb, IWST-180622A
65	CCB-6,CCB,1,	19	1000	Unknown	10/02/2018 18:49	Finished	CCB R180919A
66	SHUTDOWN	20	1000	Unknown	10/02/2018 18:58	Finished	
67	Eluent: R181002A	21	1000	Unknown	n.a.	Finished	Eluent
68	PCR: R181001B	22	1000	Unknown	n.a.	Finished	Post-Column Reagent

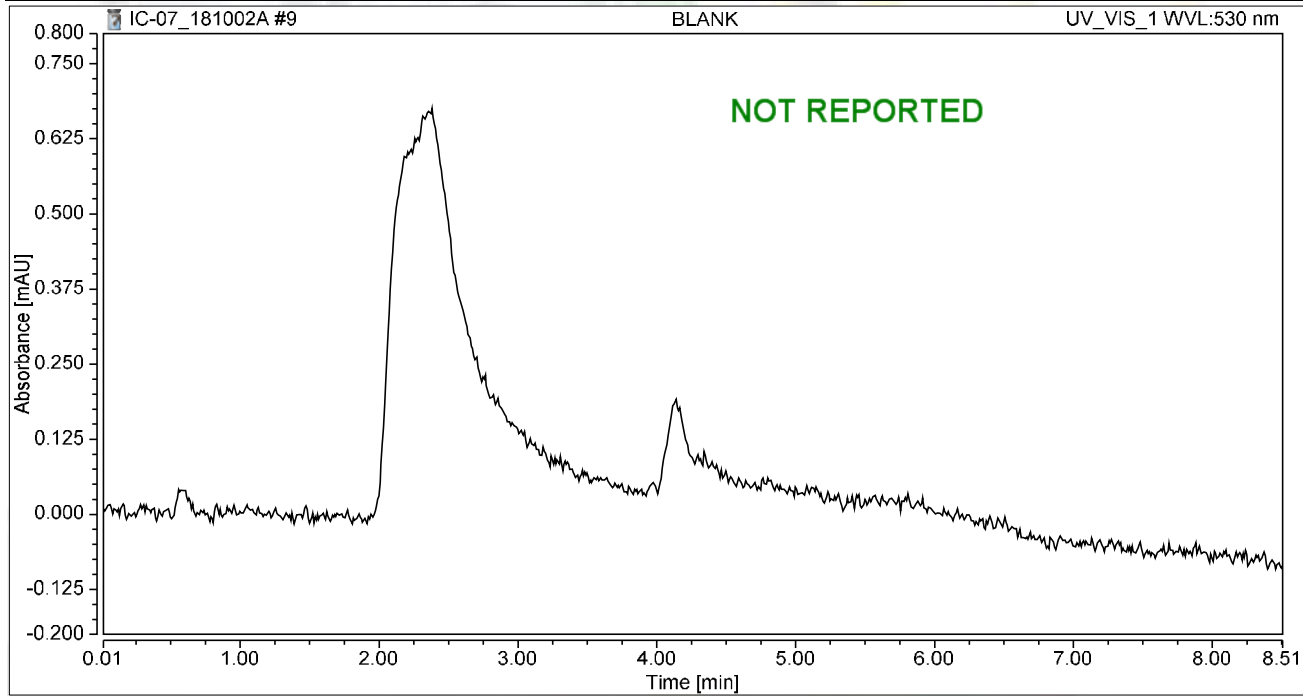


### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.49
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 08:44	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

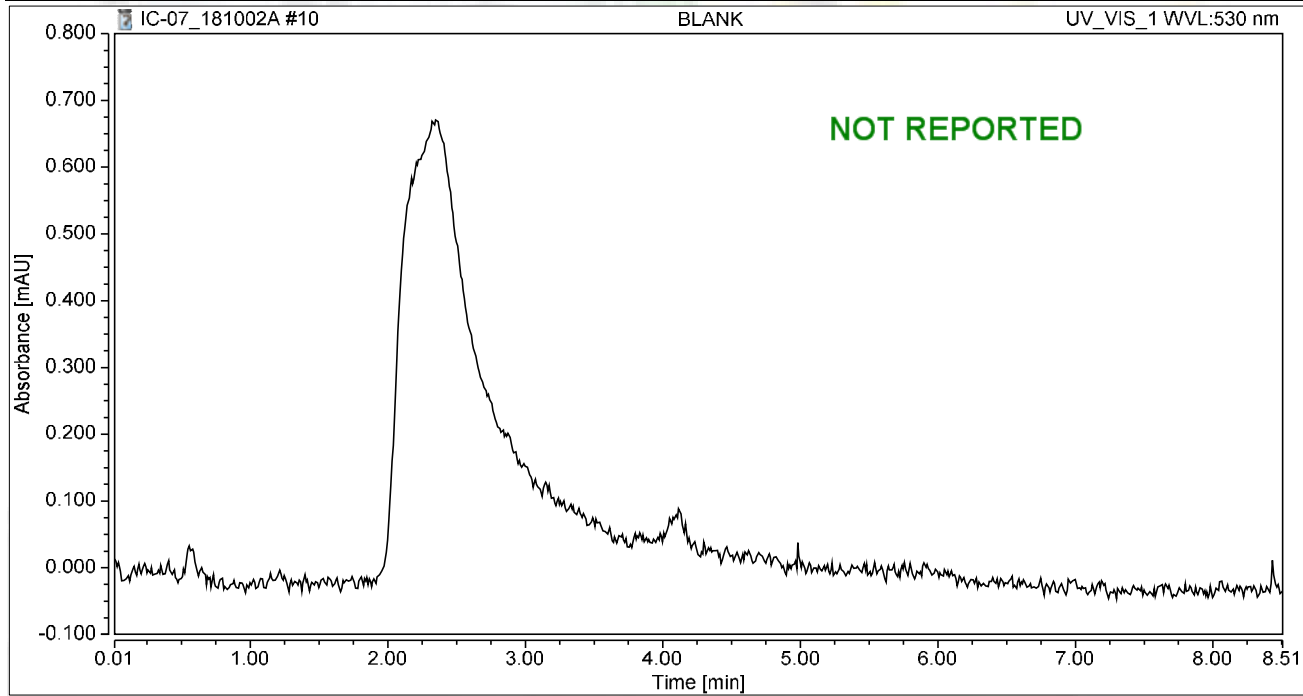
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.49
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 08:55	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

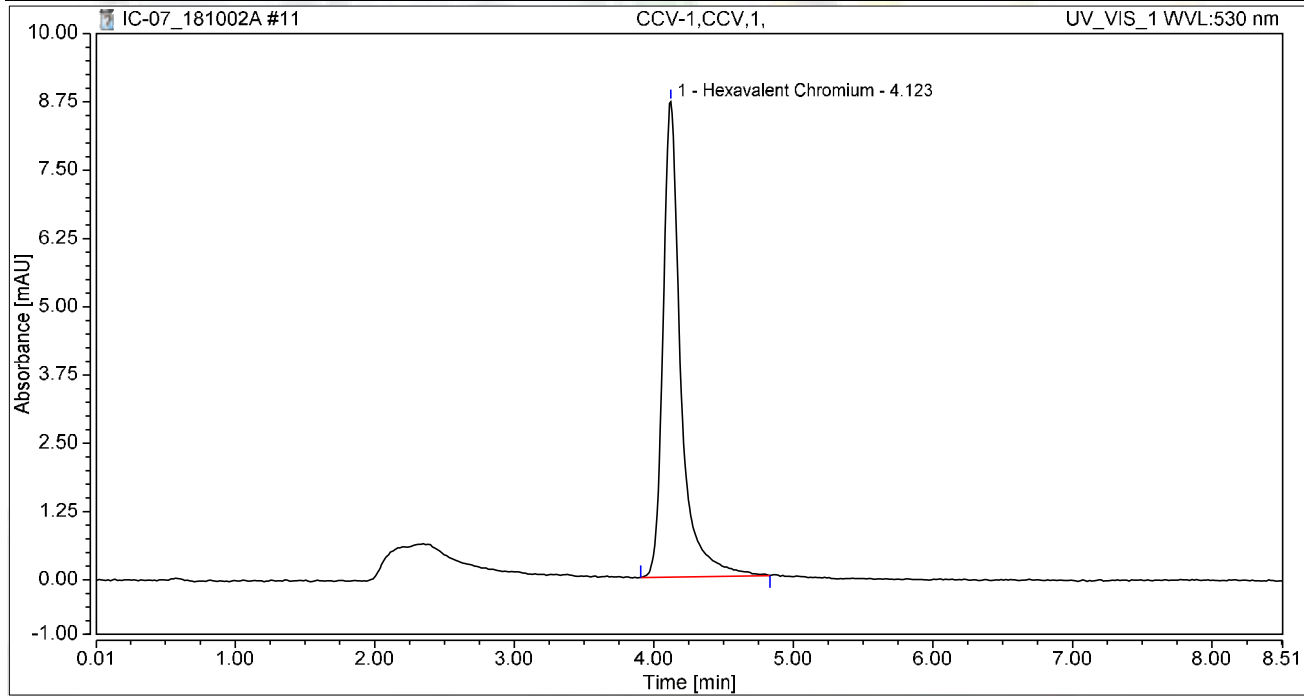
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-1,CCV,1,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 09:05	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

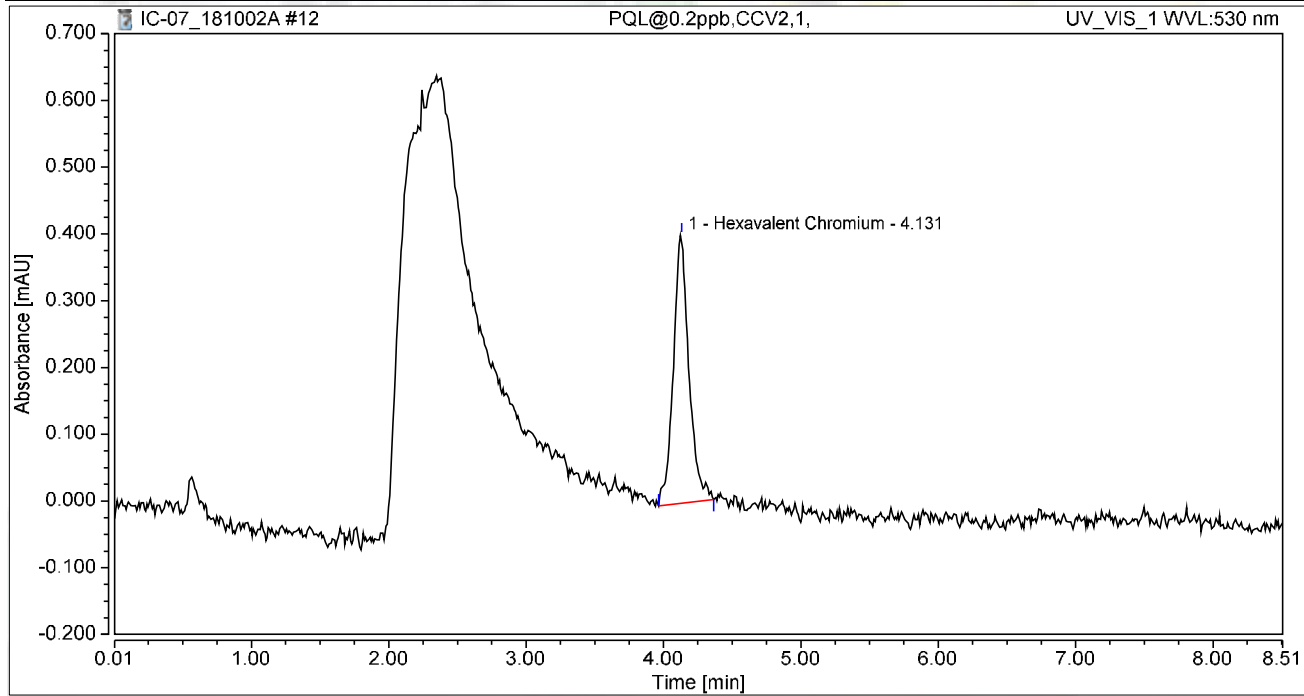
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	1.288	8.705	100.00	100.00	5.0961
<b>Total:</b>			<b>1.288</b>	<b>8.705</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 09:14	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.053	0.402	100.00	100.00	0.2094
<b>Total:</b>			<b>0.053</b>	<b>0.402</b>	<b>100.00</b>	<b>100.00</b>	

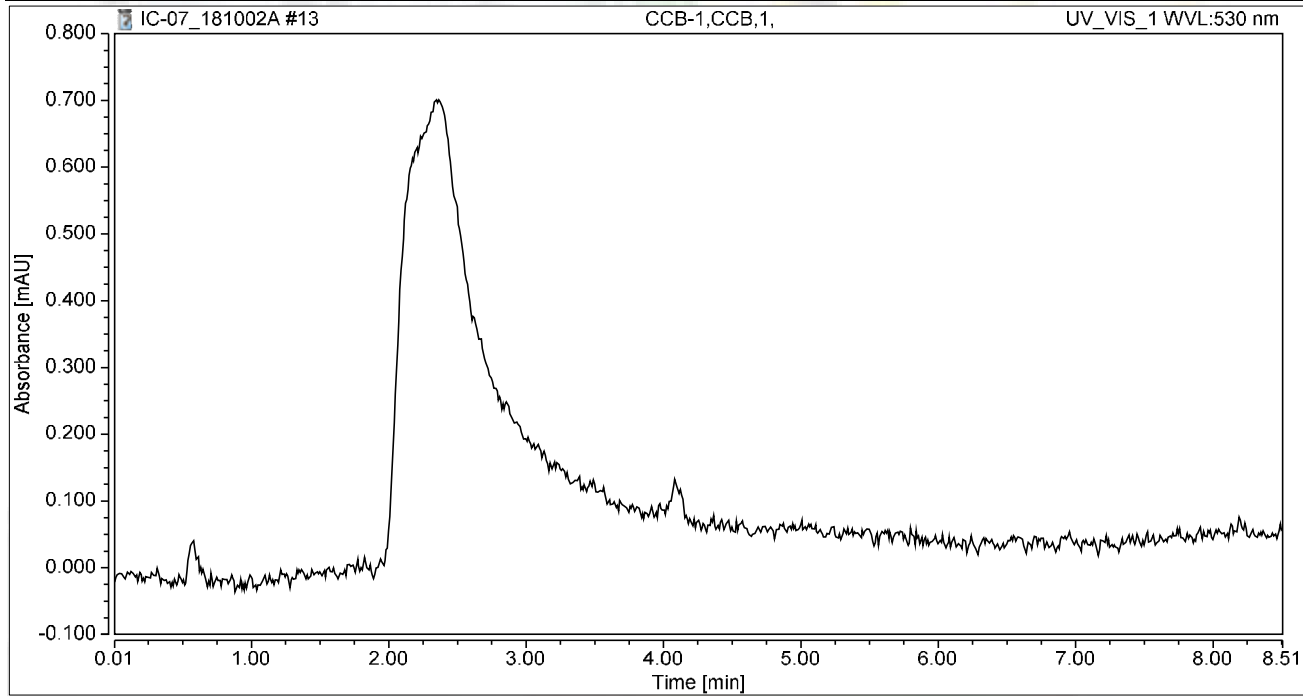


### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-1,CCB,1,	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 09:23	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

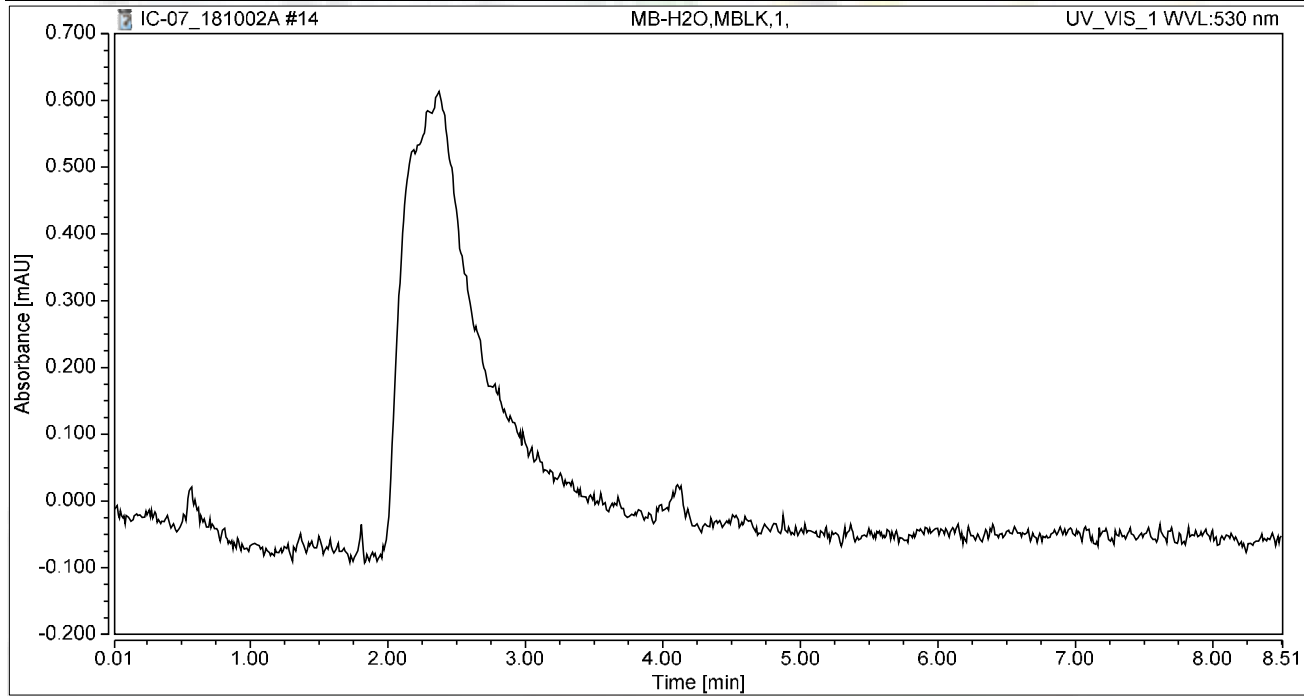
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	MB-H2O,MBLK,1,	Run Time (min):	8.49
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 09:33	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

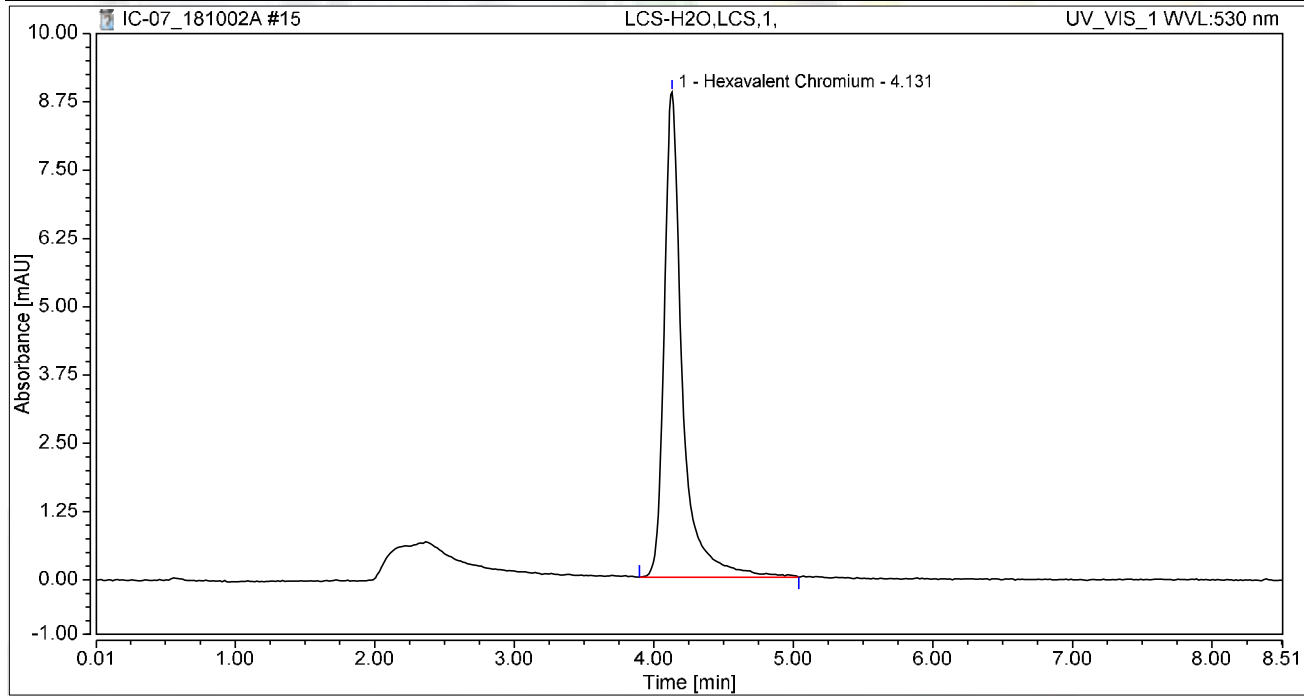
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	LCS-H2O,LCS,1,	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 09:42	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

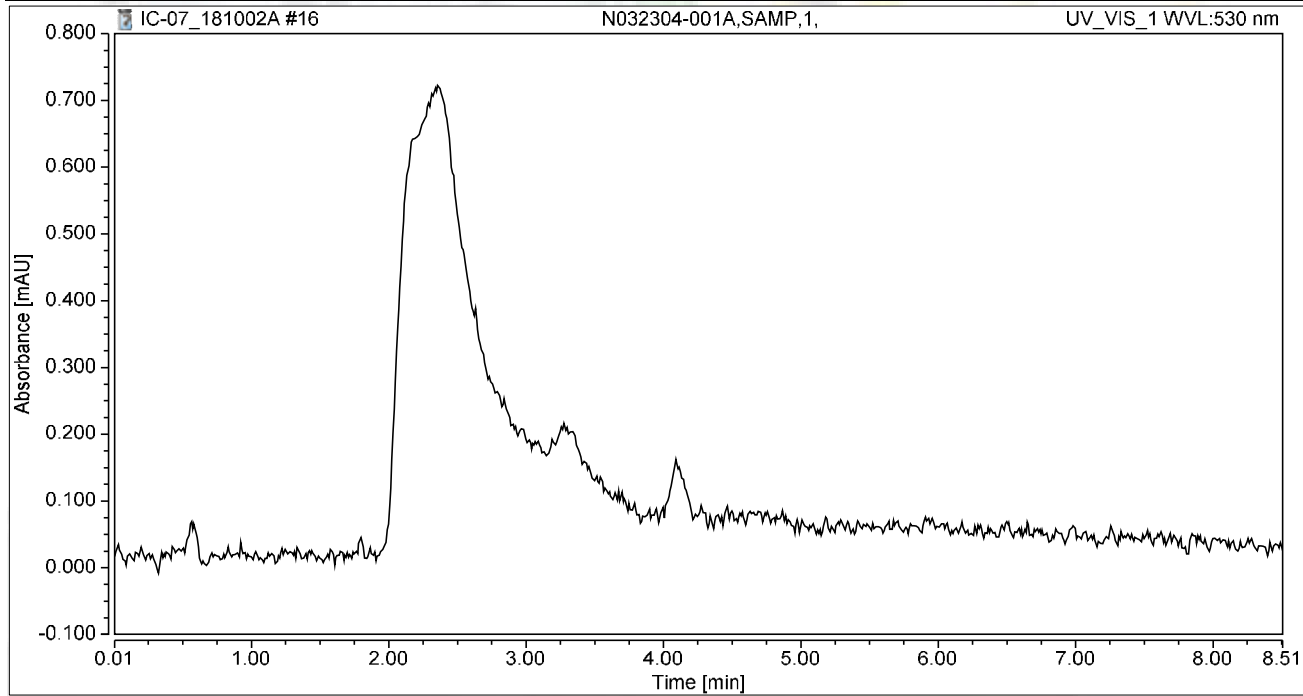
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.337	8.880	100.00	100.00	5.2896
<b>Total:</b>			<b>1.337</b>	<b>8.880</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 10:22	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

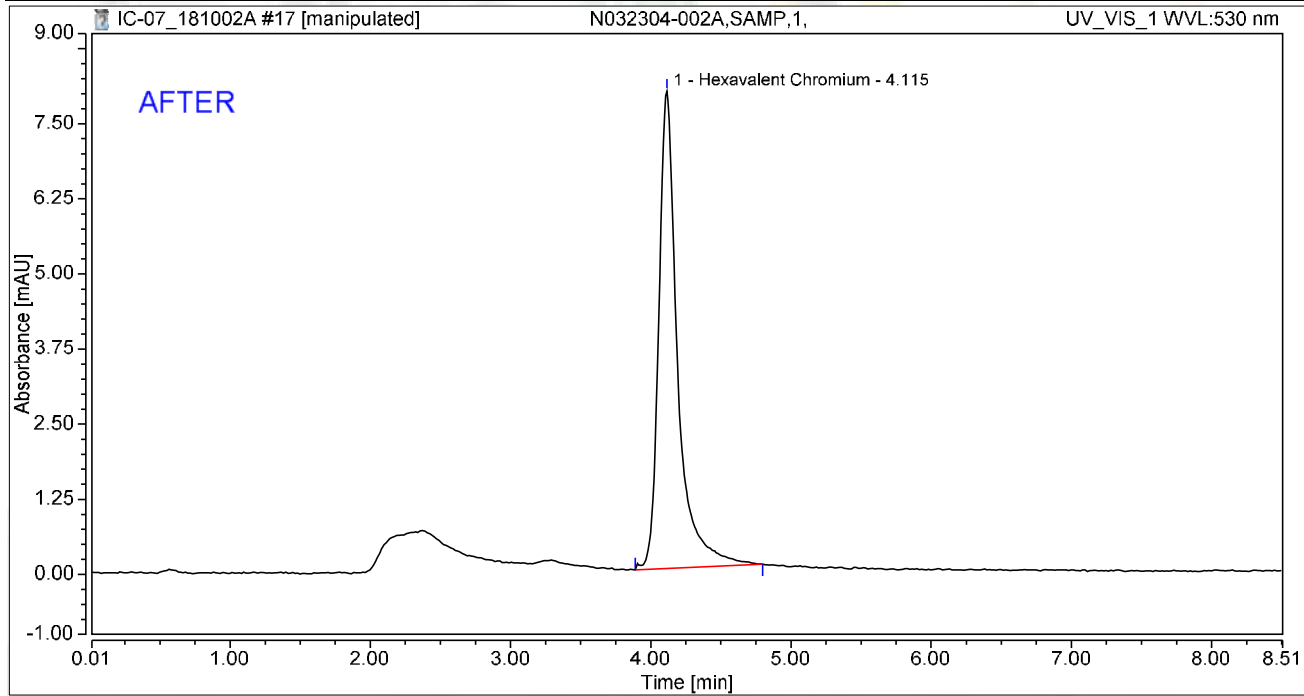
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-002A,SAMP,1,	Run Time (min):	8.49
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 10:32	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.240	7.945	100.00	100.00	4.9043
<b>Total:</b>			<b>1.240</b>	<b>7.945</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/13/2018

Reviewed by:

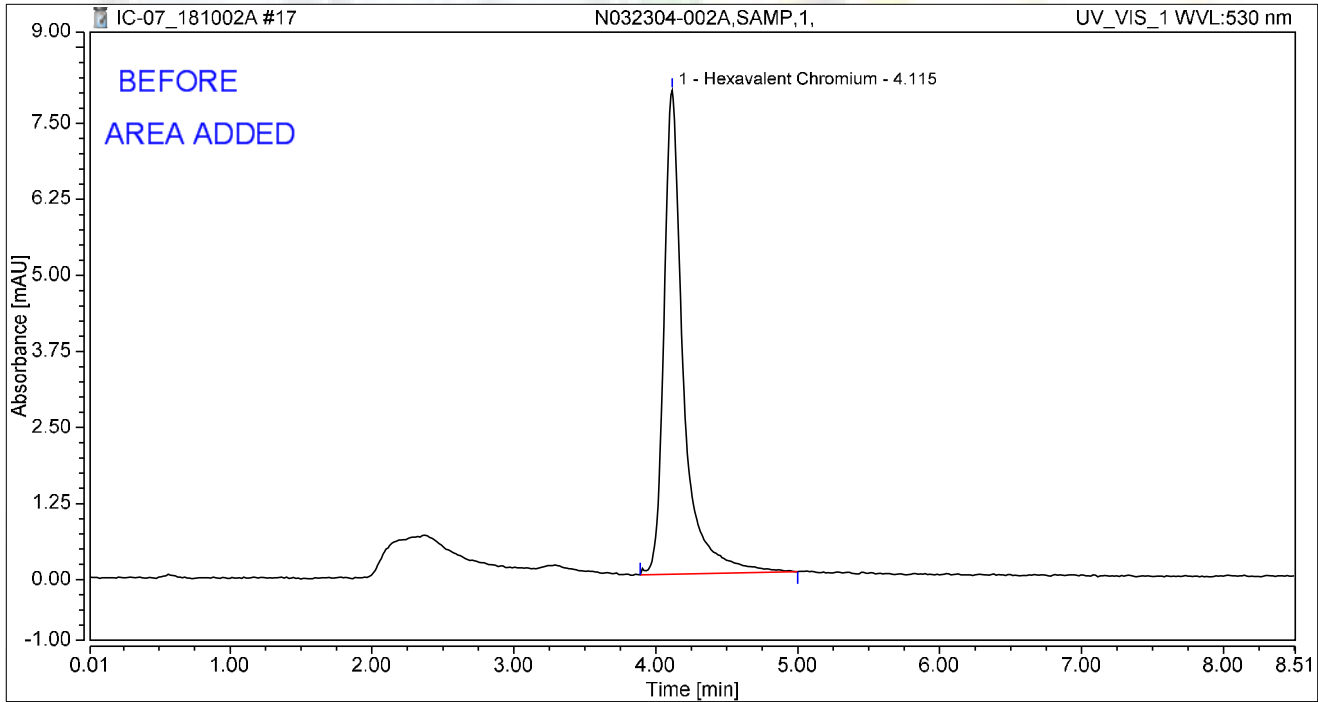
*Henry* 10/15/2018  
My first report with integration

### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-002A,SAMP,1,	Run Time (min):	8.49
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 10:32	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.270	7.958	100.00	100.00	5.0227
<b>Total:</b>			<b>1.270</b>	<b>7.958</b>	<b>100.00</b>	<b>100.00</b>	

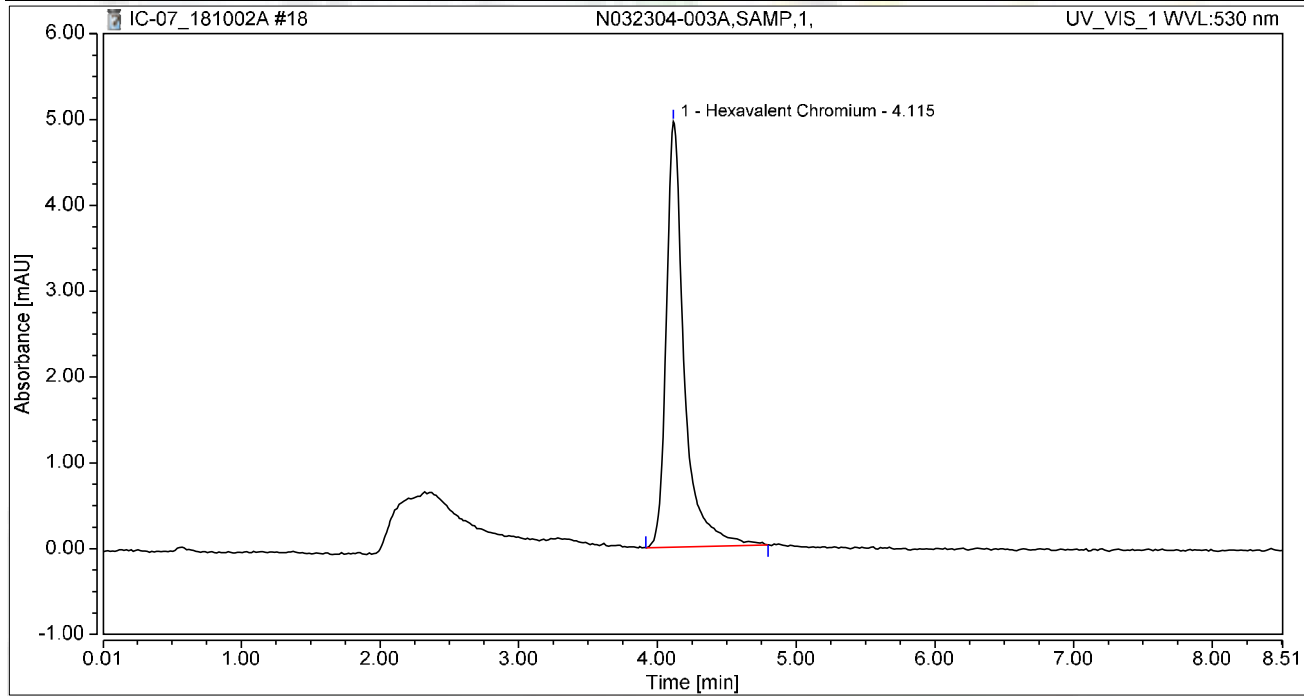
rba 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-003A,SAMP,1,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 10:42	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

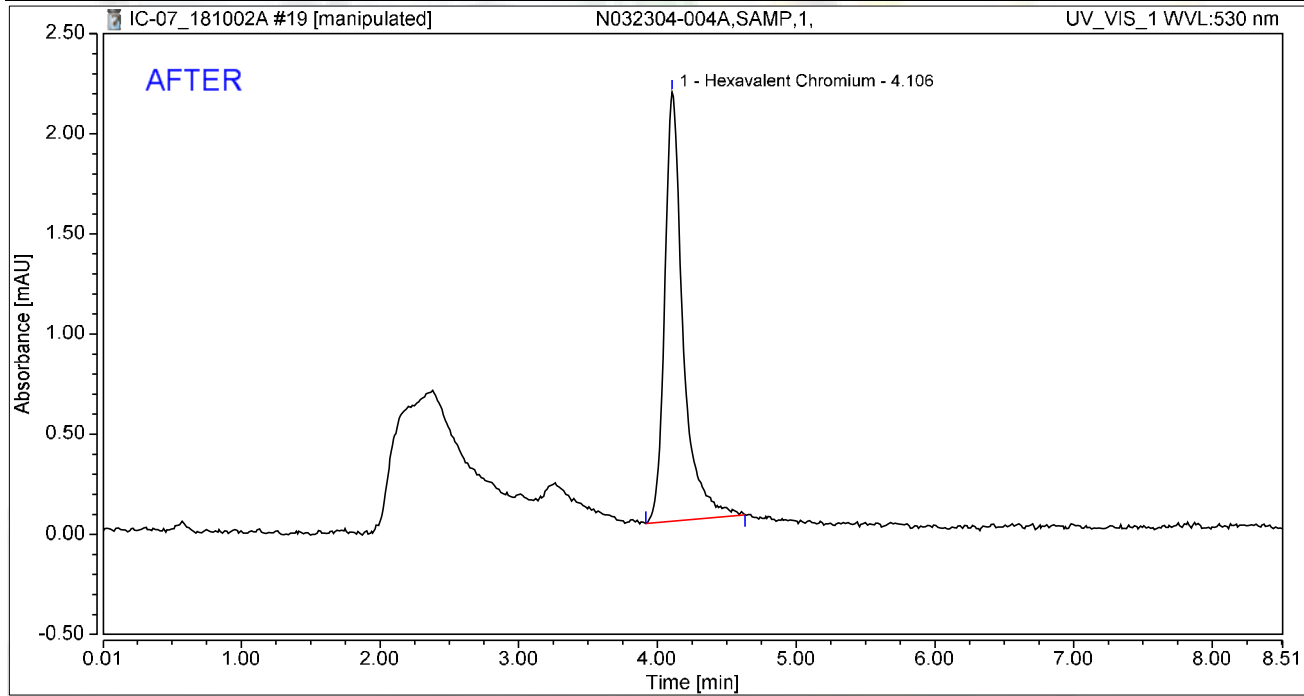
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.746	4.959	100.00	100.00	2.9503
<b>Total:</b>			<b>0.746</b>	<b>4.959</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-004A,SAMP,1,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 10:51	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.328	2.142	100.00	100.00	1.2979
<b>Total:</b>			<b>0.328</b>	<b>2.142</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/13/2018

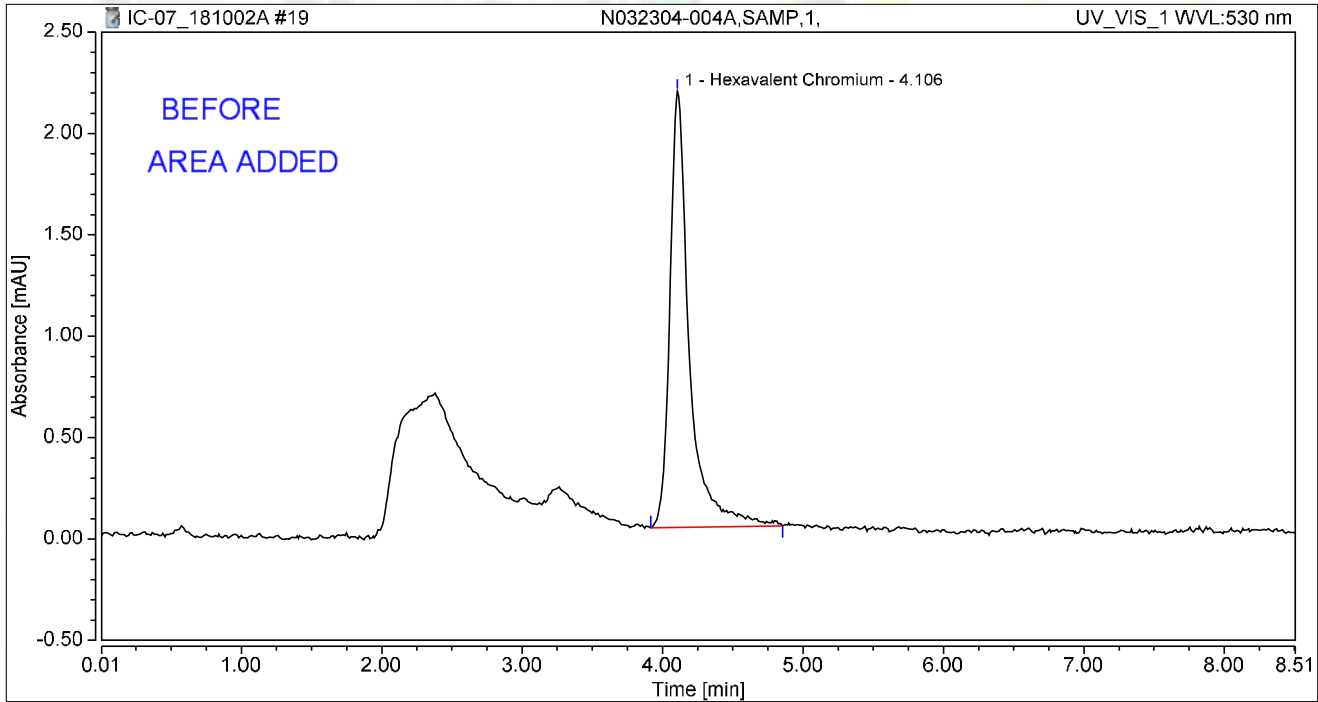


### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-004A,SAMP,1,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 10:51	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.346	2.151	100.00	100.00	1.3669
<b>Total:</b>			<b>0.346</b>	<b>2.151</b>	<b>100.00</b>	<b>100.00</b>	

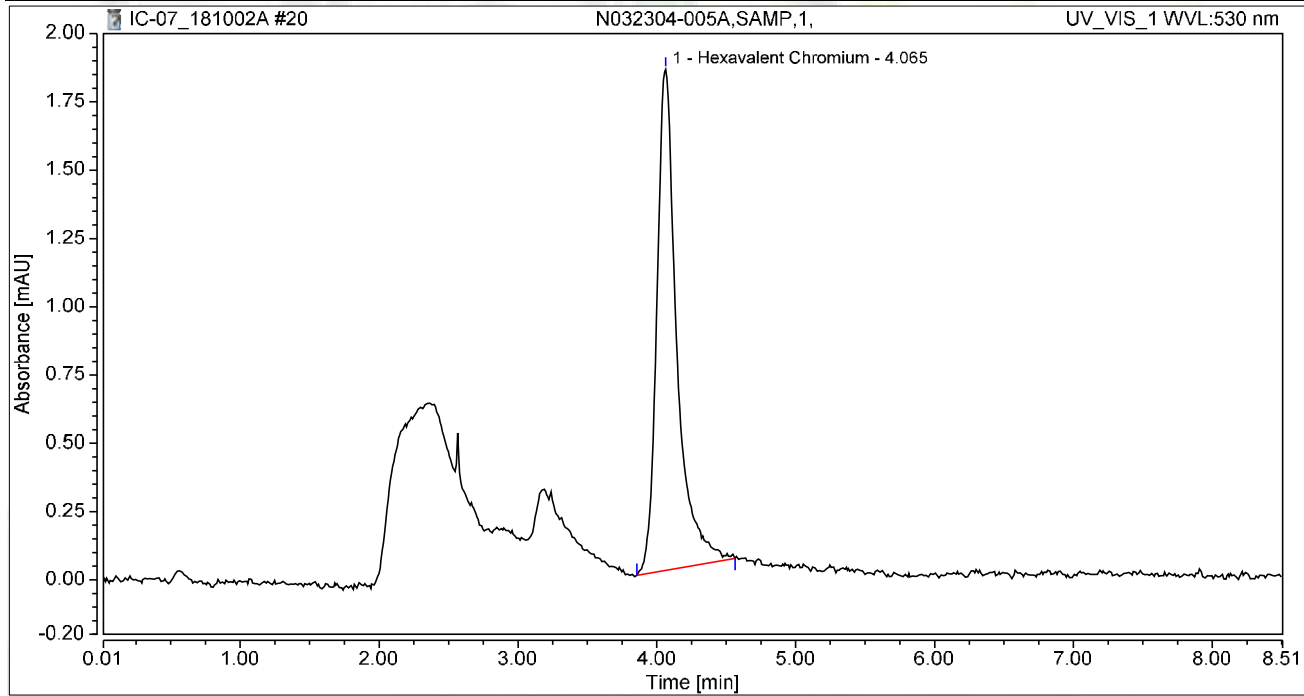
rba 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-005A,SAMP,1,	Run Time (min):	8.49
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 11:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

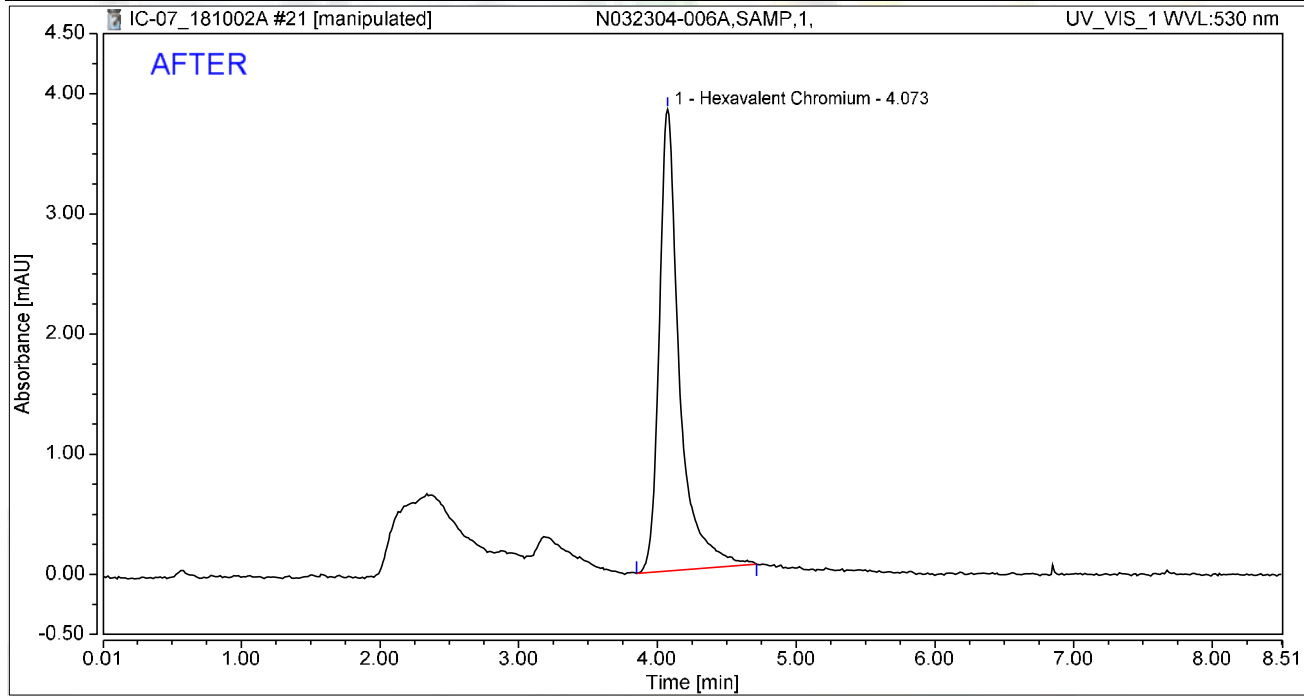
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.065	0.307	1.835	100.00	100.00	1.2159
<b>Total:</b>			<b>0.307</b>	<b>1.835</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-006A,SAMP,1,	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 11:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.649	3.840	100.00	100.00	2.5692
<b>Total:</b>			<b>0.649</b>	<b>3.840</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/13/2018

My first report/Integration

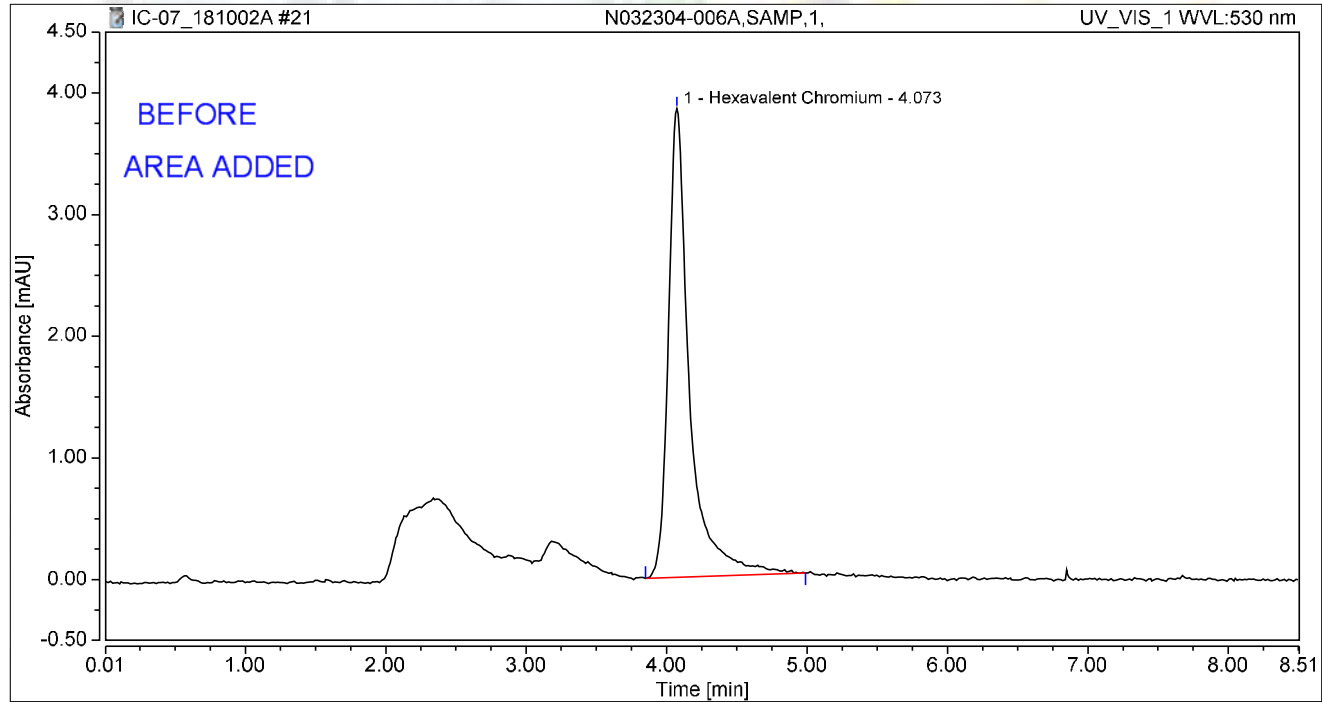
Reviewed by:  
*Nancy* 10/15/2018

Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

Injection Details		
Injection Name:	N032304-006A,SAMP,1,	Run Time (min): 8.50
Vial Number:	7	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	02/Oct/18 11:18	Sample Weight: 1.0000

#### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.674	3.851	100.00	100.00	2.6665
<b>Total:</b>			<b>0.674</b>	<b>3.851</b>	<b>100.00</b>	<b>100.00</b>	

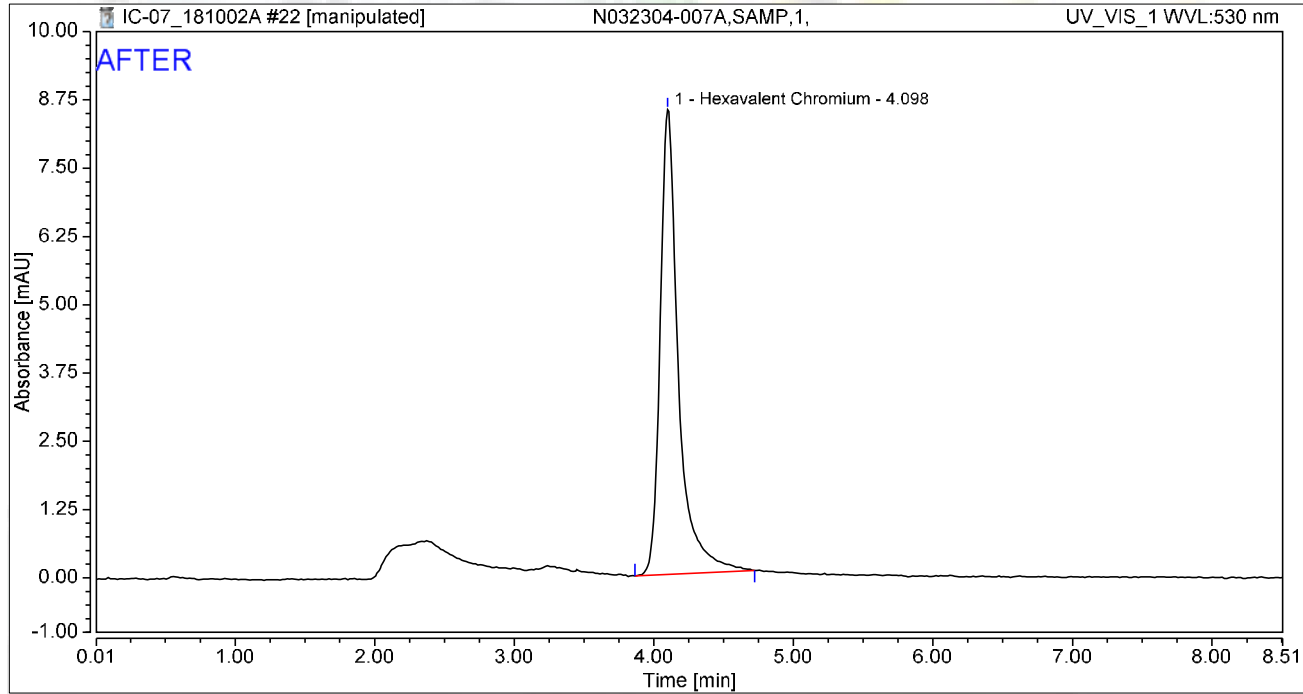
rba 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-007A,SAMP,1,	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 11:27	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	1.296	8.507	100.00	100.00	5.1264
<b>Total:</b>			<b>1.296</b>	<b>8.507</b>	<b>100.00</b>	<b>100.00</b>	

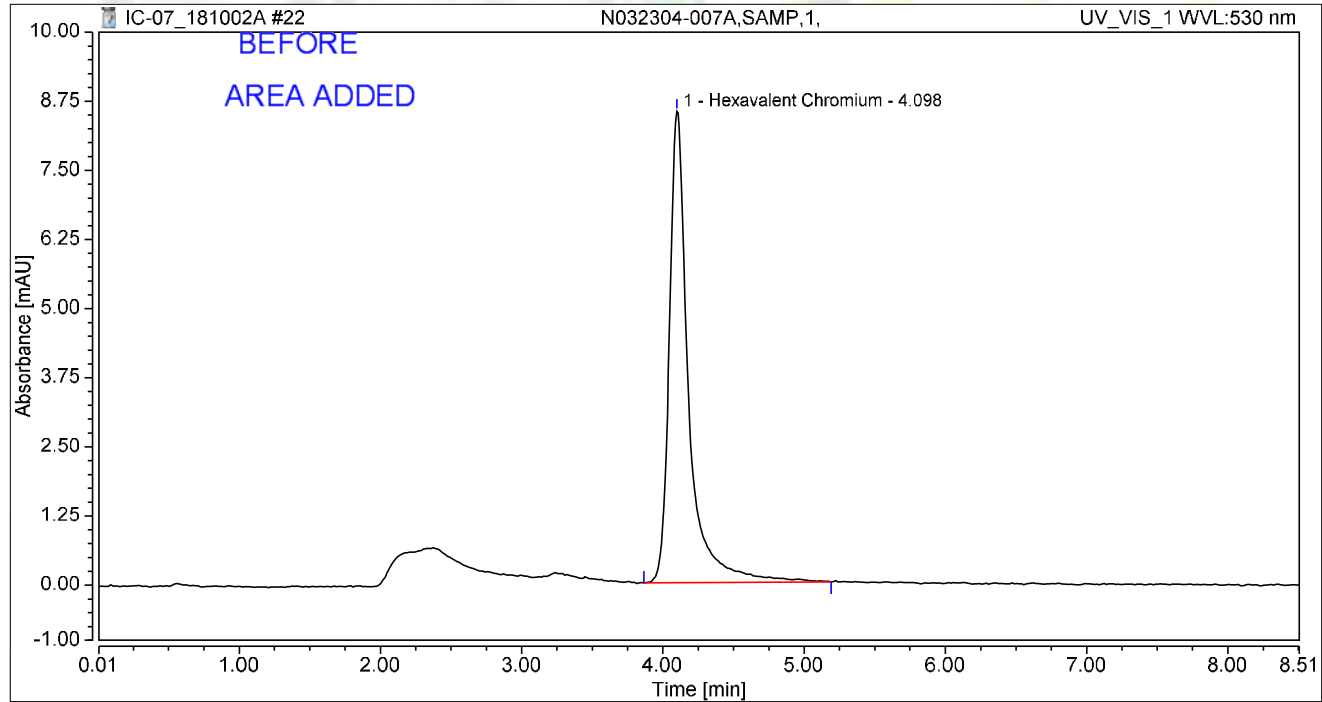
*rba* 10/13/2018

Reviewed by:  
 10/15/2018  
 My first report/integration

### Chromatogram and Results

Injection Details		
Injection Name:	N032304-007A,SAMP,1,	Run Time (min): 8.50
Vial Number:	8	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	02/Oct/18 11:27	Sample Weight: 1.0000

#### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	1.351	8.529	100.00	100.00	5.3430
<b>Total:</b>			<b>1.351</b>	<b>8.529</b>	<b>100.00</b>	<b>100.00</b>	

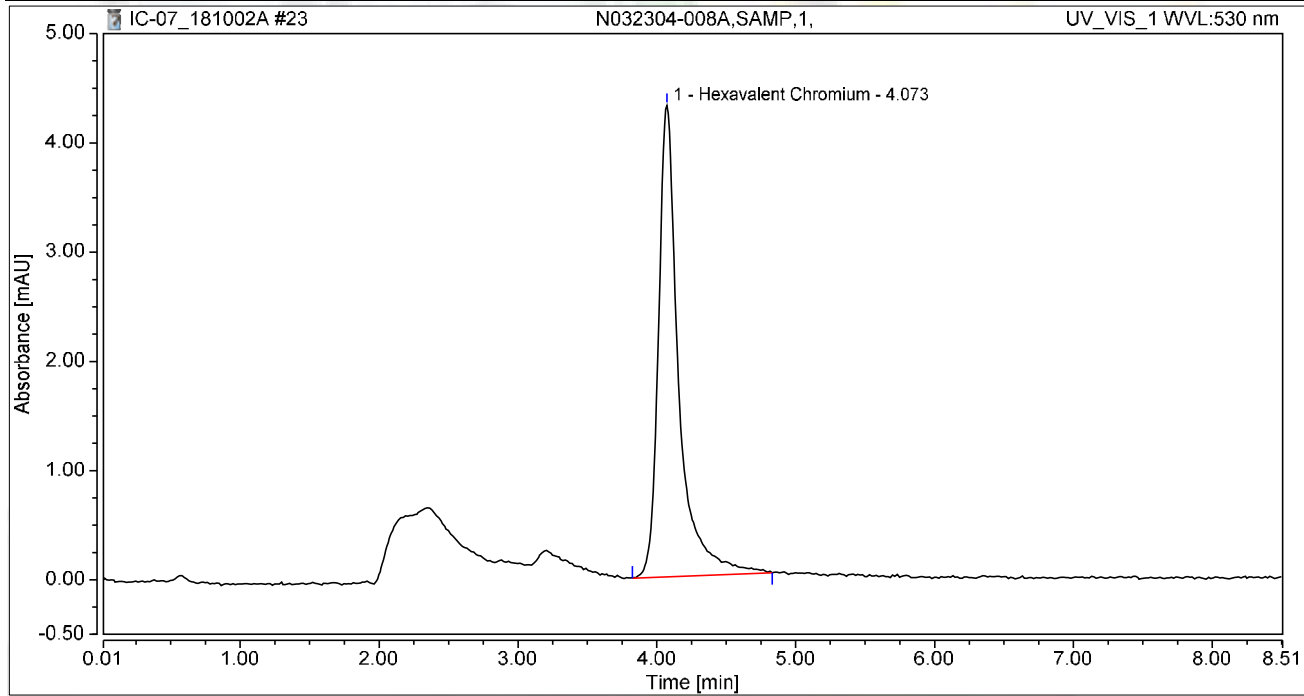
rba 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-008A,SAMP,1,	Run Time (min):	8.49
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 11:36	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

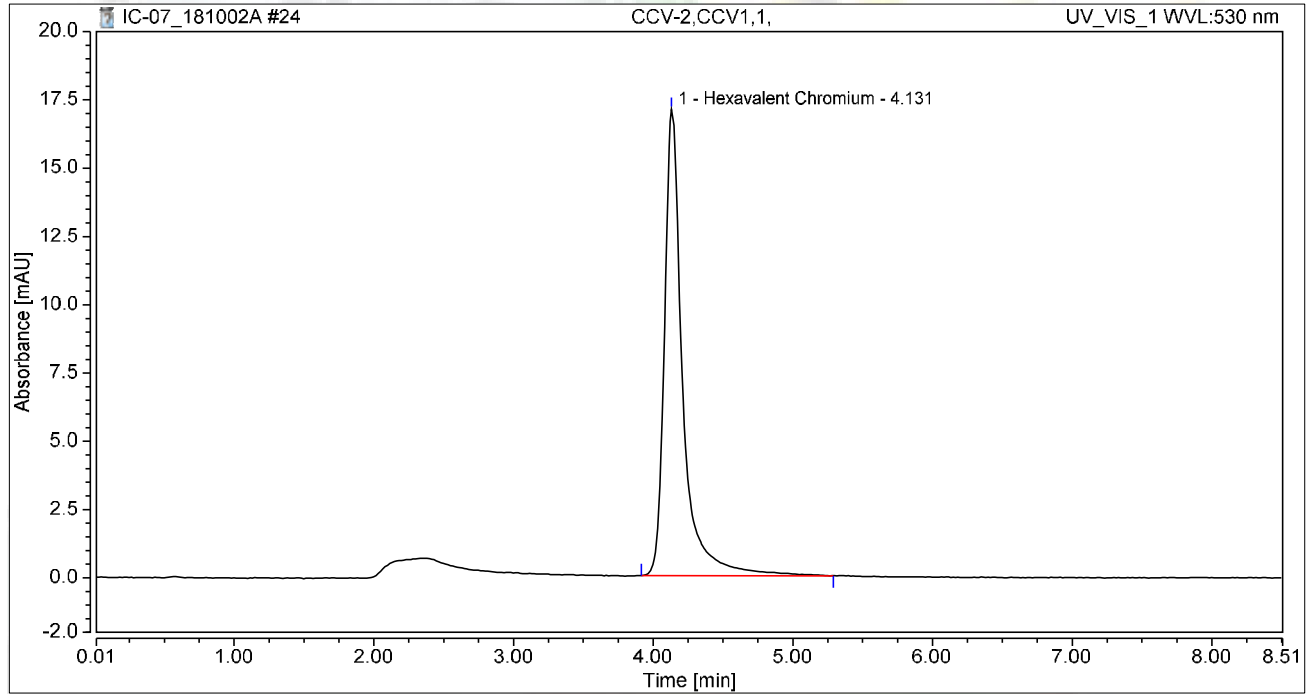
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.733	4.316	100.00	100.00	2.9000
<b>Total:</b>			<b>0.733</b>	<b>4.316</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-2,CCV1,1,	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 11:46	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.596	17.070	100.00	100.00	10.2688
<b>Total:</b>			<b>2.596</b>	<b>17.070</b>	<b>100.00</b>	<b>100.00</b>	

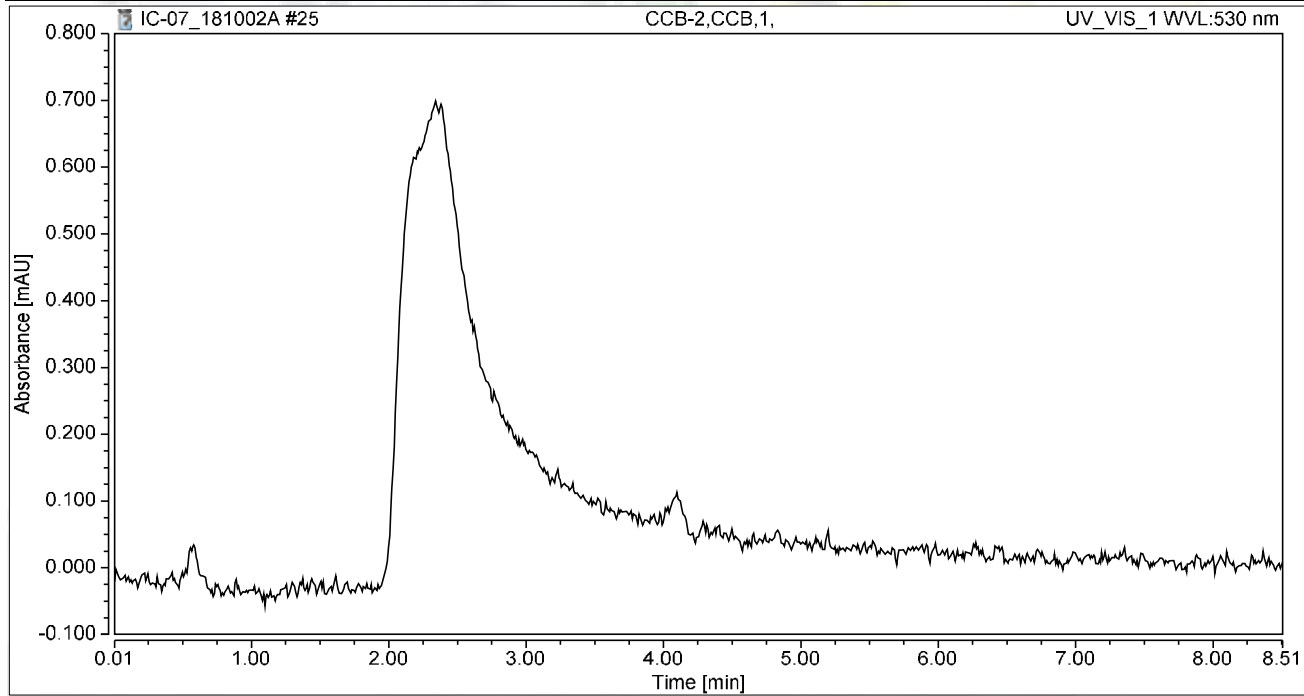


### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-2,CCB,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 11:55	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

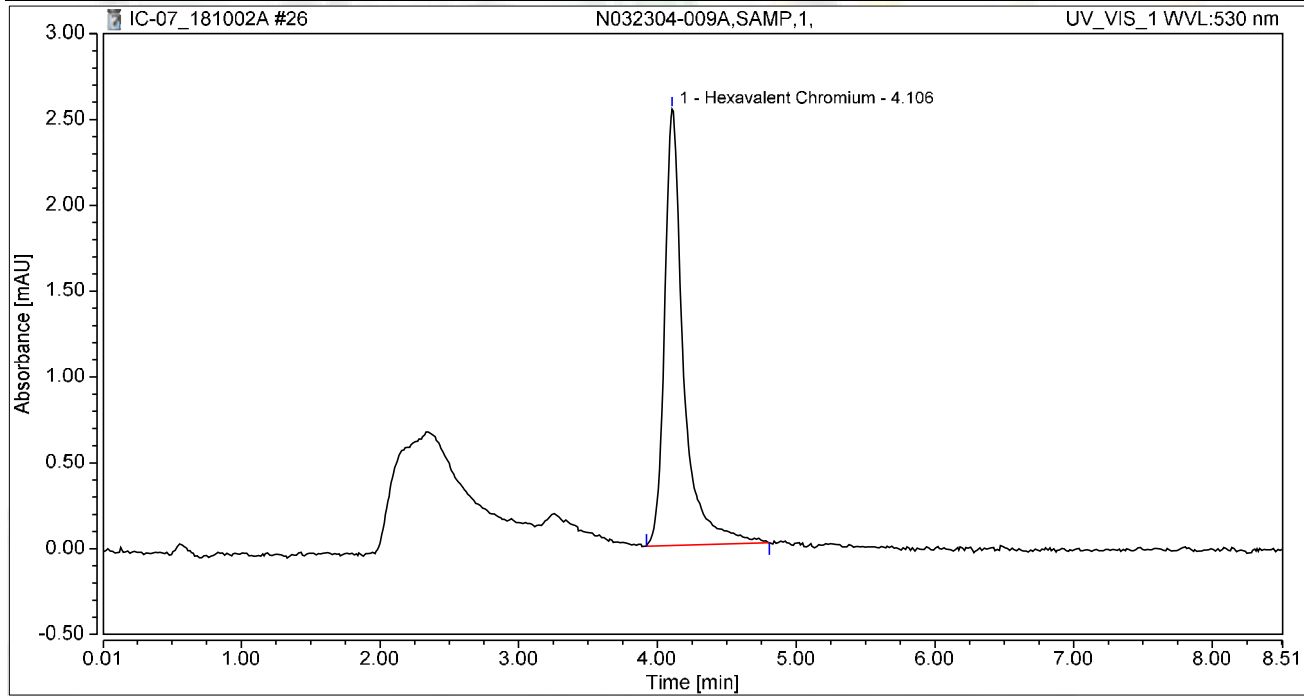
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-009A,SAMP,1,	Run Time (min):	8.50
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 12:05	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

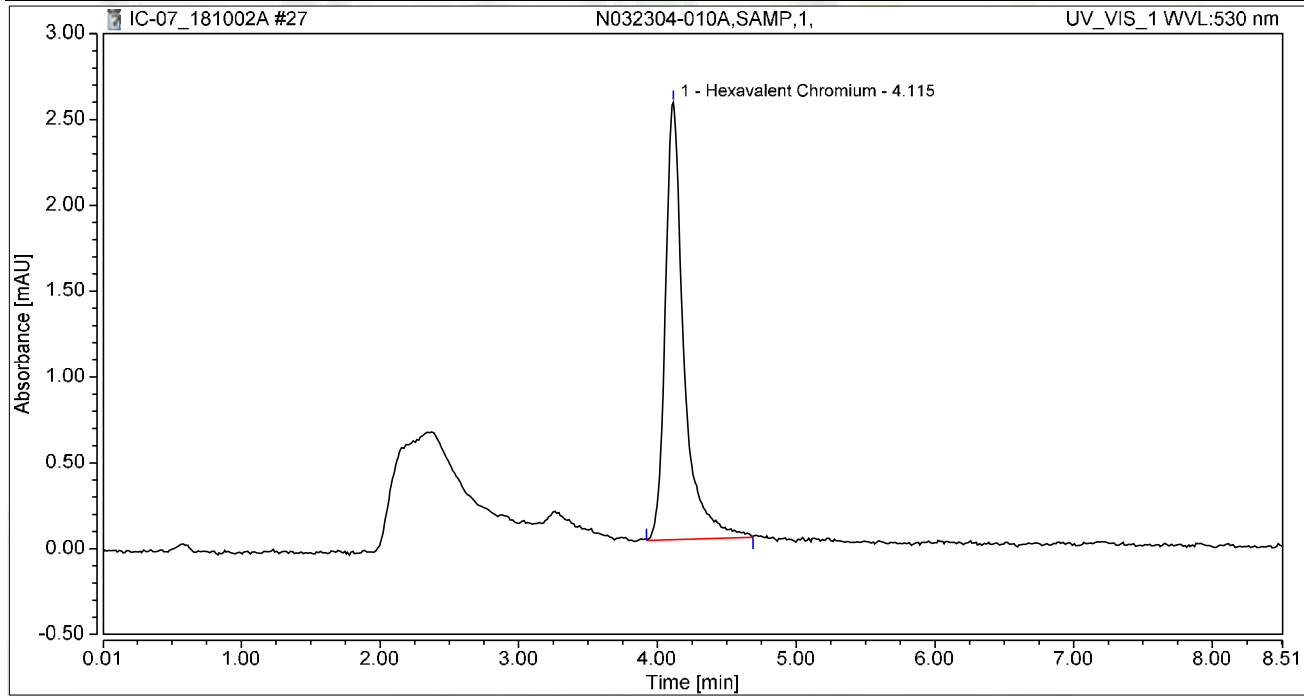
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.403	2.542	100.00	100.00	1.5959
<b>Total:</b>			<b>0.403</b>	<b>2.542</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-010A,SAMP,1,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 12:14	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

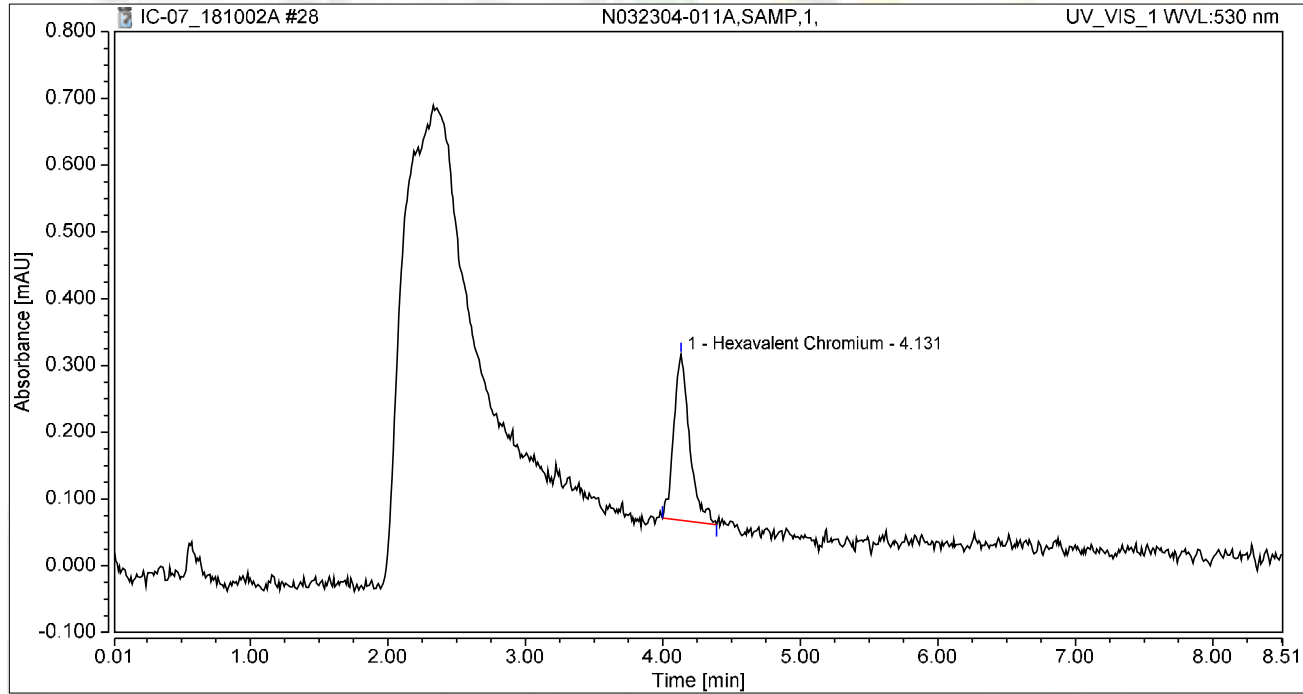
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.394	2.546	100.00	100.00	1.5598
<b>Total:</b>			<b>0.394</b>	<b>2.546</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-011A,SAMP,1,	Run Time (min):	8.49
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 12:24	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

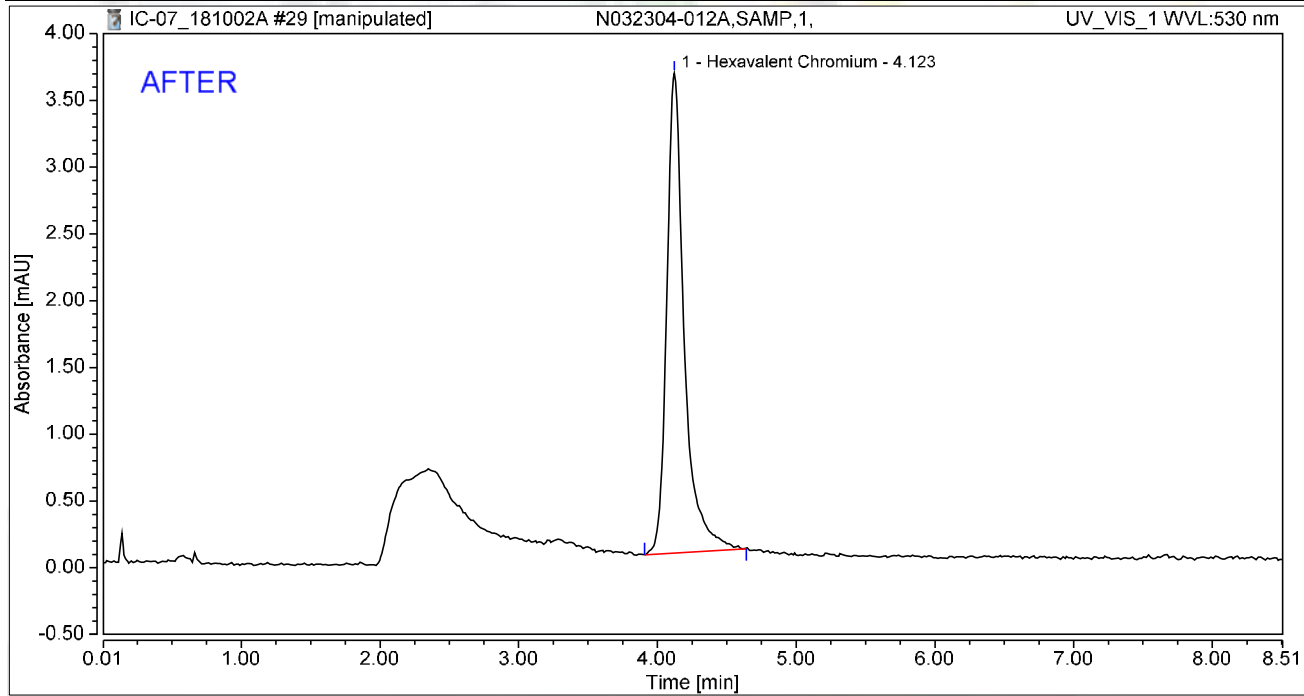
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.033	0.248	100.00	100.00	0.1311
<b>Total:</b>			<b>0.033</b>	<b>0.248</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-012A,SAMP,1,	Run Time (min):	8.50
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 12:33	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.527	3.594	100.00	100.00	2.0845
<b>Total:</b>			<b>0.527</b>	<b>3.594</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/13/2018

Reviewed by:  
*Nancy* 10/15/2018

My first report/Integration

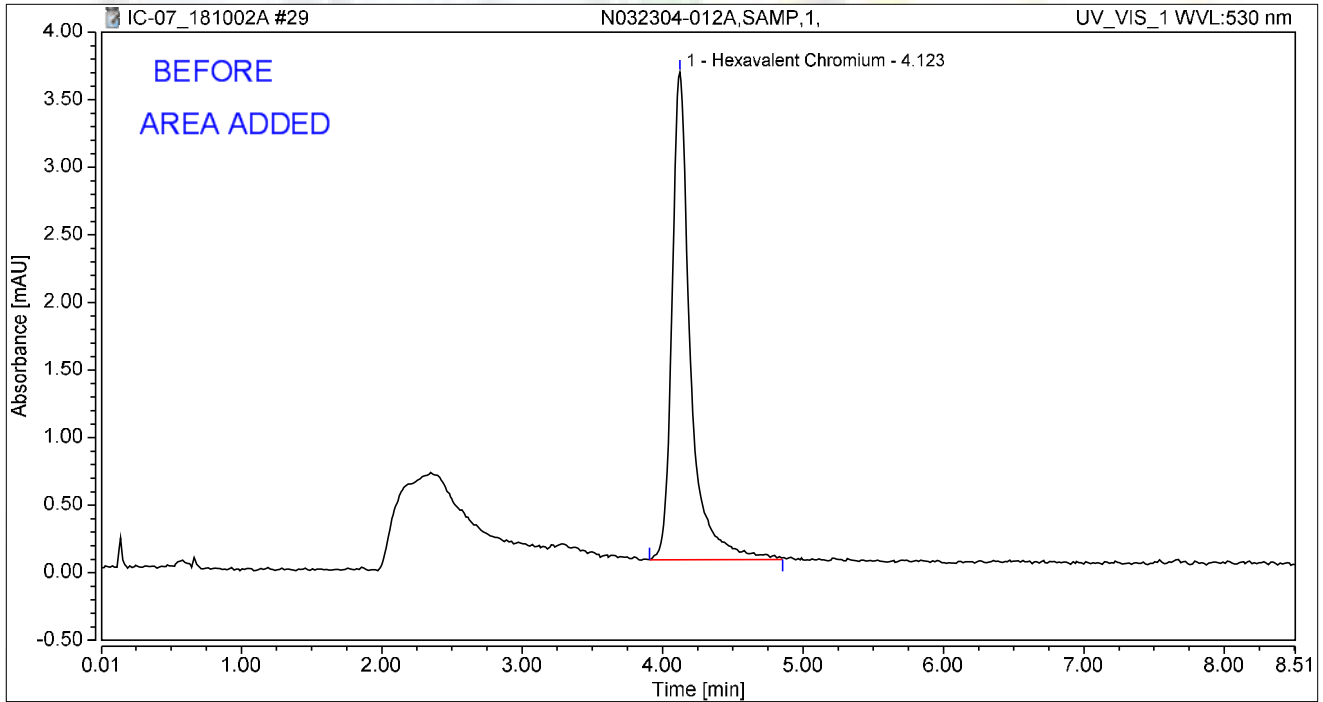
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-012A,SAMP,1,	Run Time (min):	8.50
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 12:33	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.548	3.607	100.00	100.00	2.1666
<b>Total:</b>			<b>0.548</b>	<b>3.607</b>	<b>100.00</b>	<b>100.00</b>	

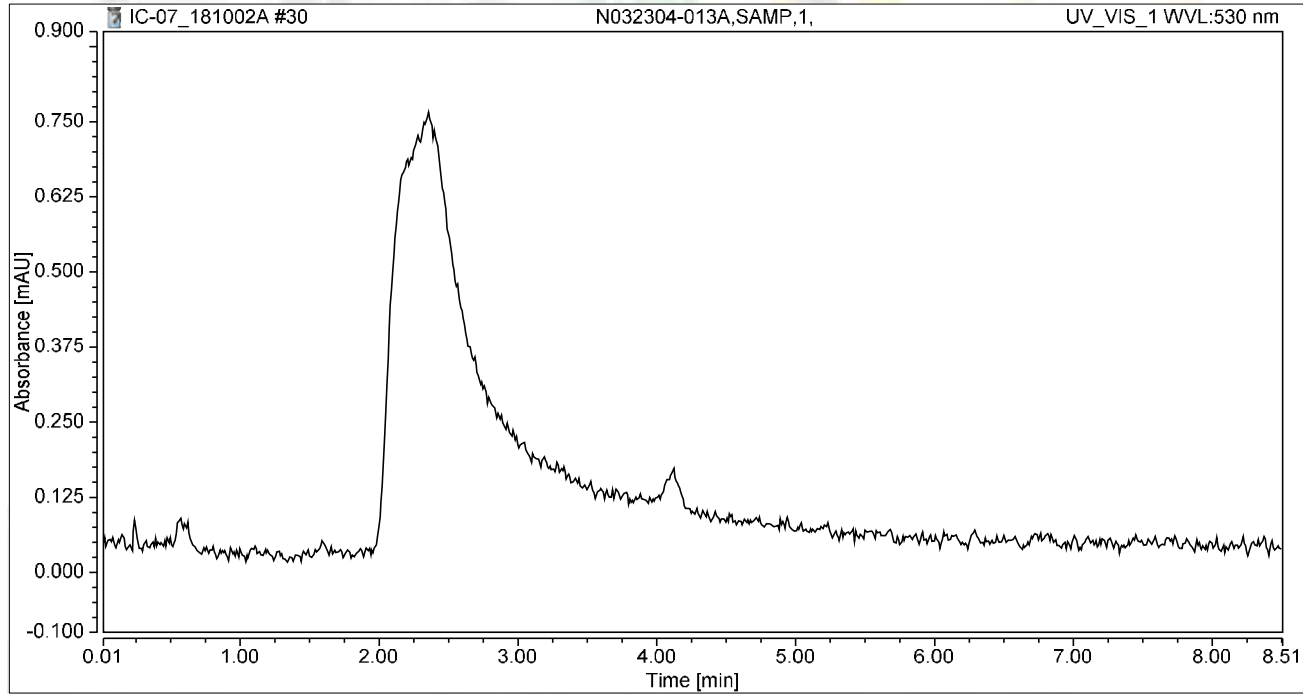
rba 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-013A,SAMP,1,	Run Time (min):	8.49
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 12:43	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

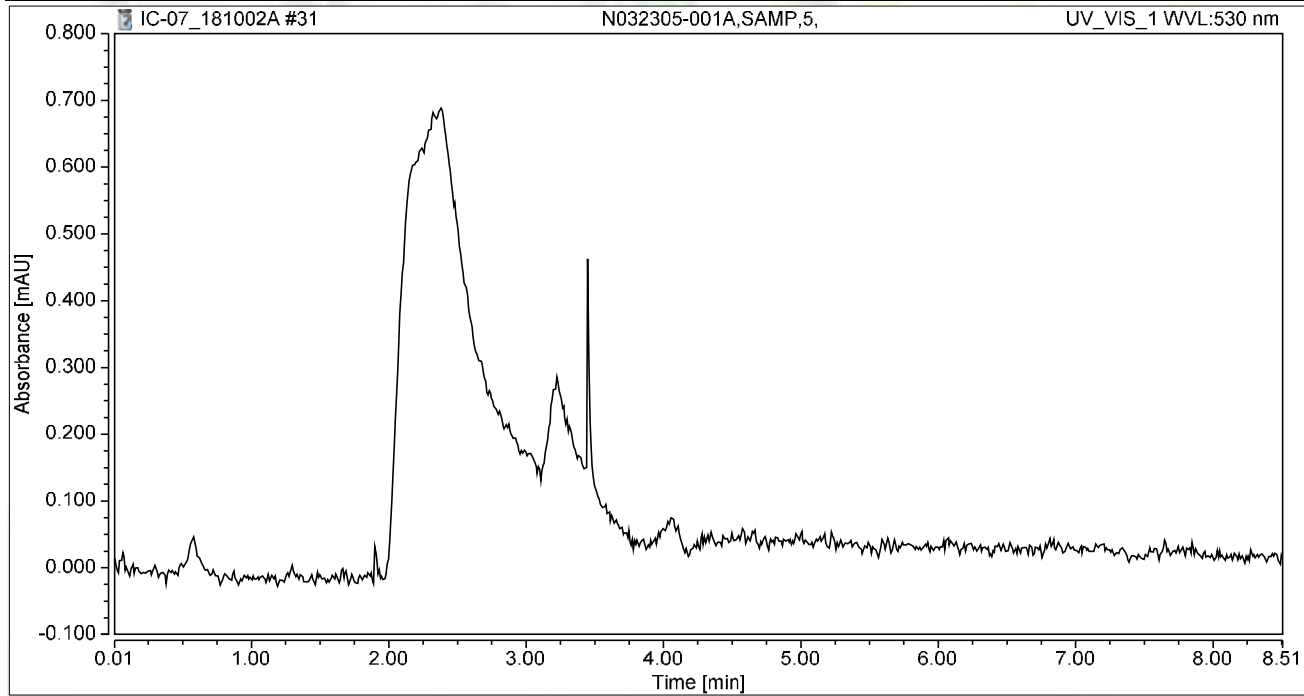
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032305-001A,SAMP,5,	Run Time (min):	8.50
Vial Number:	18	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 12:52	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

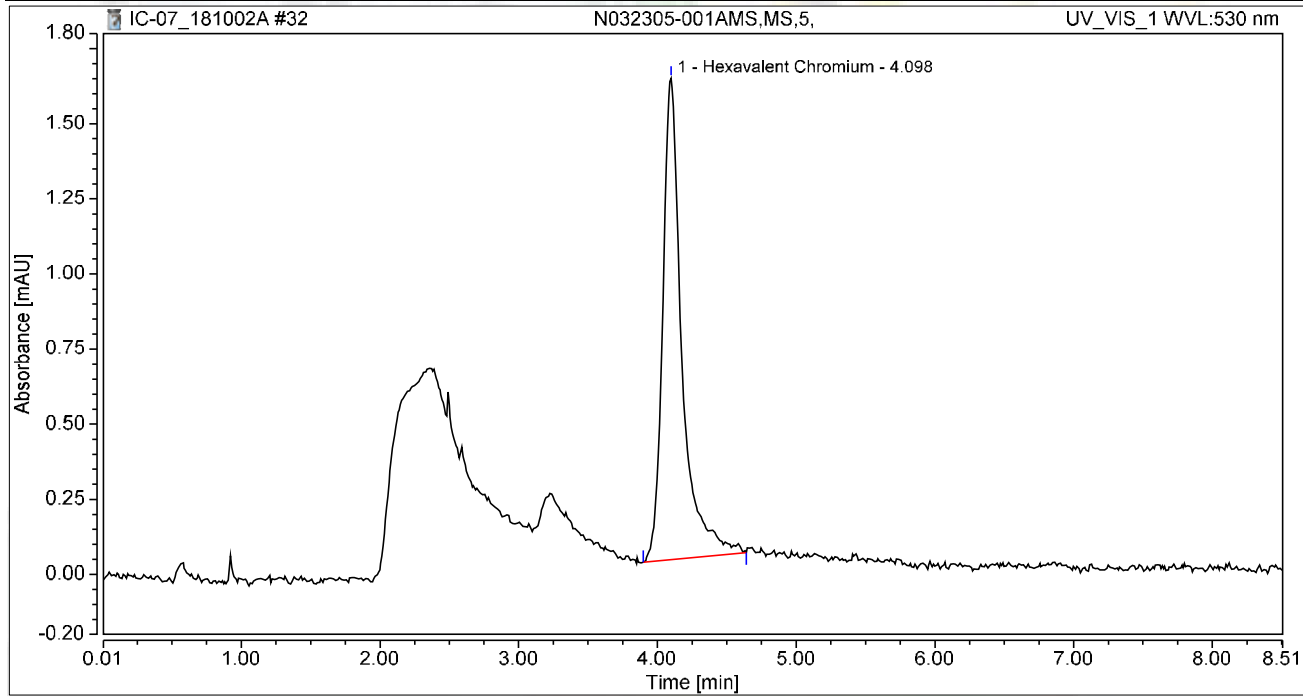


### Chromatogram and Results

**Injection Details**

Injection Name:	N032305-001AMS,MS,5,	Run Time (min):	8.50
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 13:02	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

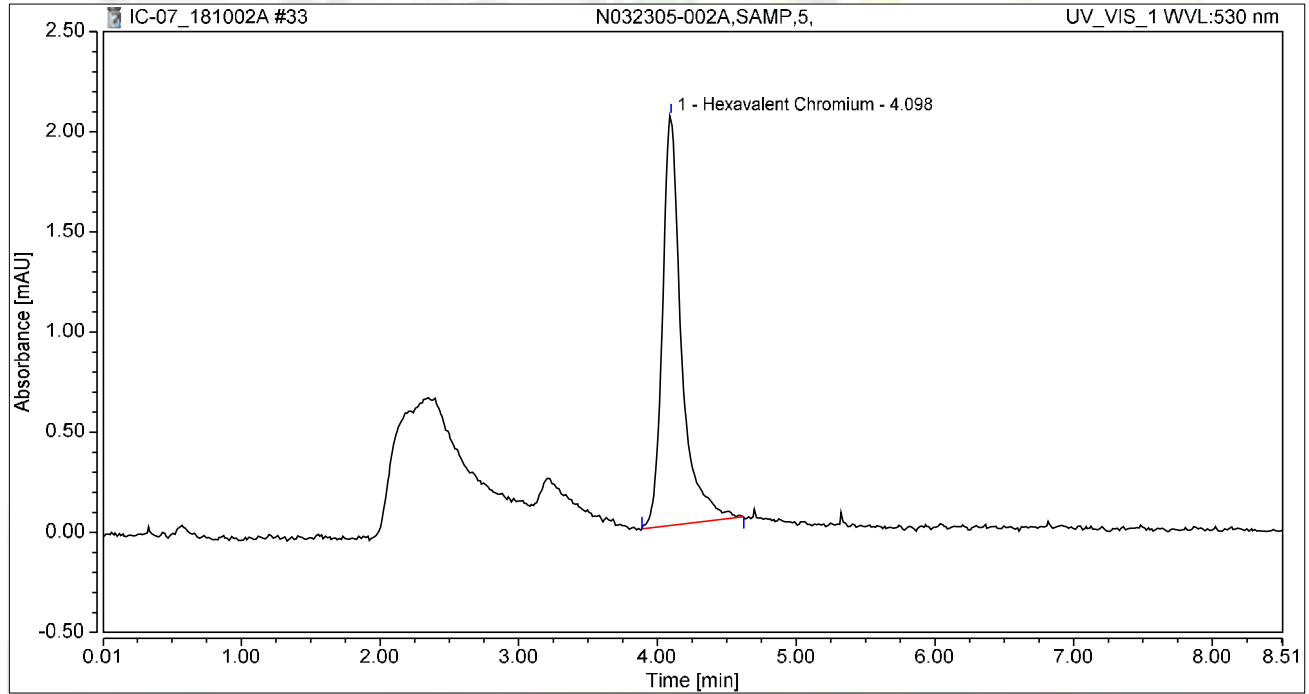
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.257	1.602	100.00	100.00	1.0182
<b>Total:</b>			<b>0.257</b>	<b>1.602</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032305-002A,SAMP,5,	Run Time (min):	8.50
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 13:11	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

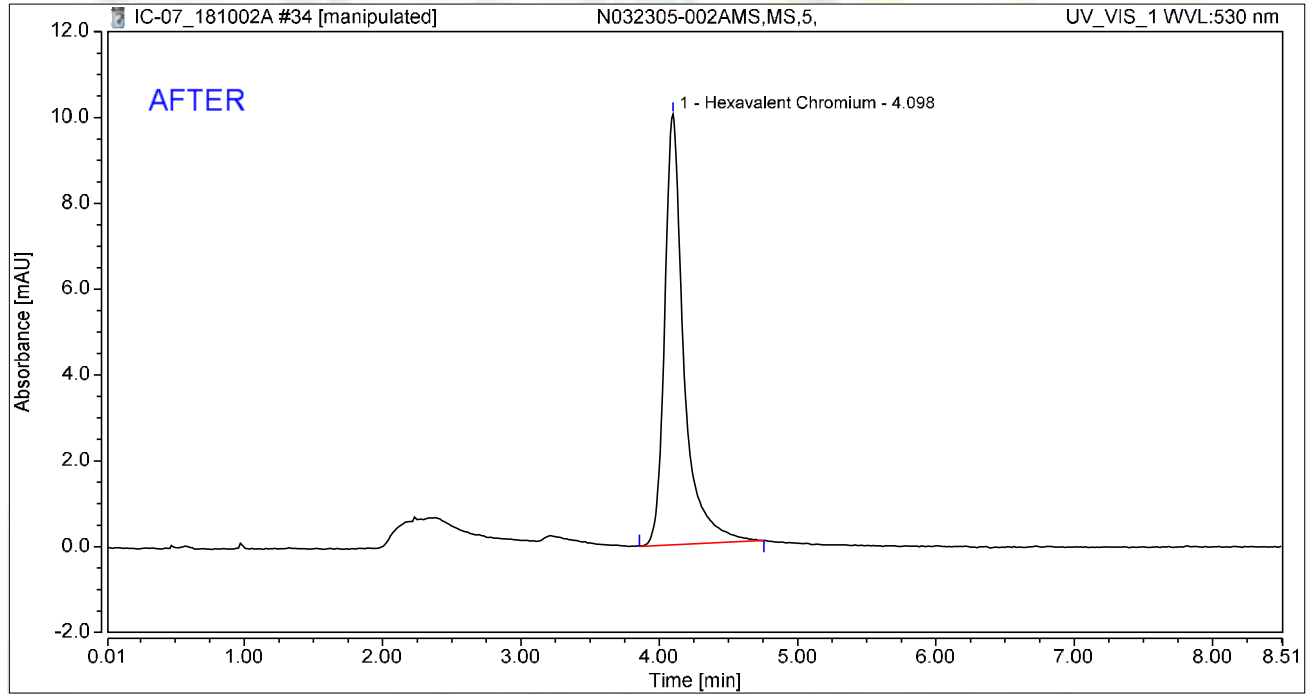
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	0.326	2.046	100.00	100.00	1.2896
<b>Total:</b>			<b>0.326</b>	<b>2.046</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032305-002AMS,MS,5,	Run Time (min):	8.49
Vial Number:	21	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 13:21	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	1.615	10.034	100.00	100.00	6.3897
<b>Total:</b>			<b>1.615</b>	<b>10.034</b>	<b>100.00</b>	<b>100.00</b>	

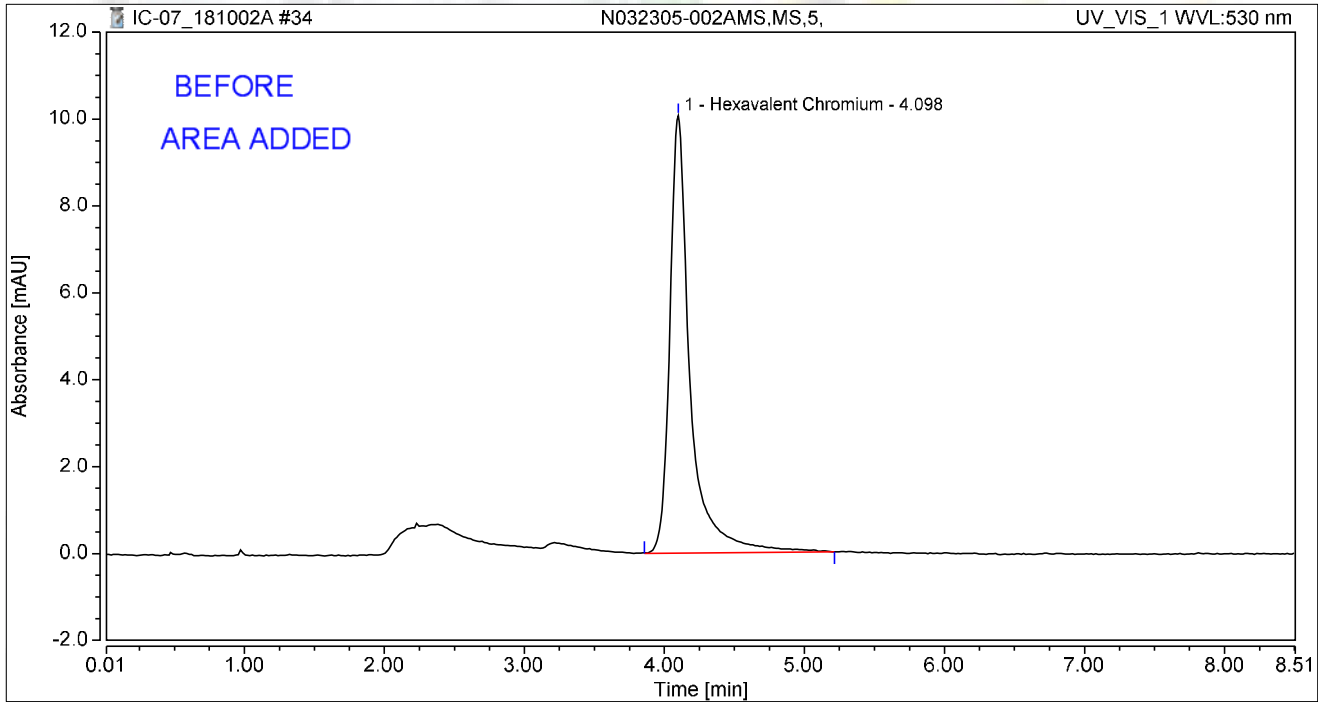
*rba* 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032305-002AMS,MS,5,	Run Time (min):	8.49
Vial Number:	21	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 13:21	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.098	1.695	10.067	100.00	100.00	6.7057
<b>Total:</b>			<b>1.695</b>	<b>10.067</b>	<b>100.00</b>	<b>100.00</b>	

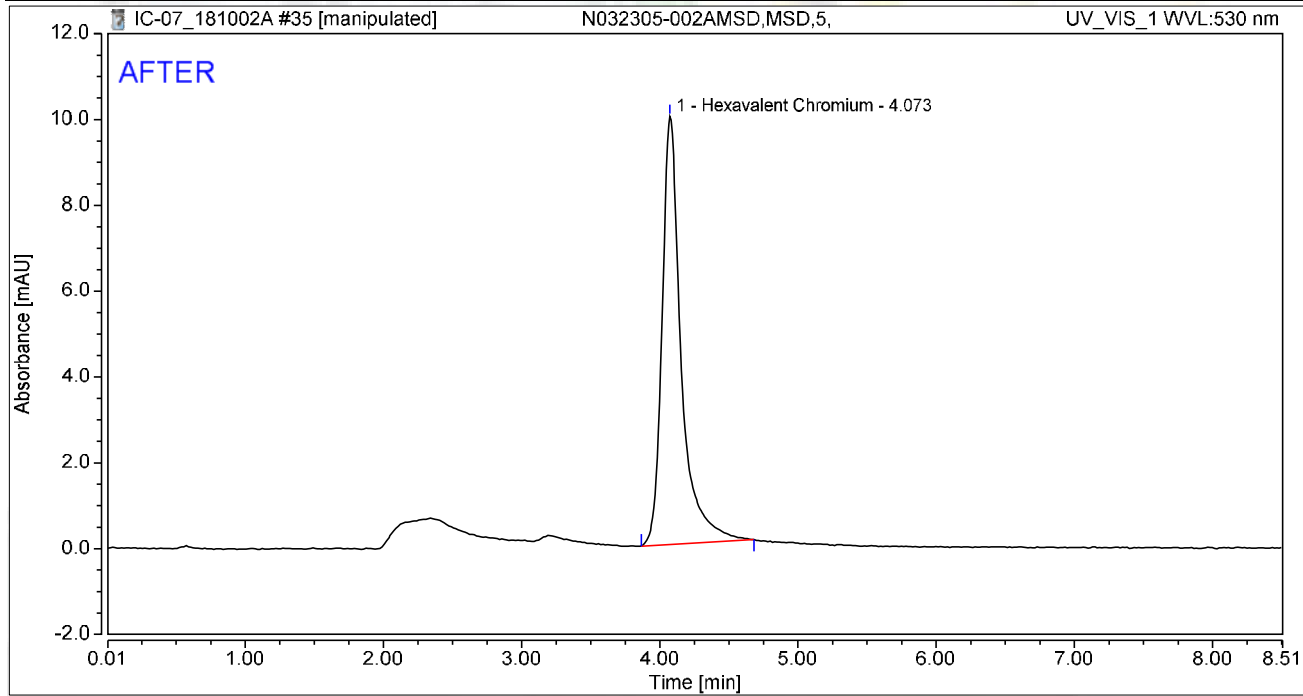
*rba* 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032305-002AMSD,MSD,5,	Run Time (min):	8.50
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 13:30	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	1.597	9.970	100.00	100.00	6.3189
<b>Total:</b>			<b>1.597</b>	<b>9.970</b>	<b>100.00</b>	<b>100.00</b>	

rba 10/13/2018

Reviewed by:

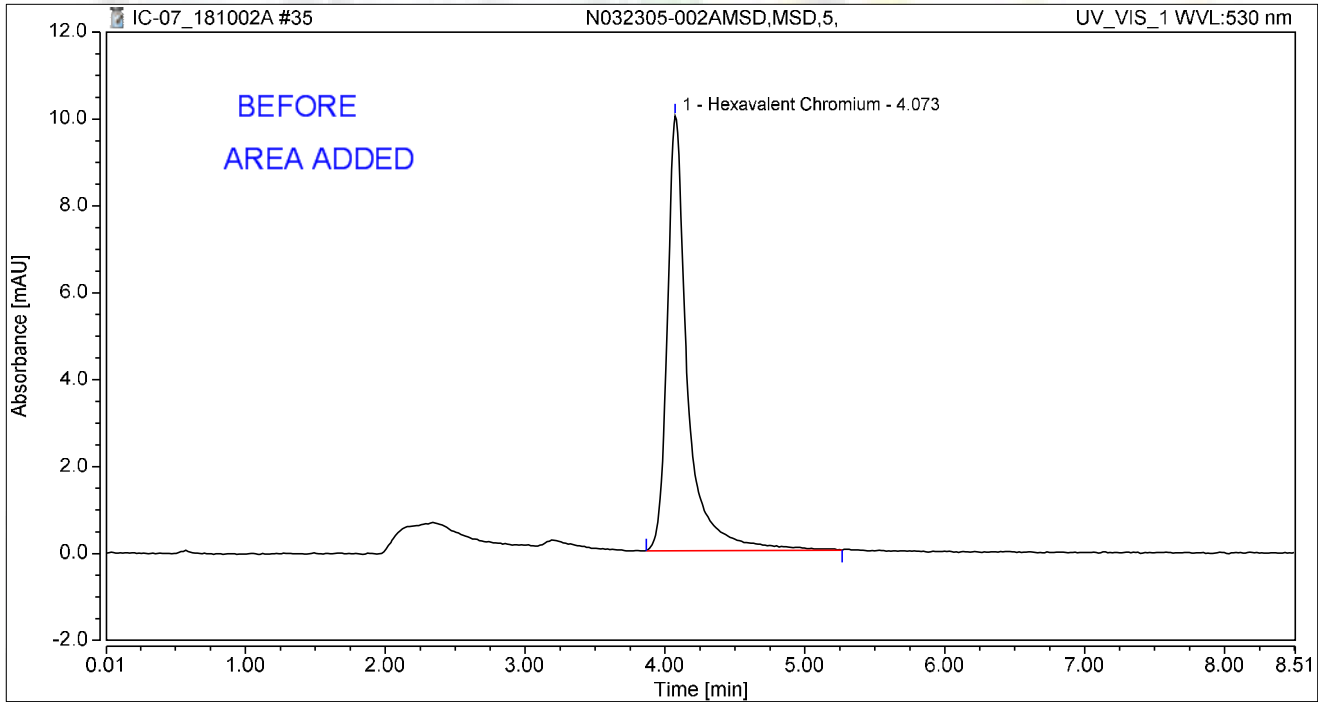
My first report/Integration Nancy 10/15/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032305-002AMSD,MSD,5,	Run Time (min):	8.50
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 13:30	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	1.695	10.007	100.00	100.00	6.7064
<b>Total:</b>			<b>1.695</b>	<b>10.007</b>	<b>100.00</b>	<b>100.00</b>	

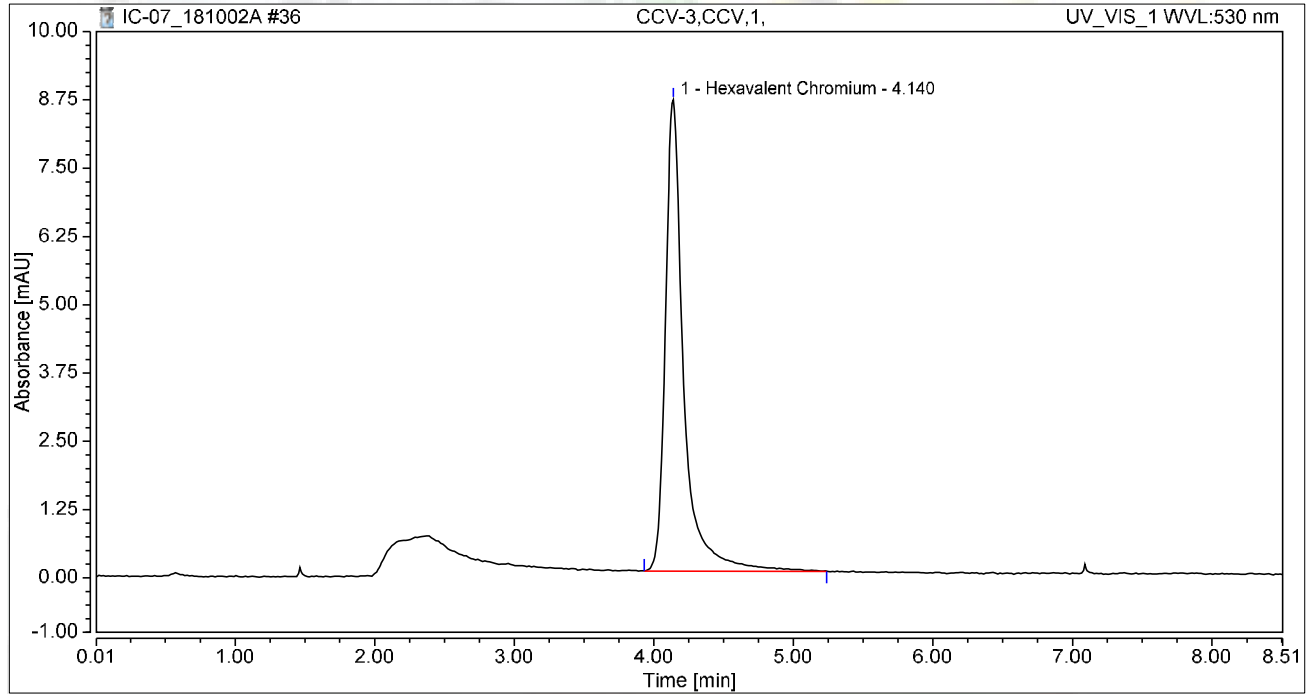
rba 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-3,CCV,1,	Run Time (min):	8.50
Vial Number:	23	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 13:39	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

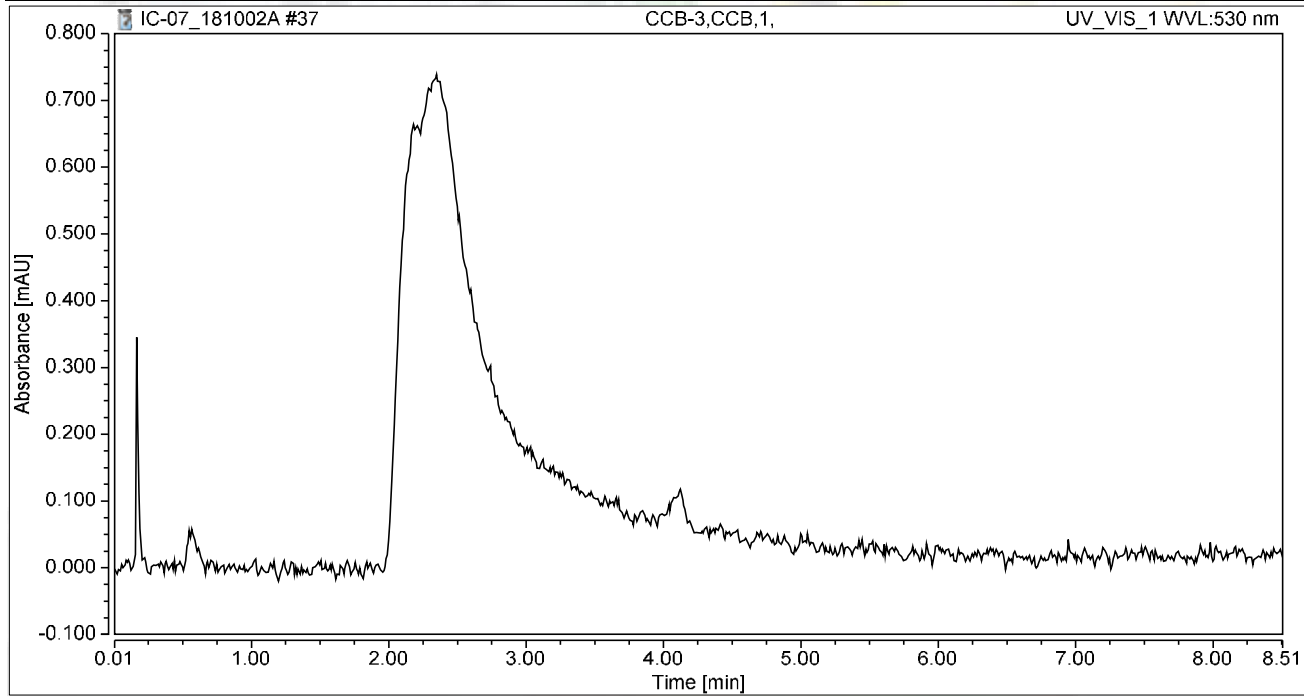
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.313	8.629	100.00	100.00	5.1933
<b>Total:</b>			<b>1.313</b>	<b>8.629</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-3,CCB,1,	Run Time (min):	8.50
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 13:49	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

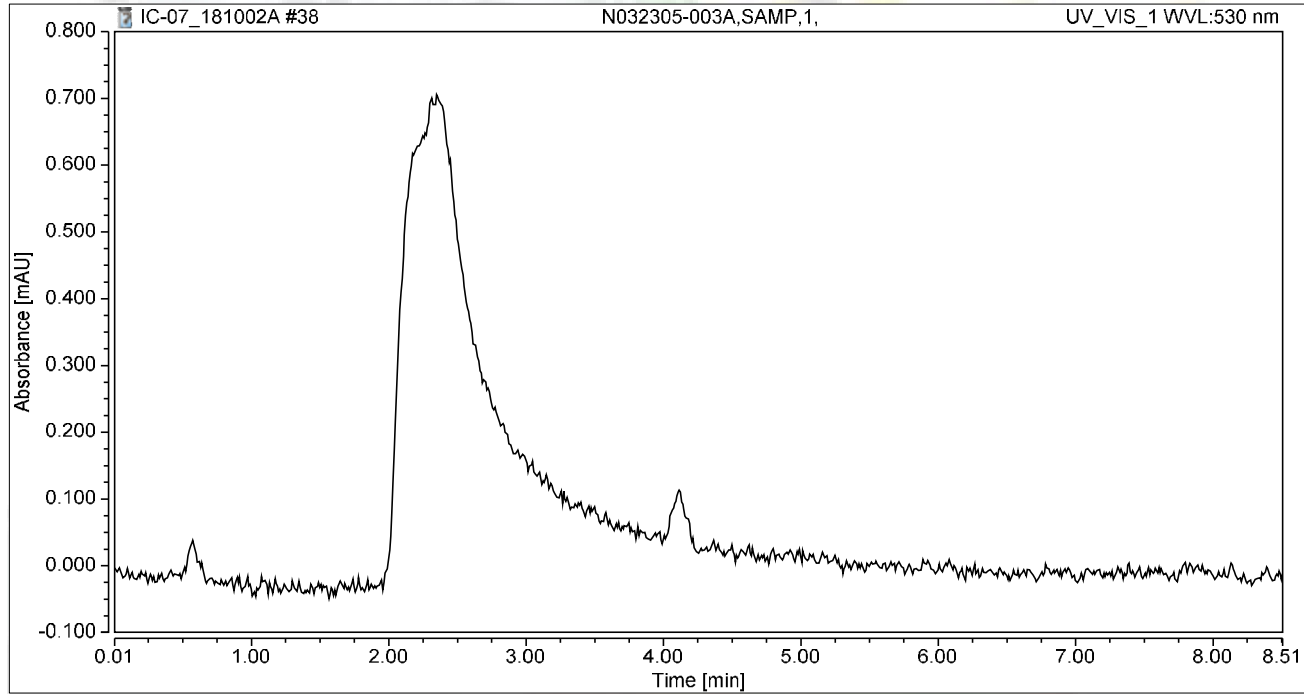


### Chromatogram and Results

**Injection Details**

Injection Name:	N032305-003A,SAMP,1,	Run Time (min):	8.50
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 13:58	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

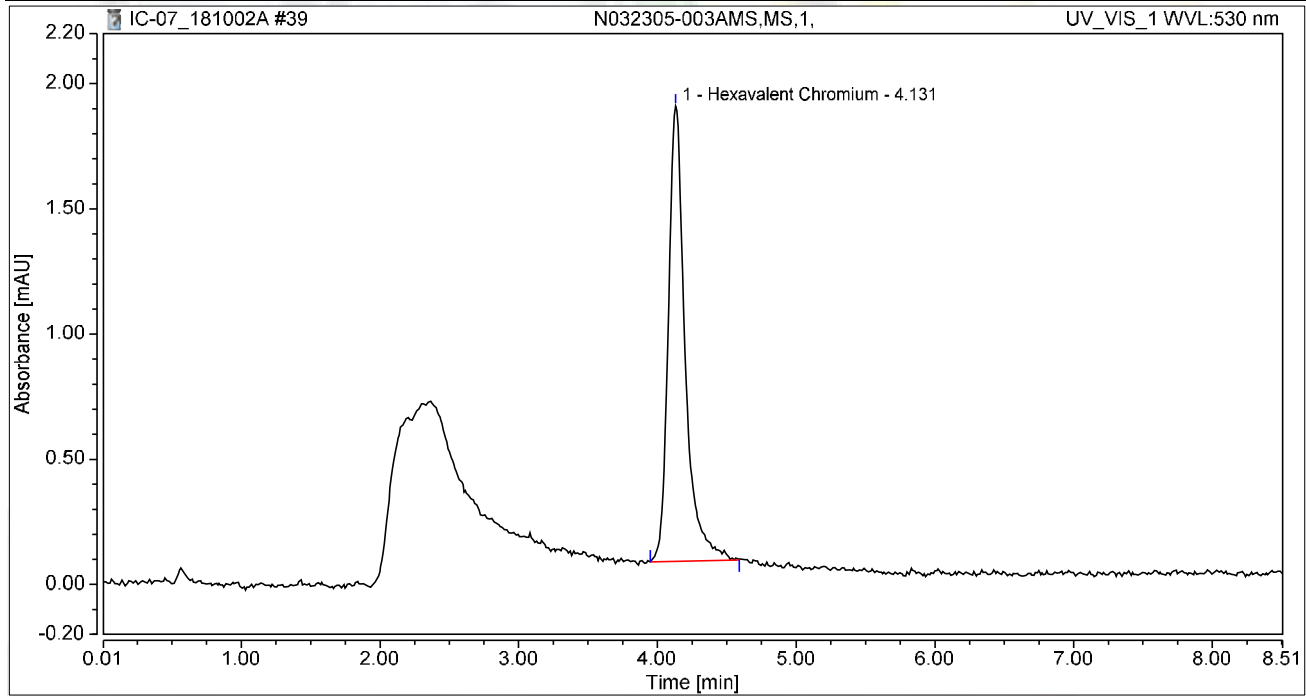
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032305-003AMS,MS,1,	Run Time (min):	8.50
Vial Number:	26	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 14:08	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

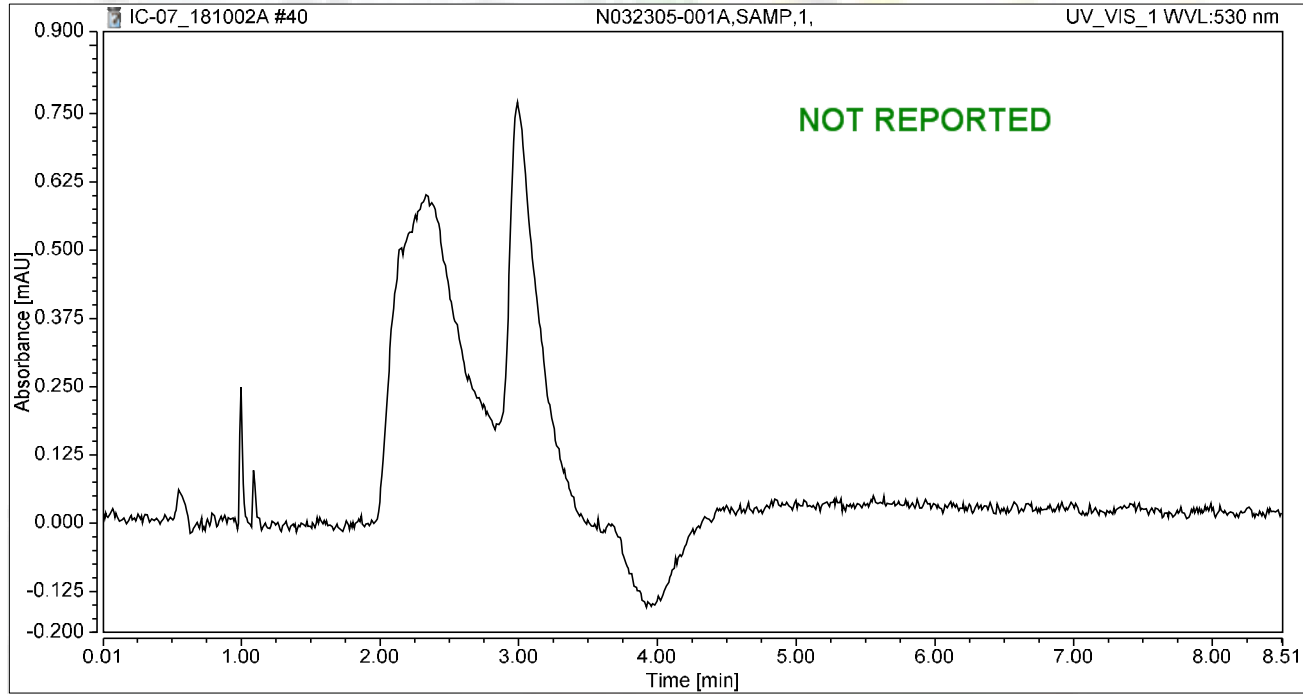
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.256	1.819	100.00	100.00	1.0127
<b>Total:</b>			<b>0.256</b>	<b>1.819</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032305-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 14:17	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

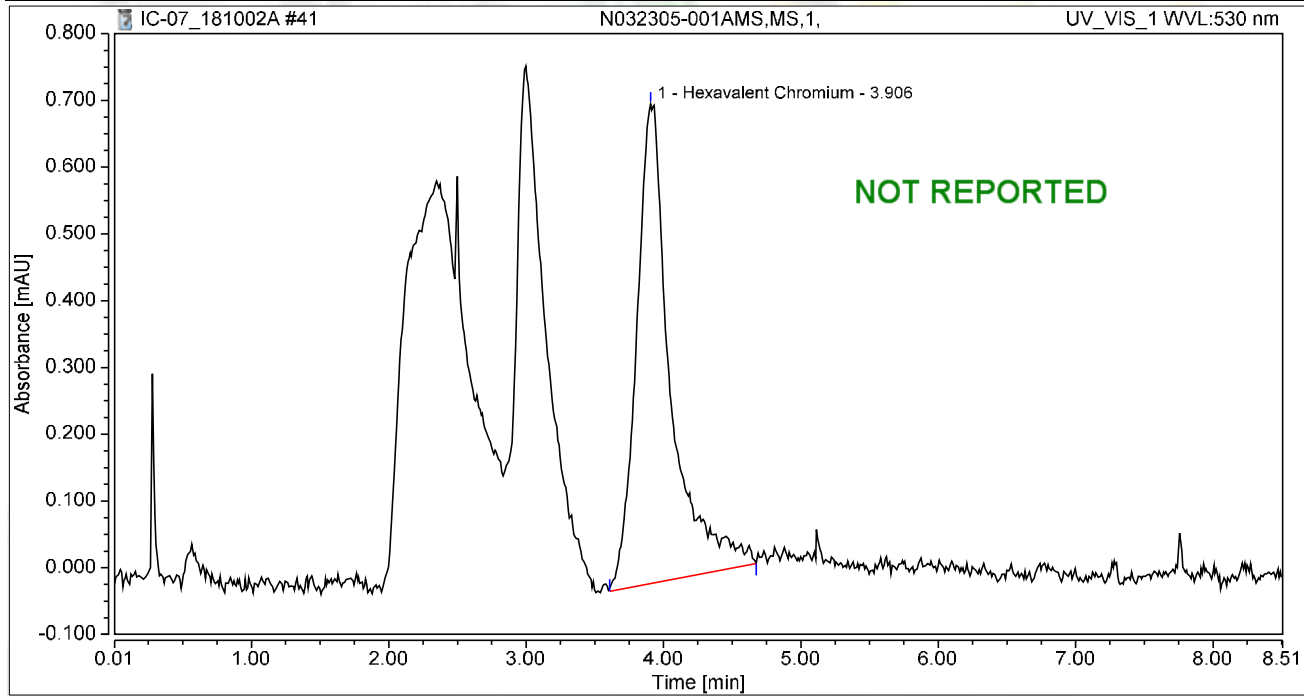
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032305-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	28	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 14:27	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

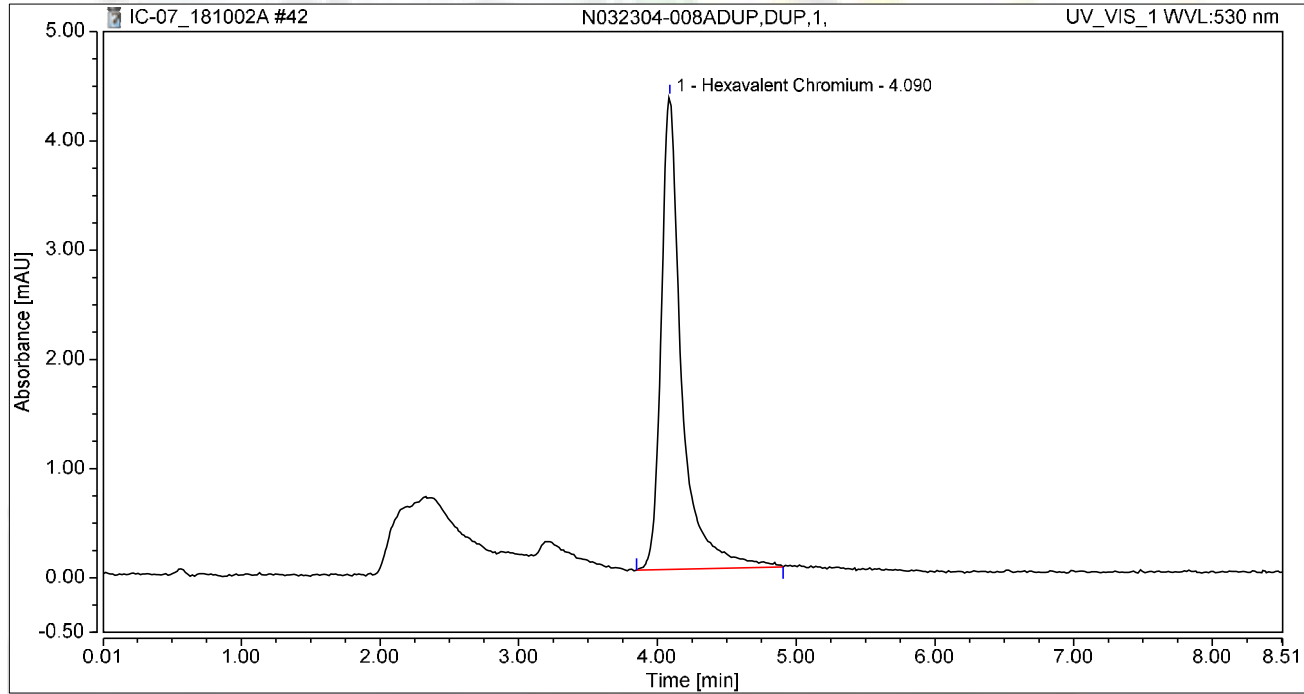
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.906	0.207	0.719	100.00	100.00	0.8197
<b>Total:</b>			<b>0.207</b>	<b>0.719</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032304-008ADUP,DUP,1,	Run Time (min):	8.50
Vial Number:	29	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 14:36	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

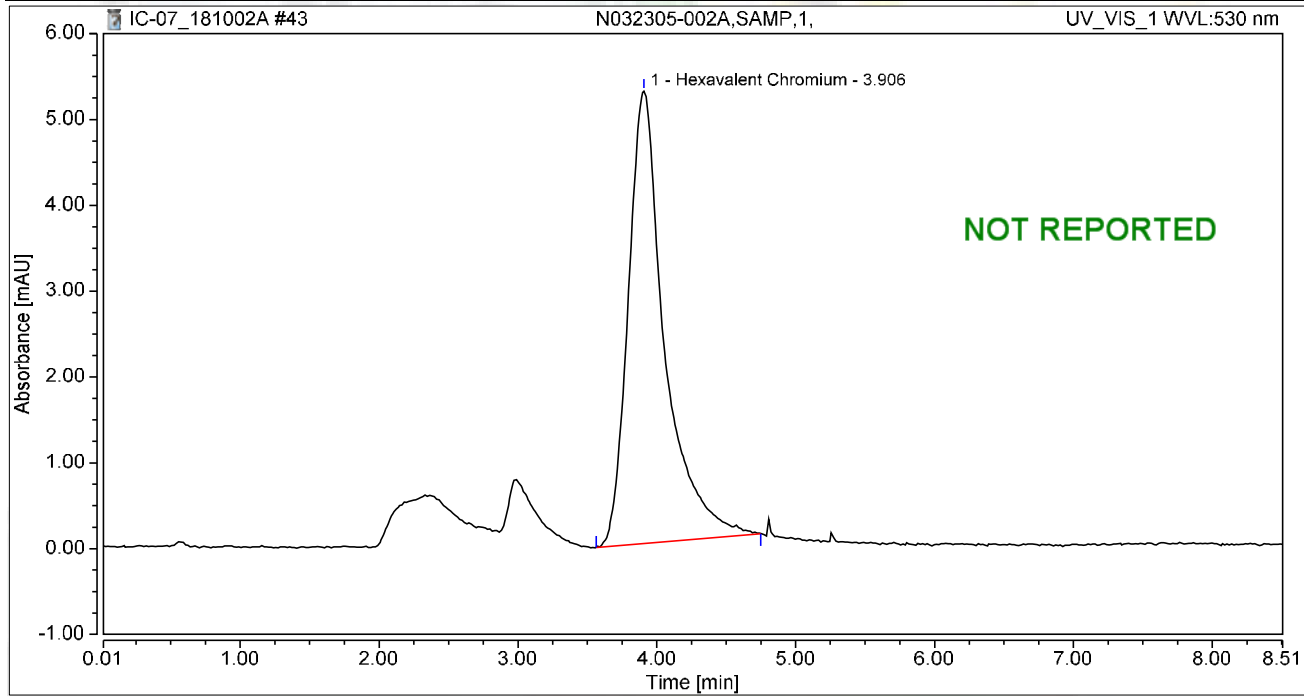
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	0.742	4.327	100.00	100.00	2.9369
<b>Total:</b>			<b>0.742</b>	<b>4.327</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032305-002A,SAMP,1,	Run Time (min):	8.49
Vial Number:	30	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 14:46	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.906	1.603	5.273	100.00	100.00	6.3412
<b>Total:</b>			<b>1.603</b>	<b>5.273</b>	<b>100.00</b>	<b>100.00</b>	

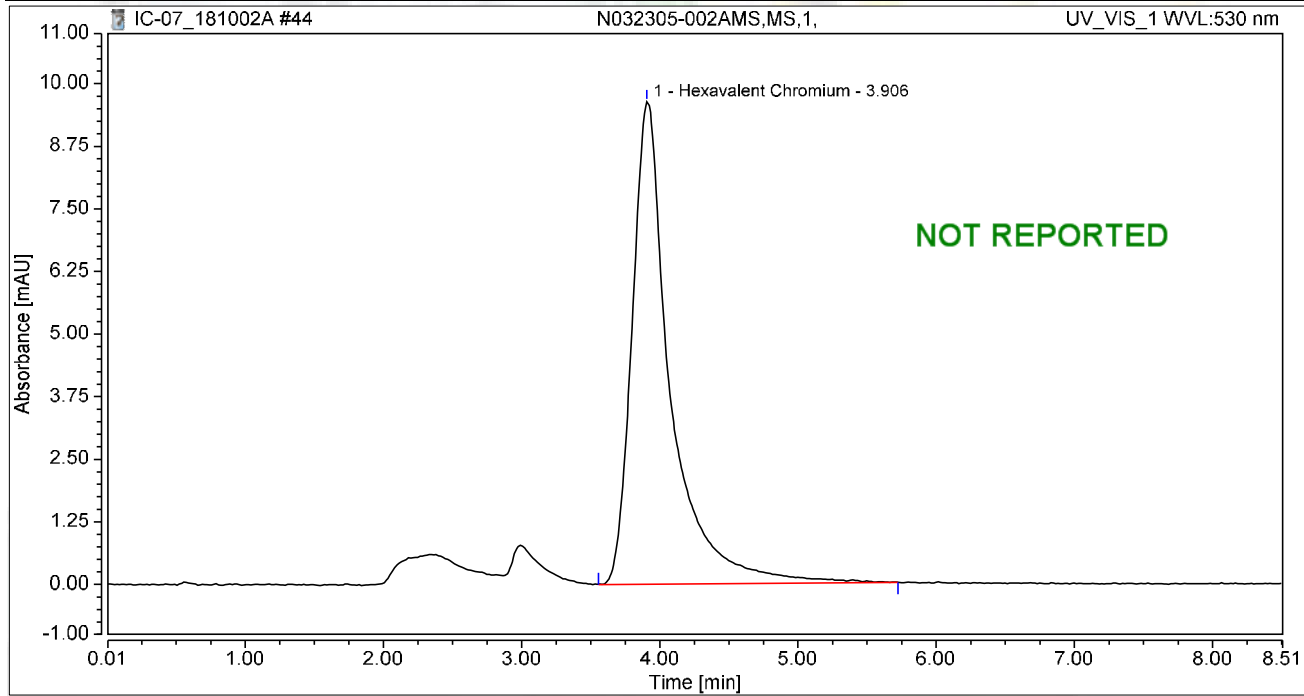
*rba* 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032305-002AMS,MS,1,	Run Time (min):	8.50
Vial Number:	32	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 15:13	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	3.906	3.102	9.631	100.00	100.00	12.2726
<b>Total:</b>			<b>3.102</b>	<b>9.631</b>	<b>100.00</b>	<b>100.00</b>	

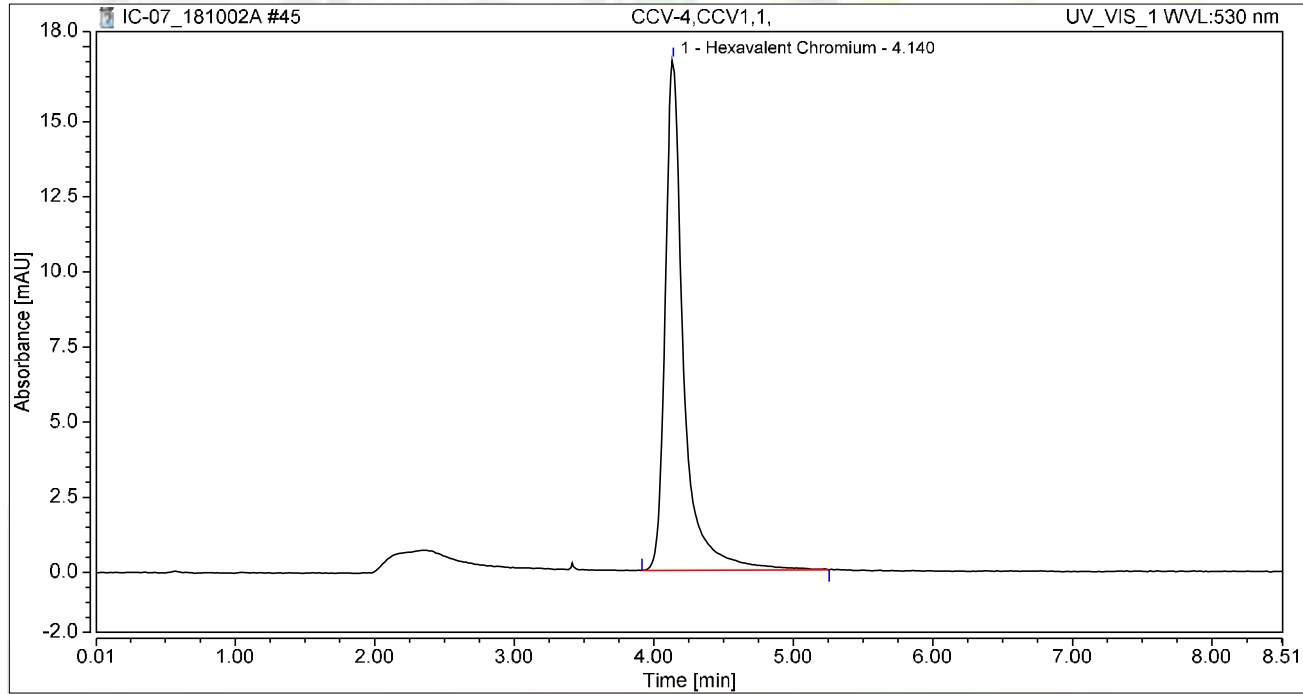
rba 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-4,CCV1,1,	Run Time (min):	8.50
Vial Number:	33	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 15:24	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	2.602	17.009	100.00	100.00	10.2951
<b>Total:</b>			<b>2.602</b>	<b>17.009</b>	<b>100.00</b>	<b>100.00</b>	

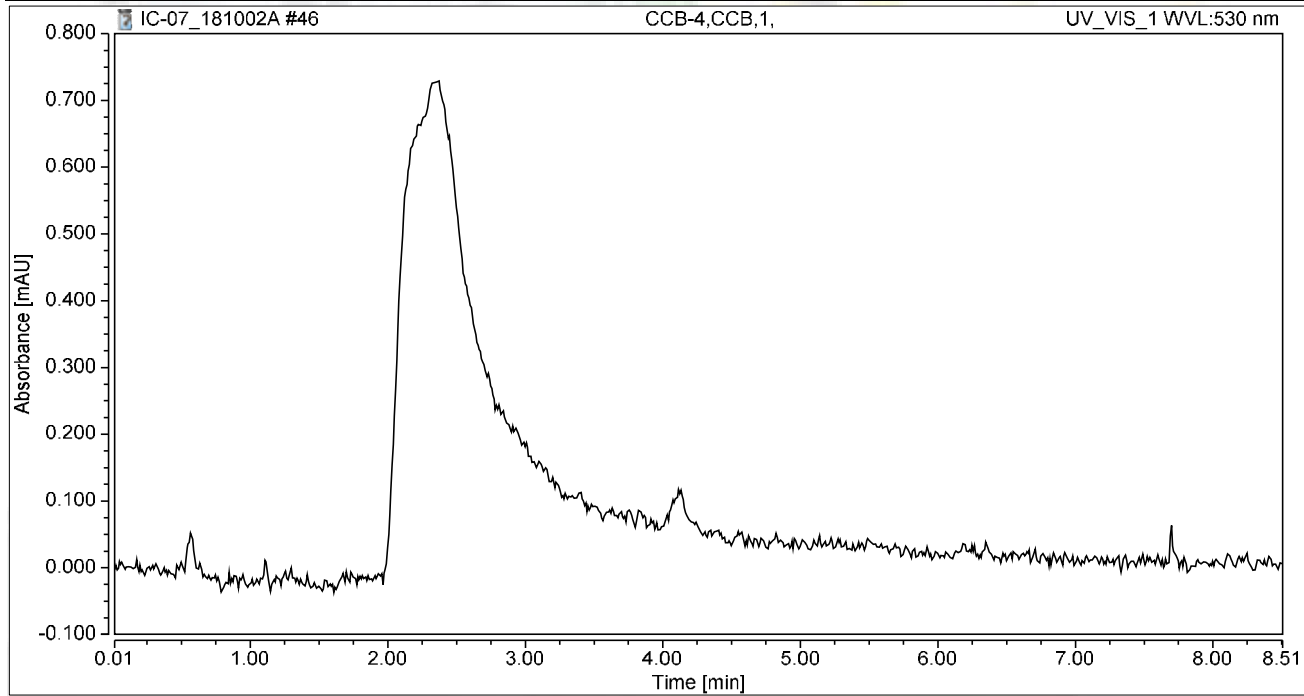


### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-4,CCB,1,	Run Time (min):	8.49
Vial Number:	34	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	02/Oct/18 15:33	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# SM 4500-NO3F



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number:                     R129235                     Analyst:                     QBM                    

ASSET #:                     N032305                     Date Analyzed:                     10/12/2018                    

Method:           4500\_N03          

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.	X					
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)	X					
3. ICV within ± 15% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.	X					
5. CCV within ± 15% of expected value.	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)	X					
<b>Sample Information</b>						
8. All samples are within linear range.	X					
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

Results for sample 1 doesn't follow historical results. Sample was analyzed twice at 1X and 5X and results agree with each other. General minerals bottle was analyzed by EPA 300.0 and gave ND results at 5X (PQL of 0.25mg/L).

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer           QBM          

Date:           10/19/18          

2nd Level Reviewer           *Manny* 10/20/2018          

Date:           \_\_\_\_\_

# SAMPLE CALCULATION



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 4500N03F  
**TEST NAME:** Nitrate/Nitrite-N by Automated Cadmium Reduction  
**MATRIX:** Groundwater

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

$$\text{Nitrate/Nitrite-N, mg/L} = A * DF$$

where:

A = mg/L, instrument calculated concentration  
DF = dilution factor

For: **N032305-001C**

The concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{Nitrate/Nitrite-N} &= 0.7139 * 5 \\ &= 3.5695 \text{ mg/L} \end{aligned}$$

Reporting result in two significant figures,

$$\text{Nitrate/Nitrite-N} = 3.6 \text{ mg/L}$$

# INITIAL CALIBRATION DATA SUMMARY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## EPA 353.2 NO3 as N (NO3CD) - Endpoint

## General setup

Measuring unit	ppm
Number of decimals	4
Stabilization time (sec)	26
Measurement time (sec)	3
Sample volume (µl)	450
Filter	546
Reagent prime	No
CD Reduction	Yes

## Limits and dilution

Low level	-0.2
High level	4
Max linearity	4
Blank min	0
Blank max	0.049
Postdilution factor %	10
Factor Calculations	No

## Washes

Number of final washes	6
Wash every	R1, R2

## O.D. Corrections

Carry Over	No
Carry Over value	0.0000
Blank	No
Gain	No

## Reagents

N.	Volume (µl)	Incubation time (sec)
1	200	102
2	300	663
3	0	0

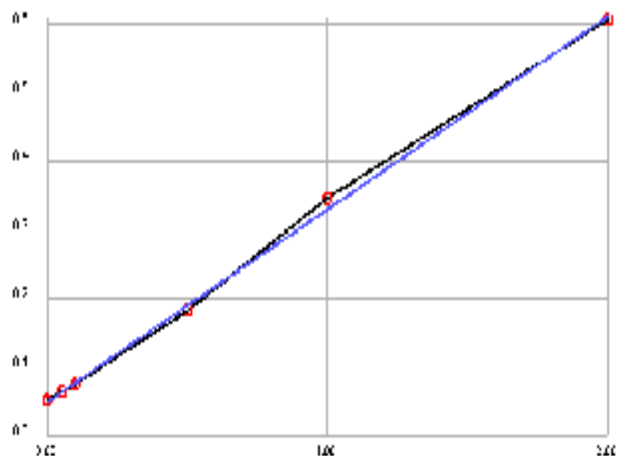
## QC

N.	Value	Tolerance
1	1	0.1

## Calibration

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	$y = 0.2805x + 0.0498$
Correlation	.999305



Calibrant	Energy	Set	Conc
1	0.0511	0.0000	0.0045
2	0.0638	0.0500	0.0497
3	0.0751	0.1000	0.0900
4	0.1820	0.5000	0.4711
5	0.3455	1.0000	1.0539
6	0.6055	2.0000	1.9808

Notes:

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171930</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.478	0.050	0.5000	0	95.6	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171941</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.467	0.050	0.5000	0	93.4	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171946</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.486	0.050	0.5000	0	97.2	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# INITIAL CALIBRATION AND CONTINUING CALIBRATION BLANK SUMMARY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171931</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171942</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171947</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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Las Vegas, NV. 89118  
702-307-2659  
702-307-2691  
[www.atl-labs.com](http://www.atl-labs.com)

Time start: 10-12-2018 15:53

Time end: 10-12-2018 17:52

		EPA 353.2 NO3 as N		
		ppm	Flags	OD
1	<BLANK>	17:26:19	-0.0205	0.0441
2	<BLANK>	17:27:14	0.0037	0.0509
3	<CAL1>	17:28:14	0.0045 [0]	0.0511
4	<CAL2>	17:29:09	0.0497 [0.05]	0.0638
5	<CAL3>	17:30:10	0.0900 [0.1]	0.0751
6	<CAL4>	17:31:06	0.4711 [0.5]	0.1820
7	<CAL5>	17:32:05	1.0539 [1]	0.3455
8	<CAL6>	17:33:01	1.9808 [2]	0.6055
9	,BLANK,BLANK,1, <b>NOT REPORTED</b>	17:33:56	0.0572	0.0659
10	,ICV,ICV,1,	17:34:56	0.4779	0.1839
11	,ICB,ICB,1,	17:35:52	0.0205	0.0556
12	,MB-H2O,MBLK,1,	17:36:35	-0.0002	0.0498
13	,LCS-H2O,LCS,1,	17:37:23	0.5050	0.1915
14	,N032305-002C,SAMP,1,	17:38:13	0.0476	0.0632
15	,N032329-001C,SAMP,1,	17:38:55	0.3303	0.1425
16	,N032329-002C,SAMP,5,	17:39:38	0.5271	0.1977
17	,N032329-002CMS,MS,5,	17:40:27	1.0400	0.3416
18	,N032329-002CMSD,MSD,5,	17:41:09	0.9106	0.3053
19	,N032305-001C,SAMP,5,	17:41:53	0.7139	0.2501
20	,N032305-001CDUP,DUP,5,	17:42:41	0.7260	0.2535
21	,BLANK, <b>NOT REPORTED</b>	17:43:24	0.0251	0.0569
22	,CCV-1,CCV,1,	17:44:06	0.4672	0.1809
23	,CCB-1,CCB,1,	17:44:55	0.0148	0.0540
24	,N032328-001C,SAMP,1,	17:45:39	1.0325	0.3395
25	,N032328-002C,SAMP,1,	17:46:21	0.9951	0.3290
26	,N032254-001C,SAMP,200,	17:47:10	0.6137	0.2220

			<b>EPA 353.2 NO3 as N</b>		
			ppm	Flags	OD
27	,BLANK,	<b>NOT REPORTED</b>	17:47:52	0.0180	0.0549
28	,BLANK,	<b>NOT REPORTED</b>	17:48:35	-0.0016	0.0494
29	,CCV-2,CCV,1,		17:49:23	0.4861	0.1862
30	,CCB-2,CCB,1,		17:50:07	0.0144	0.0539

ICAL/CCV: ISST180914E  
ICV/LCS/MS/MSD: ISST180523E

Nitrate/Nitrite as N by Cadmium Reduction Preparation and Runlog

**Matrix:**

Method: SM 4500-NO3-F/ EPA 353.2 Reagent ID # \_\_\_\_\_  
 Instrument: Easy Chem Analyzer Ammonium Chloride reagent/Buffer: R181005H  
 Color reagent: R181005I  
 2% Copper Sulfate: R181005G  
 Ammonium Hydroxide: CINV-180831A

Date Analyzed: 10/12/2018  
 Time Analyzed: 3:53 PM  
 Analyzed By: QBM

Sample ID.	Sample Wt./Vol.	Sample pH	Std Code	Spike Amt Added (mL)	Spike Conc.(PPM)	Final Volume (mL)	Dilution (F/I)	Reading & Calculations (mg/L)	Comments

N032254-001C		6.07							
N032305-001C		7.91							
N032305-002C		8.01							
N032328-001C		7.78							
N032328-002C		7.68							
N032329-001C		8.25							
N032329-002C		7.94							


# MDL STUDY



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Nitrate/Nitrite by Cadmium Reduction**  
 Method Number: SM4500NO3F  
 Analysis Date(s): 10/25,2017, 10/26/2017, 10/27/2017  
 Analyst/Technician: Quennie B. Manimtim

Matrix: **Water**  
 Unit: mg/L  
 Spike Conc: 0.05 mg/L

Analyte	#1	#2	#3	#4	#5	#6	#7	Ave	SD	t <sub>(n-1)</sub> value	MDL	PQL
Nitrate/Nitrite as N	0.0573	0.0562	0.0500	0.0730	0.0698	0.0637	0.0564	0.0609	0.0082	3.143	0.0259	0.05
<b>Method Blank</b>												
Nitrate/Nitrite as N	0.0160	0.0067	0.0064	0.0204	0.0173	0.0036	0.0083	0.0112	0.0065	3.143	0.0317	0.05
<b>MDL:</b>	<b>0.0317</b>	<b>mg/L</b>										



# EPA 6020 Dissolved



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70851  
 ASSET #: N032305

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 10/3/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits		X			X	
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented	X			X		
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

% Rec of Cr in N032268-002 PS / MS / MSD failed, high bias. However, LCS passed  
 Mn is OLR in N032305-001D. For dilution.

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI

Date: 10/26/18

2nd Level Reviewer [Signature] 10/26/2018

Date: [Signature]



**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70851  
 ASSET #: N032305

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 10/9/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		X
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			<del>X</del>		X
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			<del>X</del>		X
24. LCS compounds within control limits.	X			<del>X</del>		X
25. MS/MSD, RPD's are within control limits	X			<del>X</del>		X
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented			X			X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

For Mn rerun.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer Thommy 10/26/2018

Date: 10/26/18  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## SAMPLE CALCULATION

**METHOD:** EPA 6020  
**TEST NAME:** Heavy Metals by ICP-MS  
**MATRIX:** Water

### FORMULA:

Calculate the Arsenic concentration, in ug/L in the original sample as follows:

$$\text{Arsenic, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration

DF = Dilution Factor

PF = Final Volume of Digestate, mL / Amount of Sample, mL

For Sample **N032305-002D**, the concentration in ug/L is calculated as follows:

$$\text{Arsenic, ug/L} = 5.3891 * 1 * (25/25)$$

$$\text{Arsenic, ug/L} = 5.3891$$

Reporting results in two significant figures,

$$\text{Arsenic, ug/L} = 5.4$$

# % RSD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENTAL TECHNOLOGY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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PERCENT RSD SUMMARY: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.1	7.97	15	PASS	0.12	10.84	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.52	8.27	15	PASS	0.53	2.88	15	PASS
Std3-5/50 ppb	ICAL	1	5.17	1.17	15	PASS	5.23	1.71	15	PASS
Std4-10/100 ppb	ICAL	1	10.28	1.73	15	PASS	10.15	1.99	15	PASS
Std5-20/200 ppb	ICAL	1	20.4	0.56	15	PASS	20.48	1.09	15	PASS
Std6-40/400 ppb	ICAL	1	40.36	1.48	15	PASS	40.72	0.34	15	PASS
Std7-100/1000 ppb	ICAL	1	101.38	1.27	15	PASS	101.18	1.58	15	PASS
Std8-200/2000 ppb	ICAL	1	199.18	0.95	15	PASS	199.21	0.93	15	PASS
ICV	ICV	1	10.32	0.55	15	PASS	105.84	0.11	15	PASS
ICB	ICB	1	<0.000	N/A	15	<PQL	0.0039	286.71	15	<PQL
LLICV	CCV1	1	1.048	1.44	20	PASS	0.57	5.74	20	PASS
ICSA1	ICSA	1	0.022	13.12	15	PASS	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	21.01	0.93	15	PASS	16.65	1.97	15	PASS
MB-70851	MBLK	1	0.0016	364.46	15	<PQL	0.0054	135.61	15	<PQL
LCS-70851	LCS	1	9.67	0.52	15	PASS	104.81	0.12	15	PASS
N032268-001D	SAMP	1	8760.99	1.18	15	PASS	3.13	2.57	15	PASS
N032268-002D	SAMP	1	453.083	1.32	15	PASS	0.4	13.93	15	PASS
N032268-002D	SAMP	5	89.23	1.69	15	PASS	0.1	19.44	15	<PQL
N032268-002D-PS	PS	1	456.58	1.44	15	PASS	98.97	0.93	15	PASS
N032268-002D-MS	MS	1	458.29	2.17	15	PASS	98.77	1.67	15	PASS
N032268-002D-MSD	MSD	1	457.15	1.55	15	PASS	98.82	1.2	15	PASS
N032268-003D	SAMP	1	169.53	1.27	15	PASS	25.59	0.81	15	PASS
N032268-004D	SAMP	1	172.44	1.21	15	PASS	27.37	1.24	15	PASS
CCV1	CCV	1	19.88	1.39	15	PASS	20.55	1.49	15	PASS
CCB1	CCB	1	0.11	13.65	15	PASS	0.031	18.53	15	<PQL
N032268-005D	SAMP	1	3.27	1.88	15	PASS	47.27	0.79	15	PASS
N032268-006D	SAMP	1	2.8	0.85	15	PASS	49.96	0.89	15	PASS
N032268-007D	SAMP	1	9.55	0.76	15	PASS	285.68	1.27	15	PASS
N032268-009D	SAMP	1	169.46	0.63	15	PASS	46.71	2.33	15	PASS
N032303-001B	SAMP	1	11.088	0.62	15	PASS	<0.000	N/A	15	<PQL
N032303-002B	SAMP	1	3.7	3.23	15	PASS	<0.000	N/A	15	<PQL
N032303-003B	SAMP	1	1.93	3.7	15	PASS	<0.000	N/A	15	<PQL
N032303-004B	SAMP	1	0.42	8.38	15	PASS	52.78	0.37	15	PASS
N032303-005B	SAMP	1	3	2.27	15	PASS	<0.000	N/A	15	<PQL
N032305-001D	SAMP	1	1	2.014	15	PASS	190.56	0.48	15	PASS
CCV2	CCV	1	19.37	1.043	15	PASS	20.19	1.39	15	PASS
CCB2	CCB	1	0.026	43.61	15	<PQL	0.033	43.25	15	<PQL
N032305-002D	SAMP	1	6.99	2.19	15	PASS	16.97	0.46	15	PASS
N032268-001D	SAMP	100	88.95	0.23	15	PASS	0.048	11.8	15	PASS
N032268-002D	SAMP	25	18.4	0.83	15	PASS	0.036	50.96	15	<PQL



PERCENT RSD SUMMARY: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N032268-002D-PS	PS	5	93.11	1.41	15	PASS	20.57	1.47	15	PASS
N032268-002D-MS	MS	5	93.2	0.93	15	PASS	20.83	1.96	15	PASS
N032268-002D-MSD	MSD	5	92.79	1.34	15	PASS	20.59	0.34	15	PASS
N032268-004D	SAMP	1	173.019	0.82	15	PASS	27.57	0.073	15	PASS
N032268-007D	SAMP	1	9.71	1.23	15	PASS	289.17	1.082	15	PASS
N032268-007D	SAMP	5	2.038	3.78	15	PASS	59.46	1.95	15	PASS
N032268-004D	SAMP	1	175.21	0.36	15	PASS	27.32	0.71	15	PASS
CCV3	CCV	1	20.1	0.65	15	PASS	20.62	0.82	15	PASS
CCB3	CCB	1	0.068	17.17	15	<PQL	0.047	9.12	15	PASS
ICSA2	ICSA	1	0.064	30.27	15	<PQL	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	20.6	1.51	15	PASS	16.44	2.58	15	PASS

PERCENT RSD SUMMARY: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	75 As [2]				78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.084	25.65	15	<PQL	0.15	30.43	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.47	2.52	15	PASS	0.57	7.33	15	PASS
Std3-5/50 ppb	ICAL	1	5.073	3.82	15	PASS	5	5.12	15	PASS
Std4-10/100 ppb	ICAL	1	10.23	3.15	15	PASS	9.55	2.28	15	PASS
Std5-20/200 ppb	ICAL	1	20.56	0.85	15	PASS	19.44	4.72	15	PASS
Std6-40/400 ppb	ICAL	1	39.63	1.46	15	PASS	39.54	0.68	15	PASS
Std7-100/1000 ppb	ICAL	1	100.46	1.13	15	PASS	100.34	2.43	15	PASS
Std8-200/2000 ppb	ICAL	1	199.77	1.85	15	PASS	197.73	1.2	15	PASS
ICV	ICV	1	10.26	1.88	15	PASS	10.033	5.88	15	PASS
ICB	ICB	1	0.017	87.15	15	<PQL	<0.000	0	15	PASS
LLICV	CCV1	1	0.097	20.47	20	<PQL	0.59	25.7	20	NR!
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	0.037	89.35	15	<PQL
ICSAB1	ICSAB	1	21.2	0.76	15	PASS	18.95	3.25	15	PASS
MB-70851	MBLK	1	<0.000	N/A	15	<PQL	0.049	78.99	15	<PQL
LCS-70851	LCS	1	9.85	1.019	15	PASS	9.18	5.45	15	PASS
N032268-001D	SAMP	1	3.22	2.28	15	PASS	9.47	6.56	15	PASS
N032268-002D	SAMP	1	2.086	6.28	15	PASS	12.19	4.2	15	PASS
N032268-002D	SAMP	5	0.41	6.7	15	PASS	2.47	1.74	15	PASS
N032268-002D-PS	PS	1	12.2	3.46	15	PASS	22.11	3	15	PASS
N032268-002D-MS	MS	1	12.42	3.69	15	PASS	20.95	6.4	15	PASS
N032268-002D-MSD	MSD	1	12.083	1.34	15	PASS	22.0065	8.15	15	PASS
N032268-003D	SAMP	1	2.93	1.083	15	PASS	1.97	8.14	15	PASS
N032268-004D	SAMP	1	3.06	2.6	15	PASS	2.72	22.24	15	NR!
CCV1	CCV	1	19.69	0.59	15	PASS	18.38	5.29	15	PASS
CCB1	CCB	1	0.017	92.11	15	<PQL	0.04	1.19	15	PASS
N032268-005D	SAMP	1	5.84	0.54	15	PASS	3.38	4.14	15	PASS
N032268-006D	SAMP	1	6.23	3.078	15	PASS	3.21	14.29	15	PASS
N032268-007D	SAMP	1	1.83	1.99	15	PASS	2.1	26.15	15	NR!
N032268-009D	SAMP	1	0.75	5.18	15	PASS	8.89	3.38	15	PASS
N032303-001B	SAMP	1	0.44	0.57	15	PASS	0.36	11.9	15	PASS
N032303-002B	SAMP	1	0.87	1.7	15	PASS	0.94	9.95	15	PASS
N032303-003B	SAMP	1	1.017	5.85	15	PASS	0.66	32.15	15	NR!
N032303-004B	SAMP	1	9.89	1.38	15	PASS	0.0084	186.54	15	<PQL
N032303-005B	SAMP	1	0.59	6.44	15	PASS	0.82	21.088	15	NR!
N032305-001D	SAMP	1	1.6	7.24	15	PASS	0.05	40.6	15	<PQL
CCV2	CCV	1	19.96	2.032	15	PASS	18.59	4.99	15	PASS
CCB2	CCB	1	0.012	162.089	15	<PQL	0.034	44.97	15	<PQL
N032305-002D	SAMP	1	5.39	1.33	15	PASS	0.074	75.31	15	<PQL
N032268-001D	SAMP	100	0.047	16.77	15	<PQL	0.17	25.53	15	<PQL
N032268-002D	SAMP	25	0.11	10.97	15	PASS	0.52	30.19	15	NR!

PERCENT RSD SUMMARY: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	75 As [2]				78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
N032268-002D-PS	PS	5	2.42	4.58	15	PASS	4.37	10.84	15	PASS
N032268-002D-MS	MS	5	2.4	3.97	15	PASS	4.31	10.17	15	PASS
N032268-002D-MSD	MSD	5	2.47	6.008	15	PASS	4.76	4.66	15	PASS
N032268-004D	SAMP	1	2.69	4.19	15	PASS	2.48	21.68	15	NR!
N032268-007D	SAMP	1	1.66	4.3	15	PASS	1.75	12.04	15	PASS
N032268-007D	SAMP	5	0.31	12.71	15	PASS	0.38	43.76	15	<PQL
N032268-004D	SAMP	1	2.78	4.68	15	PASS	2.54	16.61	15	NR!
CCV3	CCV	1	19.46	1.38	15	PASS	19.77	3.85	15	PASS
CCB3	CCB	1	0.0026	99.58	15	<PQL	<0.000	N/A	15	<PQL
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	0.00031	5490.7	15	<PQL
ICSAB2	ICSAB	1	20.87	3.064	15	PASS	19.45	2.94	15	PASS

PERCENT RSD SUMMARY: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.074	6.023	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.45	3.39	15	PASS
Std3-5/50 ppb	ICAL	1	4.68	1.45	15	PASS
Std4-10/100 ppb	ICAL	1	9.52	0.61	15	PASS
Std5-20/200 ppb	ICAL	1	19.68	1.42	15	PASS
Std6-40/400 ppb	ICAL	1	39.98	0.6	15	PASS
Std7-100/1000 ppb	ICAL	1	99.54	0.68	15	PASS
Std8-200/2000 ppb	ICAL	1	200.3	0.77	15	PASS
ICV	ICV	1	10.85	0.83	15	PASS
ICB	ICB	1	0.022	50.12	15	<PQL
LLICV	CCV1	1	0.51	4.52	20	PASS
ICSA1	ICSA	1	0.078	7.83	15	PASS
ICSAB1	ICSAB	1	22.21	0.79	15	PASS
MB-70851	MBLK	1	0.16	24.5	15	<PQL
LCS-70851	LCS	1	9.85	0.91	15	PASS
N032268-001D	SAMP	1	33.34	1.3	15	PASS
N032268-002D	SAMP	1	65.37	0.59	15	PASS
N032268-002D	SAMP	5	12.48	0.98	15	PASS
N032268-002D-PS	PS	1	76.88	0.98	15	PASS
N032268-002D-MS	MS	1	77.38	0.15	15	PASS
N032268-002D-MSD	MSD	1	76.64	0.23	15	PASS
N032268-003D	SAMP	1	47.18	0.77	15	PASS
N032268-004D	SAMP	1	47.3	0.14	15	PASS
CCV1	CCV	1	20.14	0.86	15	PASS
CCB1	CCB	1	0.27	15.11	15	<PQL
N032268-005D	SAMP	1	28.78	0.28	15	PASS
N032268-006D	SAMP	1	29.78	1.92	15	PASS
N032268-007D	SAMP	1	24.14	0.95	15	PASS
N032268-009D	SAMP	1	53.8	1.2	15	PASS
N032303-001B	SAMP	1	1.19	0.96	15	PASS
N032303-002B	SAMP	1	1.85	1.6	15	PASS
N032303-003B	SAMP	1	1.098	5.53	15	PASS
N032303-004B	SAMP	1	6.82	2.59	15	PASS
N032303-005B	SAMP	1	1.82	0.46	15	PASS
N032305-001D	SAMP	1	49.3	0.75	15	PASS
CCV2	CCV	1	20.095	1.058	15	PASS
CCB2	CCB	1	0.19	3.91	15	PASS
N032305-002D	SAMP	1	75.46	0.96	15	PASS
N032268-001D	SAMP	100	0.59	2.8	15	PASS
N032268-002D	SAMP	25	2.48	3.26	15	PASS

PERCENT RSD SUMMARY: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment
N032268-002D-PS	PS	5	14.92	2.031	15	PASS
N032268-002D-MS	MS	5	15.21	1.18	15	PASS
N032268-002D-MSD	MSD	5	14.95	0.54	15	PASS
N032268-004D	SAMP	1	47.059	0.26	15	PASS
N032268-007D	SAMP	1	24.22	0.41	15	PASS
N032268-007D	SAMP	5	4.85	3.052	15	PASS
N032268-004D	SAMP	1	47.12	0.44	15	PASS
CCV3	CCV	1	20.37	1.008	15	PASS
CCB3	CCB	1	0.21	22.028	15	<PQL
ICSA2	ICSA	1	0.14	16.57	15	<PQL
ICSAB2	ICSAB	1	22.83	0.48	15	PASS

PERCENT RSD SUMMARY: 181009A

Instrument ID: ICPMS-02

Sample Name	Type	DF	55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.11	9.15	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.53	3.75	15	PASS
Std3-5/50 ppb	ICAL	1	5.058	1.58	15	PASS
Std4-10/100 ppb	ICAL	1	10.019	2.75	15	PASS
Std5-20/200 ppb	ICAL	1	20.094	1.4	15	PASS
Std6-40/400 ppb	ICAL	1	39.79	0.62	15	PASS
Std7-100/1000 ppb	ICAL	1	99.55	0.81	15	PASS
Std8-200/2000 ppb	ICAL	1	200.25	0.35	15	PASS
ICV	ICV	1	106.82	0.31	15	PASS
ICB	ICB	1	0.013	61.12	15	<PQL
LLICV	CCV1	1	0.53	9.32	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	20.21	0.98	15	PASS
LLICV	CCV1	1	0.51	6.37	20	PASS
CCV1	CCV	1	19.92	1.13	15	PASS
CCB1	CCB	1	0.0026	168.56	15	<PQL
N032305-001D	SAMP	5	40.67	1.98	15	PASS
CCV2	CCV	1	20.12	3.043	15	PASS
CCB2	CCB	1	0.00046	1759.094	15	<PQL
ICSA2	ICSA	1	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	20.15	1.58	15	PASS

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENTAL PROFESSION

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INJECTION LOG: 181003A**

**Instrument ID: ICPMS-02**

Data File	Sample Name	Type	DF	Acq. Date-Time
A1003001.D	RINSE	RINSE	1	10/03/18 2:02 PM
A1003002.D	Cal Blank	IBLK	1	10/03/18 2:08 PM
A1003003.D	Std1-0.1/1 ppb	ICAL	1	10/03/18 2:13 PM
A1003004.D	Std2-0.5/5 ppb	ICAL	1	10/03/18 2:19 PM
A1003005.D	Std3-5/50 ppb	ICAL	1	10/03/18 2:24 PM
A1003006.D	Std4-10/100 ppb	ICAL	1	10/03/18 2:30 PM
A1003007.D	Std5-20/200 ppb	ICAL	1	10/03/18 2:36 PM
A1003008.D	Std6-40/400 ppb	ICAL	1	10/03/18 2:42 PM
A1003009.D	Std7-100/1000 ppb	ICAL	1	10/03/18 2:47 PM
A1003010.D	Std8-200/2000 ppb	ICAL	1	10/03/18 2:54 PM
A1003011.D	ICV	ICV	1	10/03/18 2:59 PM
A1003012.D	ICB	ICB	1	10/03/18 3:05 PM
A1003013.D	LLICV	CCV1	1	10/03/18 3:11 PM
A1003014.D	ICSA1	ICSA	1	10/03/18 3:17 PM
A1003015.D	ICSAB1	ICSAB	1	10/03/18 3:22 PM
A1003016.D	MB-70851	MBLK	1	10/03/18 3:28 PM
A1003017.D	LCS-70851	LCS	1	10/03/18 3:33 PM
A1003018.D	N032268-001D	SAMP	1	10/03/18 3:40 PM
A1003019.D	N032268-002D	SAMP	1	10/03/18 3:45 PM
A1003020.D	N032268-002D	SAMP	5	10/03/18 3:50 PM
A1003021.D	N032268-002D-PS	PS	1	10/03/18 3:56 PM
A1003022.D	N032268-002D-MS	MS	1	10/03/18 4:02 PM
A1003023.D	N032268-002D-MSD	MSD	1	10/03/18 4:07 PM
A1003024.D	N032268-003D	SAMP	1	10/03/18 4:13 PM
A1003025.D	N032268-004D	SAMP	1	10/03/18 4:18 PM
A1003026.D	CCV1	CCV	1	10/03/18 4:24 PM
A1003027.D	CCB1	CCB	1	10/03/18 4:29 PM
A1003028.D	N032268-005D	SAMP	1	10/03/18 4:35 PM
A1003029.D	N032268-006D	SAMP	1	10/03/18 4:40 PM
A1003030.D	N032268-007D	SAMP	1	10/03/18 4:46 PM
A1003031.D	N032268-009D	SAMP	1	10/03/18 4:51 PM
A1003032.D	N032303-001B	SAMP	1	10/03/18 4:57 PM
A1003033.D	N032303-002B	SAMP	1	10/03/18 5:03 PM
A1003034.D	N032303-003B	SAMP	1	10/03/18 5:09 PM
A1003035.D	N032303-004B	SAMP	1	10/03/18 5:14 PM
A1003036.D	N032303-005B	SAMP	1	10/03/18 5:20 PM
A1003037.D	N032305-001D	SAMP	1	10/03/18 5:25 PM
A1003038.D	CCV2	CCV	1	10/03/18 5:31 PM
A1003039.D	CCB2	CCB	1	10/03/18 5:36 PM
A1003040.D	N032305-002D	SAMP	1	10/03/18 5:42 PM
A1003041.D	N032268-001D	SAMP	100	10/03/18 5:47 PM
A1003042.D	N032268-002D	SAMP	25	10/03/18 5:53 PM



**INJECTION LOG: 181003A**

**Instrument ID: ICPMS-02**

<b>Data File</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq. Date-Time</b>
A1003043.D	N032268-002D-PS	PS	5	10/03/18 5:59 PM
A1003044.D	N032268-002D-MS	MS	5	10/03/18 6:04 PM
A1003045.D	N032268-002D-MSD	MSD	5	10/03/18 6:12 PM
A1003046.D	N032268-004D	SAMP	1	10/03/18 6:18 PM
A1003047.D	N032268-007D	SAMP	1	10/03/18 6:23 PM
A1003048.D	N032268-007D	SAMP	5	10/03/18 6:29 PM
A1003049.D	N032268-004D	SAMP	1	10/03/18 6:34 PM
A1003050.D	CCV3	CCV	1	10/03/18 6:40 PM
A1003051.D	CCB3	CCB	1	10/03/18 6:46 PM
A1003052.D	ICSA2	ICSA	1	10/03/18 6:51 PM
A1003053.D	ICSAB2	ICSAB	1	10/03/18 6:57 PM

**INJECTION LOG: 181009A**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A1009001.D	RINSE	RINSE	1	10/09/18 9:20 AM
A1009002.D	Cal Blank	IBLK	1	10/09/18 9:26 AM
A1009003.D	Std1-0.1/1 ppb	ICAL	1	10/09/18 9:31 AM
A1009004.D	Std2-0.5/5 ppb	ICAL	1	10/09/18 9:37 AM
A1009005.D	Std3-5/50 ppb	ICAL	1	10/09/18 9:42 AM
A1009006.D	Std4-10/100 ppb	ICAL	1	10/09/18 9:48 AM
A1009007.D	Std5-20/200 ppb	ICAL	1	10/09/18 9:53 AM
A1009008.D	Std6-40/400 ppb	ICAL	1	10/09/18 9:59 AM
A1009009.D	Std7-100/1000 ppb	ICAL	1	10/09/18 10:04 AM
A1009010.D	Std8-200/2000 ppb	ICAL	1	10/09/18 10:10 AM
A1009011.D	ICV	ICV	1	10/09/18 10:16 AM
A1009012.D	ICB	ICB	1	10/09/18 10:22 AM
A1009013.D	LLICV	CCV1	1	10/09/18 10:27 AM
A1009014.D	ICSA1	ICSA	1	10/09/18 10:33 AM
A1009015.D	ICSAB1	ICSAB	1	10/09/18 10:38 AM
A1009016.D	LLICV	CCV1	1	10/09/18 10:44 AM
A1009017.D	N032317-001B	SAMP	5	10/09/18 10:50 AM
A1009018.D	N032317-001B	SAMP	25	10/09/18 10:55 AM
A1009019.D	N032317-001B-PS	PS	5	10/09/18 11:02 AM
A1009020.D	N032317-001B-MS	MS	5	10/09/18 11:07 AM
A1009021.D	N032317-001B-MSD	MSD	5	10/09/18 11:13 AM
A1009022.D	N032317-002B	SAMP	25	10/09/18 11:19 AM
A1009023.D	N032317-004B	SAMP	5	10/09/18 11:24 AM
A1009024.D	N032317-005B	SAMP	5	10/09/18 11:30 AM
A1009025.D	N032317-006B	SAMP	5	10/09/18 11:35 AM
A1009026.D	N032317-007B	SAMP	5	10/09/18 11:41 AM
A1009027.D	CCV1	CCV	1	10/09/18 11:47 AM
A1009028.D	CCB1	CCB	1	10/09/18 11:52 AM
A1009029.D	N032317-009B	SAMP	5	10/09/18 11:58 AM
A1009030.D	N032317-010B	SAMP	5	10/09/18 12:04 PM
A1009031.D	N032317-011B	SAMP	5	10/09/18 12:09 PM
A1009032.D	N032317-012B	SAMP	5	10/09/18 12:15 PM
A1009033.D	N032318-001B	SAMP	5	10/09/18 12:20 PM
A1009034.D	N032318-008B	SAMP	10	10/09/18 12:26 PM
A1009035.D	N032318-009B	SAMP	10	10/09/18 12:32 PM
A1009036.D	N032318-011B	SAMP	5	10/09/18 12:38 PM
A1009037.D	N032305-001D	SAMP	5	10/09/18 12:43 PM
A1009038.D	MB-70935	MBLK	1	10/09/18 12:49 PM
A1009039.D	CCV2	CCV	1	10/09/18 12:54 PM
A1009040.D	CCB2	CCB	1	10/09/18 1:00 PM
A1009041.D	ICSA2	ICSA	1	10/09/18 1:05 PM
A1009042.D	ICSAB2	ICSAB	1	10/09/18 1:11 PM

**INJECTION LOG: 181009A**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A1009043.D	LCS-70935	LCS	1	10/09/18 1:17 PM
A1009044.D	N032348-006B	SAMP	1	10/09/18 1:22 PM
A1009045.D	N032348-006B	SAMP	5	10/09/18 1:28 PM
A1009046.D	N032348-006B-PS	PS	1	10/09/18 1:34 PM
A1009047.D	N032348-006B-MS	MS	1	10/09/18 1:39 PM
A1009048.D	N032348-006B-MSD	MSD	1	10/09/18 1:45 PM
A1009049.D	N032348-007B	SAMP	1	10/09/18 1:50 PM
A1009050.D	N032348-008B	SAMP	1	10/09/18 1:56 PM
A1009051.D	N032348-009B	SAMP	1	10/09/18 2:01 PM
A1009052.D	N032348-010B	SAMP	1	10/09/18 2:07 PM
A1009053.D	CCV3	CCV	1	10/09/18 2:12 PM
A1009054.D	CCB3	CCB	1	10/09/18 2:18 PM
A1009055.D	N032348-011B	SAMP	1	10/09/18 2:24 PM
A1009056.D	N032348-012B	SAMP	1	10/09/18 2:29 PM
A1009057.D	N032348-013B	SAMP	1	10/09/18 2:35 PM
A1009058.D	N032348-014B	SAMP	1	10/09/18 2:40 PM
A1009059.D	N032348-015B	SAMP	1	10/09/18 2:46 PM
A1009060.D	N032349-005B	SAMP	1	10/09/18 2:52 PM
A1009061.D	N032349-005B-MS	MS	1	10/09/18 2:57 PM
A1009062.D	N032349-006B	SAMP	1	10/09/18 3:03 PM
A1009063.D	N032350-006B	SAMP	1	10/09/18 3:08 PM
A1009064.D	N032350-007B	SAMP	1	10/09/18 3:14 PM
A1009065.D	CCV4	CCV	1	10/09/18 3:20 PM
A1009066.D	CCB4	CCB	1	10/09/18 3:25 PM
A1009067.D	N032367-002B	SAMP	1	10/09/18 3:31 PM
A1009068.D	N032367-003B	SAMP	1	10/09/18 3:37 PM
A1009069.D	N032367-008B	SAMP	1	10/09/18 3:42 PM
A1009070.D	N032367-018B	SAMP	1	10/09/18 3:48 PM
A1009071.D	N032367-019B	SAMP	1	10/09/18 3:53 PM
A1009072.D	N032359-001C	SAMP	25	10/09/18 4:01 PM
A1009073.D	MB-70882	MBLK	1	10/09/18 4:07 PM
A1009074.D	LCS-70882	LCS	1	10/09/18 4:12 PM
A1009075.D	N032318-013B	SAMP	5	10/09/18 4:18 PM
A1009076.D	N032318-013B	SAMP	25	10/09/18 4:23 PM
A1009077.D	CCV5	CCV	1	10/09/18 4:29 PM
A1009078.D	CCB5	CCB	1	10/09/18 4:35 PM
A1009079.D	N032318-013B-PS	PS	5	10/09/18 4:40 PM
A1009080.D	N032318-013B-MS	MS	5	10/09/18 4:46 PM
A1009081.D	N032318-013B-MSD	MSD	5	10/09/18 4:51 PM
A1009082.D	N032328-001D	SAMP	5	10/09/18 4:57 PM
A1009083.D	N032328-002D	SAMP	5	10/09/18 5:03 PM
A1009084.D	N032328-001D	SAMP	1	10/09/18 5:08 PM

**INJECTION LOG: 181009A**

**Instrument ID: ICPMS-02**

<b>Data File</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq. Date-Time</b>
A1009085.D	N032328-001D	SAMP	25	10/09/18 5:14 PM
A1009086.D	N032328-002D	SAMP	1	10/09/18 5:19 PM
A1009087.D	CCV6	CCV	1	10/09/18 5:25 PM
A1009088.D	CCB6	CCB	1	10/09/18 5:31 PM
A1009089.D	ICSA3	ICSA	1	10/09/18 5:36 PM
A1009090.D	ICSAB3	ICSAB	1	10/09/18 5:42 PM

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 10/2/2018 4:00:00

Reviewed/ Date: *Mary* 10/26/2018

Page: 1 of 2

Prep End Date: 10/2/2018 8:00:00

Initials/ Date: *[Signature]* 10/26/2018

Prep Factor Units  
mL / mL

Temp. (°C):  
94.7

Location:  
01-10

Prep Batch 70851 Prep Code: 3010\_W\_MSDI

Technician Claire Ignacio

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70851	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70851	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N032268-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-002D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-002D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-003D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-004D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-005D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-006D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-007D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032268-009D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032303-001B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032303-002B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 10/2/2018 4:00:00

Reviewed/ Date: *Nancy* 10/26/2018

Page: 2 of 2

Prep End Date: 10/2/2018 8:00:00

Initials/ Date: *[Signature]* 10/26/2018

Prep Factor Units

Temp. (°C):

Location:

Prep Batch 70851

Prep Code: 3010\_W\_MSDI

Technician Claire Ignacio

mL / mL

94.7

01-10

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N032303-003B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032303-004B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032303-005B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032305-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032305-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

# INSTRUMENT TUNING CHECK



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 3 Oct 2018 08:34:01 am  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	154229.00	0.00	
24 Mg	428023.00	0.00	
25 Mg	55923.80	0.00	
26 Mg	62634.10	0.00	
59 Co	347672.00	0.00	
115 In	560810.00	0.00	
206 Pb	190574.00	0.00	
207 Pb	167099.00	0.00	
208 Pb	412922.00	0.00	

## RSD (%)

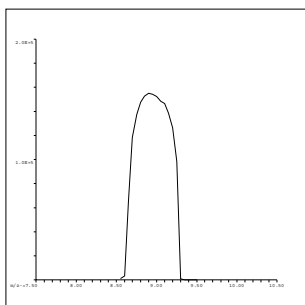
Element	Actual	Required	Flag
9 Be	0.34	5.00	
24 Mg	0.92	5.00	
25 Mg	0.67	5.00	
26 Mg	0.97	5.00	
59 Co	0.97	5.00	
115 In	0.77	5.00	
206 Pb	0.81	5.00	
207 Pb	0.84	5.00	
208 Pb	1.28	5.00	

## Ion Ratio

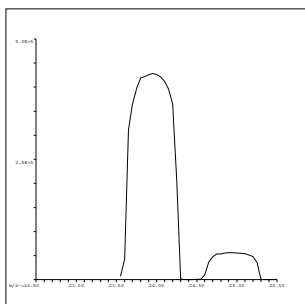
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

## Maximum Bkg. Count (CPS)

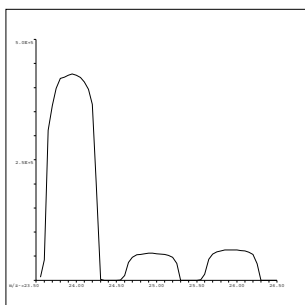
Element	Actual	Required	Flag
---------	--------	----------	------



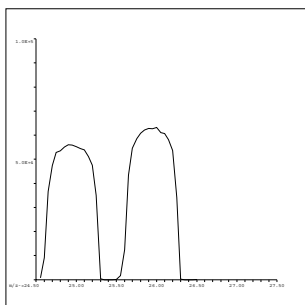
9 Be  
Mass Calib.  
Actual: 8.95  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



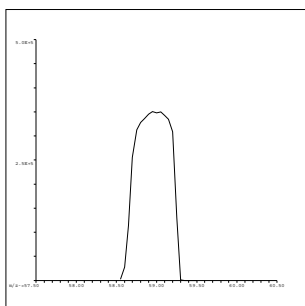
24 Mg  
Mass Calib.  
Actual: 23.95  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



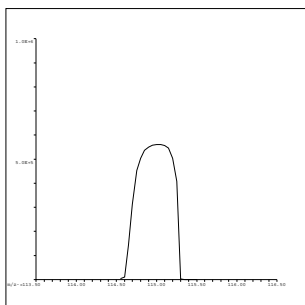
25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



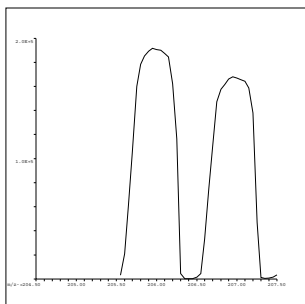
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



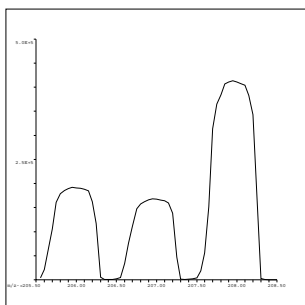
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



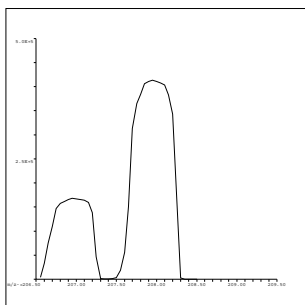
115 In  
Mass Calib.  
Actual: 115.00  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.00  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.00  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 207.95  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

QC Tune Result:Pass

## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
Date Acquired: 9 Oct 2018 08:47:51 am  
Operator:  
Misc Info:  
Vial Number: 0  
Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	115038.00	0.00	
24 Mg	545739.00	0.00	
25 Mg	69630.90	0.00	
26 Mg	78529.40	0.00	
59 Co	328857.00	0.00	
115 In	523469.00	0.00	
206 Pb	159305.00	0.00	
207 Pb	138822.00	0.00	
208 Pb	341276.00	0.00	

## RSD (%)

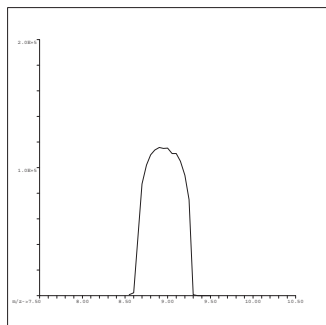
Element	Actual	Required	Flag
9 Be	0.87	5.00	
24 Mg	0.94	5.00	
25 Mg	0.56	5.00	
26 Mg	0.73	5.00	
59 Co	1.02	5.00	
115 In	0.74	5.00	
206 Pb	0.70	5.00	
207 Pb	0.97	5.00	
208 Pb	1.10	5.00	

## Ion Ratio

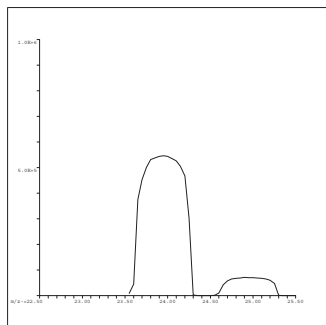
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

## Maximum Bkg. Count (CPS)

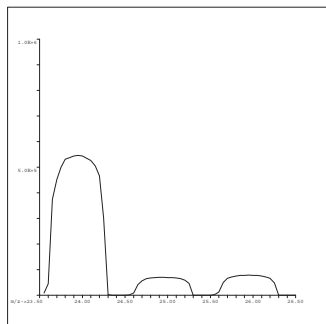
Element	Actual	Required	Flag
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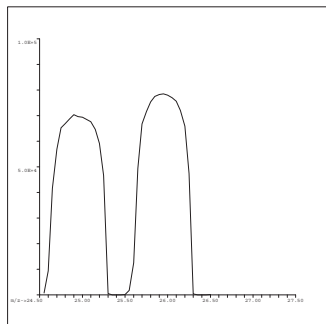
9 Be  
Mass Calib.  
Actual: 8.95  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



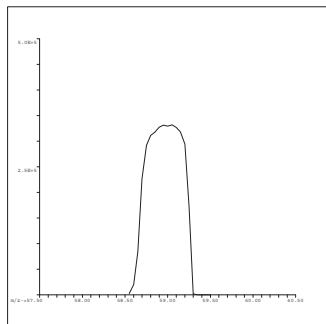
24 Mg  
Mass Calib.  
Actual: 23.95  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



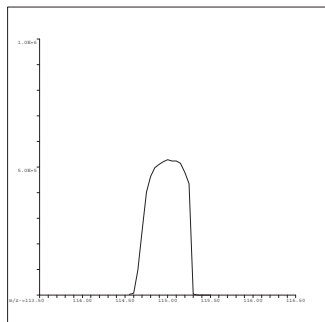
25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



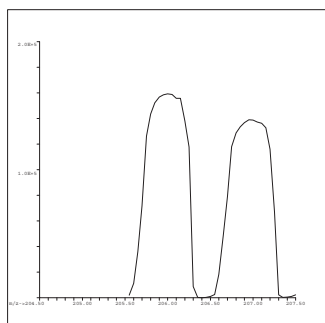
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



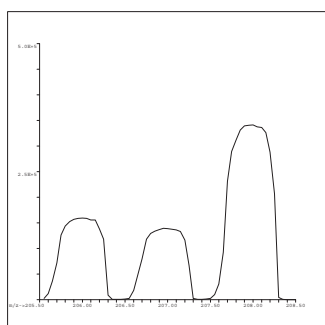
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



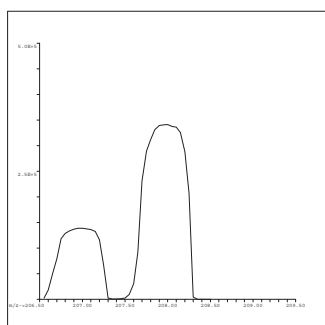
115 In  
Mass Calib.  
Actual: 115.05  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.00  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.00  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 208.00  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

QC Tune Result:Pass

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

INITIAL CALIBRATION SUMMARY: 181003A

Instrument ID: ICPMS-02

Analyte	Data File	A1003002.D	A1003003.D	A1003004.D	A1003005.D	A1003006.D	A1003007.D	A1003008.D	A1003009.D	A1003010.D	R
	Acq. Date-Time	10/03/2018 02:08 PM	10/03/2018 02:13 PM	10/03/2018 02:19 PM	10/03/2018 02:24 PM	10/03/2018 02:30 PM	10/03/2018 02:36 PM	10/03/2018 02:42 PM	10/03/2018 02:47 PM	10/03/2018 02:54 PM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	2	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std1-0.1/1 ppb	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.1/1 ug/L	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L		
45 Sc (ISTD) [ 2 ]	CPS	52776.2		50610.8	50268.6	50898.3	49493.1	49826.2	50332.3	50634.3	
55 Mn [ 2 ]	CPS	44.5		933.6	8854	17368.7	34017.2	68071.7	170769.7	338244.4	1.0000
52 Cr [ 2 ]	CPS	161.1		2039	18785.3	37667.3	72566.4	144415.3	366159.5	723676	1.0000
72 Ge (ISTD) [ 1 ]	CPS	30509.2		29057.6	29058.7	28849.4	28102.6	27867.7	28032.4	28135.9	
78 Se [ 1 ]	CPS	1.1		63.3	548.9	1041.2	2061.3	4158.5	10612.7	20989.6	1.0000
72 Ge (ISTD) [ 2 ]	CPS	32141.2	30714	31193.8	31219.4	30779.7	29827.8	30520.3	30301	30570.4	
75 As [ 2 ]	CPS	30.7	61.3	211.1	1996.1	3941.4	7643.2	15050.6	37835.1	75867.9	1.0000
103 Rh (ISTD) [ 2 ]	CPS	926847.8		898860.6	896529.1	901146.9	876591.5	874117.5	882366.1	872563.2	
95 Mo [ 2 ]	CPS	62.2		980.1	9506.5	19393.4	38936.8	78804.2	197965	393909	1.0000

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MWST-180618C

Calibration Acceptance Criteria: > 0.995 Correlation



INITIAL CALIBRATION SUMMARY: 181009A

Instrument ID: ICPMS-02

Analyte	Data File	A1009002.D	A1009004.D	A1009005.D	A1009006.D	A1009007.D	A1009008.D	A1009009.D	A1009010.D	R
	Acq. Date-Time	10/09/2018 09:26 AM	10/09/2018 09:37 AM	10/09/2018 09:42 AM	10/09/2018 09:48 AM	10/09/2018 09:53 AM	10/09/2018 09:59 AM	10/09/2018 10:04 AM	10/09/2018 10:10 AM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L		
45 Sc (ISTD) [ 2 ]	CPS	55858.6	54307	53585.7	53193.6	52579.2	52835.5	52166.6	50248.6	
55 Mn [ 2 ]	CPS	47.3	1038.3	9358.4	18355.7	36346.8	72272.5	178481.3	345789.9	1.0000
52 Cr [ 2 ]	CPS	180.8	1963.3	18992	37401	73786	145434.3	361870.8	697490.9	1.0000
72 Ge (ISTD) [ 1 ]	CPS	34532.7	33883.6	33615.3	33870.2	33247.8	33086.5	32859.4	31915.3	
78 Se [ 1 ]	CPS	1.1	61.1	643.4	1216.8	2275.8	4509.7	11665.6	22873.4	0.9999
103 Rh (ISTD) [ 2 ]	CPS	922694.3	913985.5	906041.2	900730.1	892632.1	888526.7	882087.5	854976.6	
95 Mo [ 2 ]	CPS	26.7	936.7	9490.9	19199.7	39103.8	80163.2	199792.5	392135.1	1.0000

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MWST-180618C

Calibration Acceptance Criteria: > 0.995 Correlation

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>		Prep Date:	RunNo: <b>129092</b>
Client ID: <b>ICV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>			Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165519</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	10.257	0.10	10.00	0	103	90 110
Manganese	105.838	0.50	100.0	0	106	90 110
Molybdenum	10.855	0.50	10.00	0	109	90 110
Selenium	10.033	0.50	10.00	0	100	90 110

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>		Prep Date:	RunNo: <b>129092</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>			Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165521</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	0.097	0.10	0.1000	0	96.8	80 120
Manganese	0.575	0.50	0.5000	0	115	80 120
Molybdenum	0.506	0.50	0.5000	0	101	80 120
Selenium	0.586	0.50	0.5000	0	117	80 120

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>		Prep Date:	RunNo: <b>129092</b>
Client ID: <b>CCV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>			Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165534</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	19.693	0.10	20.00	0	98.5	90 110
Manganese	20.552	0.50	20.00	0	103	90 110
Molybdenum	20.138	0.50	20.00	0	101	90 110
Selenium	18.379	0.50	20.00	0	91.9	90 110

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>		Prep Date:	RunNo: <b>129092</b>
Client ID: <b>CCV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>			Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165546</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Arsenic	19.962	0.10	20.00	0	99.8	90 110

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165546</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.193	0.50	20.00	0	101	90	110				
Molybdenum	20.095	0.50	20.00	0	100	90	110				
Selenium	18.592	0.50	20.00	0	93.0	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165558</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	19.460	0.10	20.00	0	97.3	90	110				
Manganese	20.623	0.50	20.00	0	103	90	110				
Molybdenum	20.367	0.50	20.00	0	102	90	110				
Selenium	19.765	0.50	20.00	0	98.8	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167750</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	106.820	0.50	100.0	0	107	90	110				
Molybdenum	9.742	0.50	10.00	0	97.4	90	110				
Selenium	9.906	0.50	10.00	0	99.1	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167752</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.526	0.50	0.5000	0	105	80	120				
Molybdenum	0.539	0.50	0.5000	0	108	80	120				
Selenium	0.573	0.50	0.5000	0	115	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167766</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	19.921	0.50	20.00	0	99.6	90	110				
Molybdenum	19.291	0.50	20.00	0	96.5	90	110				
Selenium	19.248	0.50	20.00	0	96.2	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167778</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.119	0.50	20.00	0	101	90	110				
Molybdenum	19.099	0.50	20.00	0	95.5	90	110				
Selenium	19.020	0.50	20.00	0	95.1	90	110				

Reported Mn only in this run.

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167792</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.274	0.50	20.00	0	101	90	110				
Molybdenum	19.302	0.50	20.00	0	96.5	90	110				
Selenium	19.631	0.50	20.00	0	98.2	90	110				

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167804</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	19.807	0.50	20.00	0	99.0	90	110				
Molybdenum	19.216	0.50	20.00	0	96.1	90	110				
Selenium	18.719	0.50	20.00	0	93.6	90	110				

Sample ID <b>CCV5</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167816</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.186	0.50	20.00	0	101	90	110				
Molybdenum	19.260	0.50	20.00	0	96.3	90	110				
Selenium	20.227	0.50	20.00	0	101	90	110				

Sample ID <b>CCV6</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167826</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	19.847	0.50	20.00	0	99.2	90	110				
Molybdenum	20.001	0.50	20.00	0	100	90	110				
Selenium	19.045	0.50	20.00	0	95.2	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165562</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.321	1.0	10.00	0	103	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165564</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.048	1.0	1.000	0	105	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165577</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	19.884	1.0	20.00	0	99.4	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165589</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	19.375	1.0	20.00	0	96.9	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165601</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.103	1.0	20.00	0	101	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>
Client ID: <b>ICB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165520</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165535</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	0.265	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165547</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Arsenic	ND	0.10			
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165559</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Arsenic	ND	0.10			
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values

Mo on CCB1 has detect > 1/2 RL , however, reported samples for this analyte are > 5x the CCB detection.

*Handwritten signature* 10/26/18 **1848**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165559</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>
Client ID: <b>ICB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167751</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167779</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167779</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167793</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Reported Mn only in this run.

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

*Mary* 10/26/2018

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167805</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB5</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167817</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB6</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167827</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									
Molybdenum	0.371	0.50									
Selenium	ND	0.50									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165563</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165578</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165590</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165602</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165522</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165523</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	21.195	0.10	20.00	0	106	80	120				
Manganese	16.651	0.50	20.00	0	83.3	80	120				
Molybdenum	22.212	0.50	20.00	0	111	80	120				
Selenium	18.950	0.50	20.00	0	94.8	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165560</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.10									
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165561</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	20.873	0.10	20.00	0	104	80	120				
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	ICSAB2	SampType:	ICSAB	TestCode:	6020_DIS	Units:	µg/L	Prep Date:		RunNo:	129092
Client ID:	ICSAB	Batch ID:	R129092	TestNo:	EPA 6020	Analysis Date:	10/3/2018	SeqNo:	3165561		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	16.441	0.50	20.00	0	82.2	80	120				
Molybdenum	22.829	0.50	20.00	0	114	80	120				
Selenium	19.448	0.50	20.00	0	97.2	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167753</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167754</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.214	0.50	20.00	0	101	80	120				
Molybdenum	22.241	0.50	20.00	0	111	80	120				
Selenium	18.251	0.50	20.00	0	91.3	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167780</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167781</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.154	0.50	20.00	0	101	80	120				
Molybdenum	22.037	0.50	20.00	0	110	80	120				
Selenium	18.906	0.50	20.00	0	94.5	80	120				

Reported Mn only in this run.

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

*Nancy* 10/26/2018

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICSA3</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167828</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	ND	0.50									
Molybdenum	0.221	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSAB3</b>	SampType: <b>ICSAB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167829</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.346	0.50	20.00	0	102	80	120				
Molybdenum	22.478	0.50	20.00	0	112	80	120				
Selenium	18.704	0.50	20.00	0	93.5	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165565</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165565</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	21.010	1.0	20.00	0	105	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165603</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129092</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165604</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	20.604	1.0	20.00	0	103	80	120				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## INTERNAL STANDARD: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	52776.2	52776.2	100	PASS	70-125	32141.2	32141.2	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	51272.9	52776.2	97.15	PASS	70-125	30714	32141.2	95.56	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	50610.8	52776.2	95.9	PASS	70-125	31193.8	32141.2	97.052	PASS	70-125
Std3-5/50 ppb	ICAL	1	50268.6	52776.2	95.25	PASS	70-125	31219.4	32141.2	97.13	PASS	70-125
Std4-10/100 ppb	ICAL	1	50898.3	52776.2	96.44	PASS	70-125	30779.7	32141.2	95.76	PASS	70-125
Std5-20/200 ppb	ICAL	1	49493.1	52776.2	93.78	PASS	70-125	29827.8	32141.2	92.8	PASS	70-125
Std6-40/400 ppb	ICAL	1	49826.2	52776.2	94.41	PASS	70-125	30520.3	32141.2	94.96	PASS	70-125
Std7-100/1000 ppb	ICAL	1	50332.3	52776.2	95.37	PASS	70-125	30301	32141.2	94.27	PASS	70-125
Std8-200/2000 ppb	ICAL	1	50634.3	52776.2	95.94	PASS	70-125	30570.4	32141.2	95.11	PASS	70-125
ICV	ICV	1	59393	52776.2	112.54	PASS	70-125	36316.6	32141.2	112.99	PASS	70-125
ICB	ICB	1	50159.3	52776.2	95.042	PASS	70-125	31044.6	32141.2	96.59	PASS	70-125
LLICV	CCV1	1	55032.6	52776.2	104.28	PASS	70-125	32968.4	32141.2	102.57	PASS	70-125
ICSA1	ICSA	1	58379.3	52776.2	110.62	PASS	70-125	33875.9	32141.2	105.4	PASS	70-125
ICSAB1	ICSAB	1	60161.2	52776.2	113.99	PASS	70-125	35492.7	32141.2	110.43	PASS	70-125
MB-70851	MBLK	1	57799.8	52776.2	109.52	PASS	70-125	35409.1	32141.2	110.17	PASS	70-125
LCS-70851	LCS	1	57874.2	52776.2	109.66	PASS	70-125	34735.4	32141.2	108.07	PASS	70-125
N032268-001D	SAMP	1	49460.7	52776.2	93.72	PASS	70-125	28623.5	32141.2	89.055	PASS	70-125
N032268-002D	SAMP	1	53590	52776.2	101.54	PASS	70-125	31199.4	32141.2	97.07	PASS	70-125
N032268-002D	SAMP	5	58020.4	52776.2	109.94	PASS	70-125	34383.5	32141.2	106.98	PASS	70-125
N032268-002D-PS	PS	1	55552.1	52776.2	105.26	PASS	70-125	32622.1	32141.2	101.5	PASS	70-125
N032268-002D-MS	MS	1	55494	52776.2	105.15	PASS	70-125	32165.7	32141.2	100.08	PASS	70-125
N032268-002D-MSD	MSD	1	57535.3	52776.2	109.02	PASS	70-125	33675.4	32141.2	104.77	PASS	70-125
N032268-003D	SAMP	1	52029.7	52776.2	98.59	PASS	70-125	28890.7	32141.2	89.89	PASS	70-125
N032268-004D	SAMP	1	54099.4	52776.2	102.51	PASS	70-125	29099.9	32141.2	90.54	PASS	70-125
CCV1	CCV	1	65198.9	52776.2	123.54	PASS	70-125	39055	32141.2	121.51	PASS	70-125
CCB1	CCB	1	61049	52776.2	115.68	PASS	70-125	36670.7	32141.2	114.09	PASS	70-125
N032268-005D	SAMP	1	56310.3	52776.2	106.7	PASS	70-125	33270.2	32141.2	103.51	PASS	70-125
N032268-006D	SAMP	1	58170.9	52776.2	110.22	PASS	70-125	34097.4	32141.2	106.09	PASS	70-125
N032268-007D	SAMP	1	55587.8	52776.2	105.33	PASS	70-125	31275	32141.2	97.31	PASS	70-125
N032268-009D	SAMP	1	61041.2	52776.2	115.66	PASS	70-125	34914.6	32141.2	108.63	PASS	70-125
N032303-001B	SAMP	1	60264	52776.2	114.19	PASS	70-125	35658.5	32141.2	110.94	PASS	70-125
N032303-002B	SAMP	1	55944.5	52776.2	106	PASS	70-125	31843.9	32141.2	99.075	PASS	70-125
N032303-003B	SAMP	1	52658.1	52776.2	99.78	PASS	70-125	30804.1	32141.2	95.84	PASS	70-125
N032303-004B	SAMP	1	55033.5	52776.2	104.28	PASS	70-125	33050.9	32141.2	102.83	PASS	70-125
N032303-005B	SAMP	1	51801.2	52776.2	98.15	PASS	70-125	30655.1	32141.2	95.38	PASS	70-125
N032305-001D	SAMP	1	48803.4	52776.2	92.47	PASS	70-125	27521.6	32141.2	85.63	PASS	70-125
CCV2	CCV	1	58810.9	52776.2	111.43	PASS	70-125	35192	32141.2	109.49	PASS	70-125
CCB2	CCB	1	55849.8	52776.2	105.82	PASS	70-125	33437.1	32141.2	104.03	PASS	70-125
N032305-002D	SAMP	1	49554.3	52776.2	93.9	PASS	70-125	28000.3	32141.2	87.12	PASS	70-125
N032268-001D	SAMP	100	59369.5	52776.2	112.49	PASS	70-125	35267.7	32141.2	109.73	PASS	70-125
N032268-002D	SAMP	25	57548.7	52776.2	109.04	PASS	70-125	34380.3	32141.2	106.97	PASS	70-125

INTERNAL STANDARD: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
N032268-002D-PS	PS	5	55058.2	52776.2	104.32	PASS	70-125	32779.2	32141.2	101.98	PASS	70-125
N032268-002D-MS	MS	5	54370.6	52776.2	103.02	PASS	70-125	32357.2	32141.2	100.67	PASS	70-125
N032268-002D-MSD	MSD	5	54722.5	52776.2	103.69	PASS	70-125	32210.2	32141.2	100.21	PASS	70-125
N032268-004D	SAMP	1	45699.9	52776.2	86.59	PASS	70-125	25138.8	32141.2	78.21	PASS	70-125
N032268-007D	SAMP	1	48282.8	52776.2	91.49	PASS	70-125	27590.6	32141.2	85.84	PASS	70-125
N032268-007D	SAMP	5	53259.9	52776.2	100.92	PASS	70-125	31586.7	32141.2	98.27	PASS	70-125
N032268-004D	SAMP	1	44667.3	52776.2	84.64	PASS	70-125	24794.9	32141.2	77.14	PASS	70-125
CCV3	CCV	1	53207.6	52776.2	100.82	PASS	70-125	32616.6	32141.2	101.48	PASS	70-125
CCB3	CCB	1	51686.3	52776.2	97.93	PASS	70-125	31110.3	32141.2	96.79	PASS	70-125
ICSA2	ICSA	1	51574.9	52776.2	97.72	PASS	70-125	30107.3	32141.2	93.67	PASS	70-125
ICSAB2	ICSAB	1	52094.4	52776.2	98.71	PASS	70-125	30296.5	32141.2	94.26	PASS	70-125

## INTERNAL STANDARD: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]					103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	30509.2	30509.2	100	PASS	70-125	926847.8	926847.8	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	29443.9	30509.2	96.51	PASS	70-125	900375.7	926847.8	97.14	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	29057.6	30509.2	95.24	PASS	70-125	898860.6	926847.8	96.98	PASS	70-125
Std3-5/50 ppb	ICAL	1	29058.7	30509.2	95.25	PASS	70-125	896529.1	926847.8	96.73	PASS	70-125
Std4-10/100 ppb	ICAL	1	28849.4	30509.2	94.56	PASS	70-125	901146.9	926847.8	97.23	PASS	70-125
Std5-20/200 ppb	ICAL	1	28102.6	30509.2	92.11	PASS	70-125	876591.5	926847.8	94.58	PASS	70-125
Std6-40/400 ppb	ICAL	1	27867.7	30509.2	91.34	PASS	70-125	874117.5	926847.8	94.31	PASS	70-125
Std7-100/1000 ppb	ICAL	1	28032.4	30509.2	91.88	PASS	70-125	882366.1	926847.8	95.2	PASS	70-125
Std8-200/2000 ppb	ICAL	1	28135.9	30509.2	92.22	PASS	70-125	872563.2	926847.8	94.14	PASS	70-125
ICV	ICV	1	33410.4	30509.2	109.51	PASS	70-125	1049177.4	926847.8	113.2	PASS	70-125
ICB	ICB	1	27821	30509.2	91.19	PASS	70-125	880720.3	926847.8	95.023	PASS	70-125
LLICV	CCV1	1	31651.3	30509.2	103.74	PASS	70-125	948121.3	926847.8	102.3	PASS	70-125
ICSA1	ICSA	1	31516.6	30509.2	103.3	PASS	70-125	902383.5	926847.8	97.36	PASS	70-125
ICSAB1	ICSAB	1	33743.3	30509.2	110.6	PASS	70-125	923638	926847.8	99.65	PASS	70-125
MB-70851	MBLK	1	34937	30509.2	114.51	PASS	70-125	984394.7	926847.8	106.21	PASS	70-125
LCS-70851	LCS	1	35561.7	30509.2	116.56	PASS	70-125	951084.4	926847.8	102.61	PASS	70-125
N032268-001D	SAMP	1	26364.1	30509.2	86.41	PASS	70-125	751163.4	926847.8	81.045	PASS	70-125
N032268-002D	SAMP	1	28267.4	30509.2	92.65	PASS	70-125	799587.4	926847.8	86.27	PASS	70-125
N032268-002D	SAMP	5	34310	30509.2	112.46	PASS	70-125	906124.3	926847.8	97.76	PASS	70-125
N032268-002D-PS	PS	1	31936.4	30509.2	104.68	PASS	70-125	826748.5	926847.8	89.2	PASS	70-125
N032268-002D-MS	MS	1	31879.4	30509.2	104.49	PASS	70-125	822639.1	926847.8	88.76	PASS	70-125
N032268-002D-MSD	MSD	1	32026.5	30509.2	104.97	PASS	70-125	849198.3	926847.8	91.62	PASS	70-125
N032268-003D	SAMP	1	25889	30509.2	84.86	PASS	70-125	713979.6	926847.8	77.033	PASS	70-125
N032268-004D	SAMP	1	25759.8	30509.2	84.43	PASS	70-125	726279.3	926847.8	78.36	PASS	70-125
CCV1	CCV	1	38632	30509.2	126.62	PASS	70-125	1054507	926847.8	113.77	PASS	70-125
CCB1	CCB	1	35836.6	30509.2	117.46	PASS	70-125	983598.3	926847.8	106.12	PASS	70-125
N032268-005D	SAMP	1	32612.1	30509.2	106.89	PASS	70-125	845249.3	926847.8	91.2	PASS	70-125
N032268-006D	SAMP	1	33489.5	30509.2	109.77	PASS	70-125	862187.6	926847.8	93.024	PASS	70-125
N032268-007D	SAMP	1	28581.2	30509.2	93.68	PASS	70-125	778630.5	926847.8	84.009	PASS	70-125
N032268-009D	SAMP	1	33193.2	30509.2	108.8	PASS	70-125	871103	926847.8	93.99	PASS	70-125
N032303-001B	SAMP	1	34477	30509.2	113.01	PASS	70-125	877686.8	926847.8	94.7	PASS	70-125
N032303-002B	SAMP	1	29482.8	30509.2	96.64	PASS	70-125	791771.6	926847.8	85.43	PASS	70-125
N032303-003B	SAMP	1	29210.1	30509.2	95.74	PASS	70-125	770416.1	926847.8	83.12	PASS	70-125
N032303-004B	SAMP	1	32399.4	30509.2	106.2	PASS	70-125	846739.6	926847.8	91.36	PASS	70-125
N032303-005B	SAMP	1	30504.8	30509.2	99.99	PASS	70-125	775698	926847.8	83.69	PASS	70-125
N032305-001D	SAMP	1	24688.2	30509.2	80.92	PASS	70-125	689036	926847.8	74.34	PASS	70-125
CCV2	CCV	1	35130.8	30509.2	115.15	PASS	70-125	945859.1	926847.8	102.05	PASS	70-125
CCB2	CCB	1	33999.5	30509.2	111.44	PASS	70-125	907965.5	926847.8	97.96	PASS	70-125
N032305-002D	SAMP	1	24712.6	30509.2	81	PASS	70-125	692149	926847.8	74.68	PASS	70-125
N032268-001D	SAMP	100	35098.4	30509.2	115.04	PASS	70-125	951387.3	926847.8	102.65	PASS	70-125
N032268-002D	SAMP	25	34219.8	30509.2	112.16	PASS	70-125	915184.4	926847.8	98.74	PASS	70-125

INTERNAL STANDARD: 181003A

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]					103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
N032268-002D-PS	PS	5	31807.1	30509.2	104.25	PASS	70-125	857020.7	926847.8	92.47	PASS	70-125
N032268-002D-MS	MS	5	31848.4	30509.2	104.39	PASS	70-125	844968.7	926847.8	91.17	PASS	70-125
N032268-002D-MSD	MSD	5	33244.4	30509.2	108.97	PASS	70-125	850114	926847.8	91.72	PASS	70-125
N032268-004D	SAMP	1	22226.8	30509.2	72.85	PASS	70-125	634001.7	926847.8	68.4	NR!	70-125
N032268-007D	SAMP	1	25580.6	30509.2	83.85	PASS	70-125	698811.8	926847.8	75.4	PASS	70-125
N032268-007D	SAMP	5	30485.8	30509.2	99.92	PASS	70-125	803831.1	926847.8	86.73	PASS	70-125
N032268-004D	SAMP	1	21682.8	30509.2	71.07	PASS	70-125	621860.5	926847.8	67.094	NR!	70-125
CCV3	CCV	1	31633.6	30509.2	103.69	PASS	70-125	881904	926847.8	95.15	PASS	70-125
CCB3	CCB	1	31329.5	30509.2	102.69	PASS	70-125	857775.2	926847.8	92.55	PASS	70-125
ICSA2	ICSA	1	30171.8	30509.2	98.89	PASS	70-125	781258.5	926847.8	84.29	PASS	70-125
ICSAB2	ICSAB	1	29727.8	30509.2	97.44	PASS	70-125	780115.2	926847.8	84.17	PASS	70-125



INTERNAL STANDARD: 181009A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	55858.6	55858.6	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	54138.5	55858.6	96.92	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	54307	55858.6	97.22	PASS	70-125
Std3-5/50 ppb	ICAL	1	53585.7	55858.6	95.93	PASS	70-125
Std4-10/100 ppb	ICAL	1	53193.6	55858.6	95.23	PASS	70-125
Std5-20/200 ppb	ICAL	1	52579.2	55858.6	94.13	PASS	70-125
Std6-40/400 ppb	ICAL	1	52835.5	55858.6	94.59	PASS	70-125
Std7-100/1000 ppb	ICAL	1	52166.6	55858.6	93.39	PASS	70-125
Std8-200/2000 ppb	ICAL	1	50248.6	55858.6	89.96	PASS	70-125
ICV	ICV	1	47452.6	55858.6	84.95	PASS	70-125
ICB	ICB	1	49738.2	55858.6	89.043	PASS	70-125
LLICV	CCV1	1	52062	55858.6	93.2	PASS	70-125
ICSA1	ICSA	1	58495.5	55858.6	104.72	PASS	70-125
ICSAB1	ICSAB	1	60436.6	55858.6	108.2	PASS	70-125
LLICV	CCV1	1	56591.1	55858.6	101.31	PASS	70-125
CCV1	CCV	1	47582.9	55858.6	85.18	PASS	70-125
CCB1	CCB	1	46916.6	55858.6	83.99	PASS	70-125
N032305-001D	SAMP	5	46451	55858.6	83.16	PASS	70-125
CCV2	CCV	1	49507.4	55858.6	88.63	PASS	70-125
CCB2	CCB	1	48389.8	55858.6	86.63	PASS	70-125
ICSA2	ICSA	1	58111.8	55858.6	104.03	PASS	70-125
ICSAB2	ICSAB	1	61632.1	55858.6	110.34	PASS	70-125

# SERIAL DILUTION/ POST DIGESTION SPIKE



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N032305  
 Test Method: EPA 6020  
 Analysis Date: 10/3/2018

**Dilution Test Summary**

Matrix: Groundwater  
 Batch No.: 70851

Instrument ID: ICP-MS #2  
 Instrument Description: Agilent 7700x


Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to several analytes. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032268-002D DT 5X	Arsenic	ug/L	2.031854	NA	2.085943	2.59%	10
N032268-002D DT 5X 25x	Chromium	ug/L	460.0147	PASS	446.1504	3.11%	10
N032268-002D DT 5X	Molybdenum	ug/L	62.37609	PASS	65.3735	4.59%	10
N032268-002D DT 5X	Selenium	ug/L	12.355	NA	12.19296	1.33%	10

Note: NA - Not applicable

 10/26/2018

**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N032305  
Test Method: EPA 6020  
Analysis Date: ~~10/9/2018~~  
10/3/2018

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70851


Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Mn. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032268-002D DT 5X	Manganese	ug/L	0	NA	0.401962	100.00%	10

Note: NA - Not applicable

 10/26/2018

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>N032268-002D-PS</b>	SampType: <b>PS</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165529</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	12.195	0.10	10.00	2.086	101	80	120				
Manganese	98.968	0.50	100.0	0.4020	98.6	80	120				
Molybdenum	76.879	0.50	10.00	65.37	115	80	120				
Selenium	22.112	0.50	10.00	12.19	99.2	80	120				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032305  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>N032268-002D-PS</b>	SampType: <b>PS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129092</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70851</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3165594</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	465.568	5.0	10.00	446.2	194	80	120				S

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# MDL STUDY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Amount of Sample:** 25 mL  
**Units:** ug/L

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	LOD	PQL
ANTIMONY	0.50	0.525	0.514	0.473	0.500	0.492	0.486	0.530	0.0210	0.0660	0.100	0.50
ARSENIC	0.10	0.099	0.104	0.087	0.048	0.060	0.069	0.120	0.0259	0.0813	0.080	0.10
BARIUM	1.00	1.041	1.059	1.052	1.011	0.967	0.957	1.023	0.0403	0.1264	0.250	1.00
BERYLLIUM	0.50	0.469	0.476	0.473	0.495	0.480	0.488	0.507	0.0135	0.0424	0.100	0.50
CADMIUM	0.50	0.515	0.513	0.492	0.534	0.499	0.483	0.508	0.0168	0.0527	0.100	0.50
CHROMIUM	1.00	0.979	0.986	0.940	0.990	0.946	0.978	0.977	0.0197	0.0618	0.250	1.00
COBALT	0.50	0.499	0.489	0.486	0.488	0.465	0.502	0.505	0.0135	0.0424	0.100	0.50
COPPER	1.00	1.110	0.667	1.039	1.060	1.006	1.099	1.075	0.1544	0.4850	0.500	1.00
IRON	10.00	10.873	10.802	10.142	9.991	9.846	9.852	10.596	0.4463	1.4014	2.500	10.00
LEAD	1.00	0.928	0.931	0.899	0.996	0.990	0.987	0.997	0.0406	0.1274	0.250	1.00
MANGANESE	0.50	0.577	0.588	0.561	0.566	0.517	0.541	0.520	0.0276	0.0866	0.100	0.50
MOLYBDENUM	0.50	0.514	0.504	0.467	0.478	0.456	0.433	0.527	0.0338	0.1061	0.250	0.50
NICKEL	1.00	0.961	0.965	0.977	0.907	0.914	0.962	1.075	0.0551	0.1731	0.250	1.00
SELENIUM	0.50	0.450	0.478	0.419	0.693	0.707	0.495	0.555	0.1155	0.3628	0.400	0.50
SILVER	0.50	0.558	0.511	0.490	0.542	0.458	0.490	0.684	0.0745	0.2340	0.250	0.50
THALLIUM	0.50	0.437	0.428	0.408	0.538	0.446	0.438	0.525	0.0504	0.1583	0.250	0.50
URANIUM	0.50	0.478	0.467	0.461	0.517	0.510	0.521	0.521	0.0267	0.0838	0.100	0.50
VANADIUM	1.00	0.950	0.969	0.900	0.844	0.829	0.848	1.053	0.0820	0.2574	0.500	1.00
ZINC	10.00	11.259	11.279	10.915	9.620	9.849	9.745	10.241	0.7235	2.2717	2.500	10.00



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CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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 P: 702.307.2659 F: 702.307.2691  
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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Units:** ug/L

Analyte	MDLs	MDLb	MDL	LOD	PQL
ANTIMONY	0.0660	0.1564	0.1564	0.300	0.50
ARSENIC	0.0813	0.0387	0.0813	0.080	0.10
BARIUM	0.1264	0.1497	0.1497	0.300	1.00
BERYLLIUM	0.0424	0.0153	0.0424	0.100	0.50
CADMIUM	0.0527	0.0060	0.0527	0.100	0.50
CHROMIUM	0.0618	0.1298	0.1298	0.300	1.00
COBALT	0.0424	0.0339	0.0424	0.100	0.50
COPPER	0.4850	0.5459	0.5459	0.600	1.00
IRON	1.4014	4.3484	4.3484	5.000	10.00
LEAD	0.1274	0.1008	0.1274	0.300	1.00
MANGANESE	0.0866	0.2552	0.2552	0.300	0.50
MOLYBDENUM	0.1061	0.2149	0.2149	0.300	0.50
NICKEL	0.1731	0.2606	0.2606	0.300	1.00
SELENIUM	0.3628	0.0953	0.3628	0.400	0.50
SILVER	0.2340	0.2023	0.2340	0.250	0.50
THALLIUM	0.1583	0.1924	0.1924	0.300	0.50
URANIUM	0.0838	0.0020	0.0838	0.100	0.50
VANADIUM	0.2574	0.2768	0.2768	0.600	1.00
ZINC	2.2717	0.4511	2.2717	3.000	10.00



October 22, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032328

RE: PG&E Topock - GMP, RC000753.801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on October 02, 2018 by ASSET Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Nancy Libucaw for*

Quennie Manimtim  
Laboratory Director

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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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EPA ID CA01638

**NEVADA** | P:702.307.2659 F:702.307.2691  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032328

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**CASE NARRATIVE****SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

**Analytical Comments for EPA 218.6:**

Dilution was necessary for samples N032328-001 and -002 due to matrix interference. Samples were analyzed at lower dilution however matrix spike recovery and retention time criteria were not met indicating possible matrix interference. Samples were reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.

**Analytical Comments for EPA 6020\_Dissolved:**

Dilution was necessary on some analytes for all samples due to associated internal standard not meeting method criteria possibly due to matrix interference. Samples were analyzed with dilution and internal standard met method criteria. Affected analytes for this failed internal standard were reported at dilution that meet internal standard recovery limit.

Matrix Spike (MS) is outside recovery criteria for Selenium in QC sample N032318-013B-MS possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike Duplicate (MSD) is outside recovery criteria for Molybdenum in QC sample N032318-013B-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032328  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032328-001A	MW-46-175-Q318	Groundwater	10/2/2018 8:39:00 AM	10/2/2018	10/22/2018
N032328-001B	MW-46-175-Q318	Groundwater	10/2/2018 8:39:00 AM	10/2/2018	10/22/2018
N032328-001C	MW-46-175-Q318	Groundwater	10/2/2018 8:39:00 AM	10/2/2018	10/22/2018
N032328-001D	MW-46-175-Q318	Groundwater	10/2/2018 8:39:00 AM	10/2/2018	10/22/2018
N032328-002A	MW-900-Q318	Groundwater	10/2/2018 8:49:00 AM	10/2/2018	10/22/2018
N032328-002B	MW-900-Q318	Groundwater	10/2/2018 8:49:00 AM	10/2/2018	10/22/2018
N032328-002C	MW-900-Q318	Groundwater	10/2/2018 8:49:00 AM	10/2/2018	10/22/2018
N032328-002D	MW-900-Q318	Groundwater	10/2/2018 8:49:00 AM	10/2/2018	10/22/2018
N032328-003A	MW-705-Q318	Groundwater	10/2/2018 9:30:00 AM	10/2/2018	10/22/2018



**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-001

**Client Sample ID:** MW-46-175-Q318  
**Collection Date:** 10/2/2018 8:39:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_181003D</b>	QC Batch: <b>R128996</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	18000	0.10	0.10		umhos/cm	1	10/3/2018 02:05 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-002

**Client Sample ID:** MW-900-Q318  
**Collection Date:** 10/2/2018 8:49:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_181003D</b>	QC Batch: <b>R128996</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	18000	0.10	0.10		umhos/cm	1	10/3/2018 02:05 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID <b>N032326-003ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>120.1_WPGE</b>	Units: <b>umhos/cm</b>	Prep Date:	RunNo: <b>128996</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128996</b>	TestNo: <b>EPA 120.1</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161443</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	64300.000	0.10						63900	0.624		2

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



**ASSET LABORATORIES**  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-001

**Client Sample ID:** MW-46-175-Q318  
**Collection Date:** 10/2/2018 8:39:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_181010A	QC Batch: R129198			PrepDate	Analyst: RAB		
Hexavalent Chromium	6.5	0.17	1.0	µg/L	5	10/10/2018 01:39 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181008D	QC Batch: 70882			PrepDate	10/4/2018	Analyst: CEI	
Chromium	7.0	0.13	1.0	µg/L	1	10/9/2018 12:58 AM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



**ASSET LABORATORIES**  
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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-002

**Client Sample ID:** MW-900-Q318  
**Collection Date:** 10/2/2018 8:49:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_181010A	QC Batch: R129198			PrepDate	Analyst: RAB		
Hexavalent Chromium	6.5	0.17	1.0	µg/L	5	10/10/2018 01:58 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181008D	QC Batch: 70882			PrepDate	10/4/2018	Analyst: CEI	
Chromium	7.0	0.13	1.0	µg/L	1	10/9/2018 01:04 AM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



**ASSET LABORATORIES**  
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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-003

**Client Sample ID:** MW-705-Q318  
**Collection Date:** 10/2/2018 9:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181010A</b>	QC Batch: <b>R129198</b>			PrepDate			Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20	µg/L	1		10/10/2018 12:51 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>MB-R129198</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170157</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>LCS-R129198</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170158</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.197	0.20	5.000	0	104 90 110

Sample ID <b>N032427-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170160</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	3.031	0.20	1.000	1.978	105 90 110

Sample ID <b>N032427-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170162</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	3.507	0.20	1.000	2.462	104 90 110

Sample ID <b>N032427-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170164</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	2.246	0.20	1.000	1.191	105 90 110

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



**ASSET LABORATORIES**  
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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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EPA ID CA01638

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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032427-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170166</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2.943	0.20	1.000	1.863	108	90	110				

Sample ID <b>N032427-005AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170170</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2.812	0.20	1.000	1.801	101	90	110				

Sample ID <b>N032427-006AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170172</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.085	0.20	1.000	0	108	90	110				

Sample ID <b>N032427-007AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170174</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	3.445	0.20	1.000	2.428	102	90	110				

Sample ID <b>N032328-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170176</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.102	0.20	1.000	0.05280	105	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



**ASSET LABORATORIES**  
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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032427-003AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170179</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2.269	0.20	1.000	1.191	108	90	110	2.246	1.04	20	

Sample ID <b>N032328-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170181</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	11.617	1.0	5.000	6.471	103	90	110				

Sample ID <b>N032328-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170183</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	11.620	1.0	5.000	6.544	102	90	110				

Sample ID <b>N032426-001ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170185</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.658	0.20						1.657	0.0905	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>MB-70882</b>	SampType: <b>MBLK</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/4/2018</b>	RunNo: <b>129120</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70882</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3166977</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	0.207	1.0									
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Sample ID <b>LCS-70882</b>	SampType: <b>LCS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/4/2018</b>	RunNo: <b>129120</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70882</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3166978</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	10.909	1.0	10.00	0	109	85	115				
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Sample ID <b>N032318-013B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/4/2018</b>	RunNo: <b>129120</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70882</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3166984</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	16.143	1.0	10.00	5.708	104	75	125				
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Sample ID <b>N032318-013B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/4/2018</b>	RunNo: <b>129120</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70882</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3166985</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	16.998	1.0	10.00	5.708	113	75	125	16.14	5.16	20	
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



**ASSET LABORATORIES**  
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 EPA ID CA01638

**NEVADA** | P: 702.307.2659 | F: 702.307.2691  
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 ORELAP/NELAP Cert 4046

"Serving Clients with Passion and Professionalism"

**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-001

**Client Sample ID:** MW-46-175-Q318  
**Collection Date:** 10/2/2018 8:39:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181012A</b>	QC Batch: <b>R129235</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	1.0	0.032	0.050		mg/L	1	10/12/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-002

**Client Sample ID:** MW-900-Q318  
**Collection Date:** 10/2/2018 8:49:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181012A</b>	QC Batch: <b>R129235</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	1.0	0.032	0.050		mg/L	1	10/12/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R129235</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171932</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R129235</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171933</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.505	0.050	0.5000	0	101 85 115

Sample ID <b>N032329-002CMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171937</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	5.200	0.25	2.500	2.636	103 75 125

Sample ID <b>N032329-002CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171938</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	4.553	0.25	2.500	2.636	76.7 75 125 5.200 13.3 20

Sample ID <b>N032305-001CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171940</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	3.630	0.25			3.570 1.68 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-001

**Client Sample ID:** MW-46-175-Q318  
**Collection Date:** 10/2/2018 8:39:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181009A</b>	QC Batch: <b>70882</b>			PrepDate	<b>10/4/2018</b>	Analyst: <b>CEI</b>
Molybdenum	190	5.4	12	µg/L	25	10/9/2018 05:14 PM
Selenium	ND	1.8	2.5	µg/L	5	10/9/2018 04:57 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-002

**Client Sample ID:** MW-900-Q318  
**Collection Date:** 10/2/2018 8:49:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181009A</b>	QC Batch: <b>70882</b>			PrepDate	<b>10/4/2018</b>	Analyst: <b>CEI</b>
Molybdenum	180	1.1	2.5	µg/L	5	10/9/2018 05:03 PM
Selenium	ND	1.8	2.5	µg/L	5	10/9/2018 05:03 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID	<b>N032318-013B-MS</b>	SampType:	<b>MS</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>10/4/2018</b>	RunNo:	<b>129145</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70882</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3167819</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium		15.018		2.5	10.00	0		150	75	125				S

Sample ID	<b>N032318-013B-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>10/4/2018</b>	RunNo:	<b>129145</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70882</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3167820</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium		12.354		2.5	10.00	0		124	75	125	15.02	19.5	20	

Sample ID	<b>MB-70882</b>	SampType:	<b>MBLK</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>10/4/2018</b>	RunNo:	<b>129120</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>70882</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168830</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum		ND		0.50										
Selenium		ND		0.50										

Sample ID	<b>LCS-70882</b>	SampType:	<b>LCS</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>10/4/2018</b>	RunNo:	<b>129120</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>70882</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168831</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum		9.670		0.50	10.00	0		96.7	85	115				
Selenium		10.677		0.50	10.00	0		107	85	115				

Sample ID	<b>N032318-013B-MS</b>	SampType:	<b>MS</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>10/4/2018</b>	RunNo:	<b>129120</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70882</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168837</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum		13.619		0.50	10.00	2.326		113	75	125				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



**ASSET LABORATORIES**  
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ORELAP/NELAP Cert 4046

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	<b>N032318-013B-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>10/4/2018</b>	RunNo:	<b>129120</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70882</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168838</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum		14.837		0.50	10.00	2.326		125	75	125	13.62	8.56	20	S

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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 P: 702.307.2659 F: 702.307.2691  
 California: 11060 Artesia Blvd., Ste C, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 www.assetlaboratories.com

Client: Arcadis		Report to: Dan Bush		Bill to: Marty Bloes		EDD Requirement		QA/QC		Sample Receipt Condition	
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis		Address:		Excel EDD		RTNE		1. Chilled <input checked="" type="checkbox"/> Y N	
Address: Roseville, CA 95661		Email: dan.bush@arcadis.com daniel.moore@critigen.com		Address:		Geotracker		RWQCB		2. Headspace <input type="checkbox"/>	
Phone: 916-786-3302		Address: 1410 Rocky Ridge Dr # 330		Email to: mbloes@pivox.com		Labspec		CalTrans		3. Container Intact <input checked="" type="checkbox"/>	
Fax:		Roseville, CA 95661		P.O.#		Others		LEVEL III		4. Seal Present <input checked="" type="checkbox"/>	
Submitted By: Gantt Jeffers		Phone: 916-786-3302		Phone: 949-727-1400, ext 200		Specify:		LEVEL IV		5. IR number <input checked="" type="checkbox"/>	
Title: Geologist II		Fax:		Fax:		RWQCB		Regulatory		6. Method of Cooling: ICE	
Signature: <i>[Signature]</i>		Date: 10/2/2018		Sampled By: Spencer Doolittle		Global ID:		Specify State:		Sample Temp: 4.6°C	
Project Name: PG&E Topock - GMP		Signature: <i>[Signature]</i>		Date: 10/2/2018		Matrix				Courier: ASSET	
Project Number: RC000753.801D						Ground				Tracking No.:	
						x Sediment					
						Potable					
						NPDES					
						Surface					
						250 mL poly					
						1 liter poly					
						1 liter poly					
						1 liter poly					
						1 liter poly					
						125 mL poly					
						500 mL poly					
						500 mL poly					
						800 mL poly					
						500 mL poly					
						Alkalinity, Total as CaCO3 (SM232DB)					
						Bromide, Sulfate, Chloride (EPA 300.0)					
						Specific Conductance (EPA 120.1)					
						Total Dissolved Solids (SM2540C)					
						Nitrate/Nitrite (SM4500NO3 F) Nitrate; H2SO4					
						Metals Dissolved (SW6020A FF) (As, Cr, Mn, Mo, Se); HNO3					
						Dissolved metals (SW6010B FF) (Cr, Mo, Se); HNO3					
						Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3					
						Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH					
						Turn Around Time (TAT)					
						Special Instruction:					
						Title 22 Metals - Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Ti, V, Zn, K, Na					
						A < 24 Hrs or Same Day TAT					
						B = Next Workday					
						C = 2 Workdays					
						D = 3 Workdays					
						E = Routine 5-7 Workdays					
						TAT Starts at 8 AM the following day if samples received after 3:00PM.					
						Preservatives:					
						H=HCL		N=HNO3		S=H2SO4	
						C=4°C		T=Tube		V=VOA	
						Z=Zn(AC)2		O=NaOH		T=Na2S2O3	
						Others/Specify:		B		[(NH4)2SO4/NH4OH	
						M=Metal		M=Metal		C=Can	
						P=Pin		G=Glass			

Terms:  
 1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report.  
 2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis.  
 Less than 24 Hrs.-200% Next Day-100% 2 Workdays-50% 3 Workdays-35% 4 Workdays-20%  
 3. Custom EDD formats will be an additional 3% of the final project price.  
 4. Add 10% surcharge for Level III Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.

5. Trip Blanks and Equipment Blanks are labile samples.  
 6. Asset Laboratories is not responsible for samples collected using incorrect methodology.  
 7. Terms are net 30 days.  
 8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed.  
 9. For subcontract analysis, TAT and Surcharges will vary.

Container Type:  
 T=Tube V=VOA P=Pin  
 J=Jar B=Tedlar G=Glass  
 M=Metal M=Metal C=Can

White=Laboratory Copy Yellow=Customer's Copy

Fianl QC Review Performed By (Sign/Date):

*[Signature]* 10/2/18

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.


If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 10/2/2018 Workorder: N032328  
 Rep sample Temp (Deg C): 4.6 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |  |  |  |
|---|--|--|--|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>   |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                                  |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                                  |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 11. All samples received within holding time?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>   |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input type="checkbox"/><br>Yes <input type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input checked="" type="checkbox"/><br>NA <input checked="" type="checkbox"/> |

Comments:

Checklist Completed By: YR  10/4/2018

Reviewed By:  LG 100418

# ASSET Laboratories

## WORK ORDER Summary

03-Oct-18

**WorkOrder:** N032328

**Client ID:** ARCUS02

**Project:** PG&E Topock - GMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 10/2/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032328-001A	MW-46-175-Q318	10/2/2018 8:39:00 AM	10/16/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-001B			10/16/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-001C			10/16/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-001D			10/16/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-002A	MW-900-Q318	10/2/2018 8:49:00 AM	10/16/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-002B			10/16/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-002C			10/16/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-002D			10/16/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-003A	MW-705-Q318	10/2/2018 9:30:00 AM	10/16/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-004A	FOLDER	10/16/2018	10/16/2018		EDD	RWQCB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/16/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/16/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB



# ***ARCADIS***

Project: PG&E Topock - GMP

Project No.: RC000753.801D

ASSET Laboratories Work Order:  
N032328

## ***ANALYTICAL and QC RESULTS SAMPLE RECEIVING ITEMS***

***PRIVILEGED AND CONFIDENTIAL***



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October 22, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032328

RE: PG&E Topock - GMP, RC000753.801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on October 02, 2018 by ASSET Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Nancy Libucaw for*

Quennie Manimtim  
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories - Las Vegas.



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032328

---

**CASE NARRATIVE****SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

**Analytical Comments for EPA 218.6:**

Dilution was necessary for samples N032328-001 and -002 due to matrix interference. Samples were analyzed at lower dilution however matrix spike recovery and retention time criteria were not met indicating possible matrix interference. Samples were reported at dilution that meet matrix spike recovery limit and the detected peak within retention time window.

**Analytical Comments for EPA 6020\_Dissolved:**

Dilution was necessary on some analytes for all samples due to associated internal standard not meeting method criteria possibly due to matrix interference. Samples were analyzed with dilution and internal standard met method criteria. Affected analytes for this failed internal standard were reported at dilution that meet internal standard recovery limit.

Matrix Spike (MS) is outside recovery criteria for Selenium in QC sample N032318-013B-MS possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike Duplicate (MSD) is outside recovery criteria for Molybdenum in QC sample N032318-013B-MSD possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.



**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab Order:** N032328  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032328-001A	MW-46-175-Q318	Groundwater	10/2/2018 8:39:00 AM	10/2/2018	10/22/2018
N032328-001B	MW-46-175-Q318	Groundwater	10/2/2018 8:39:00 AM	10/2/2018	10/22/2018
N032328-001C	MW-46-175-Q318	Groundwater	10/2/2018 8:39:00 AM	10/2/2018	10/22/2018
N032328-001D	MW-46-175-Q318	Groundwater	10/2/2018 8:39:00 AM	10/2/2018	10/22/2018
N032328-002A	MW-900-Q318	Groundwater	10/2/2018 8:49:00 AM	10/2/2018	10/22/2018
N032328-002B	MW-900-Q318	Groundwater	10/2/2018 8:49:00 AM	10/2/2018	10/22/2018
N032328-002C	MW-900-Q318	Groundwater	10/2/2018 8:49:00 AM	10/2/2018	10/22/2018
N032328-002D	MW-900-Q318	Groundwater	10/2/2018 8:49:00 AM	10/2/2018	10/22/2018
N032328-003A	MW-705-Q318	Groundwater	10/2/2018 9:30:00 AM	10/2/2018	10/22/2018



**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-001

**Client Sample ID:** MW-46-175-Q318  
**Collection Date:** 10/2/2018 8:39:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_181003D</b>	QC Batch: <b>R128996</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	18000	0.10	0.10		umhos/cm	1	10/3/2018 02:05 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-002

**Client Sample ID:** MW-900-Q318  
**Collection Date:** 10/2/2018 8:49:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_181003D</b>	QC Batch: <b>R128996</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	18000	0.10	0.10		umhos/cm	1	10/3/2018 02:05 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID <b>N032326-003ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>120.1_WPGE</b>	Units: <b>umhos/cm</b>	Prep Date:	RunNo: <b>128996</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128996</b>	TestNo: <b>EPA 120.1</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161443</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	64300.000	0.10						63900	0.624		2

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-001

**Client Sample ID:** MW-46-175-Q318  
**Collection Date:** 10/2/2018 8:39:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: NV00922-IC7_181010A	QC Batch: R129198			PrepDate	Analyst: RAB		
Hexavalent Chromium	6.5	0.17	1.0	µg/L	5	10/10/2018 01:39 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
				<b>EPA 6020</b>			
RunID: NV00922-ICP7_181008D	QC Batch: 70882			PrepDate	10/4/2018	Analyst: CEI	
Chromium	7.0	0.13	1.0	µg/L	1	10/9/2018 12:58 AM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-002

**Client Sample ID:** MW-900-Q318  
**Collection Date:** 10/2/2018 8:49:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
<b>HEXAVALENT CHROMIUM BY IC</b>							
				<b>EPA 218.6</b>			
RunID: <b>NV00922-IC7_181010A</b>	QC Batch: <b>R129198</b>			PrepDate	Analyst: <b>RAB</b>		
Hexavalent Chromium	6.5	0.17	1.0	µg/L	5	10/10/2018 01:58 PM	
<b>DISSOLVED METALS BY ICP-MS</b>							
<b>EPA 3010A</b>				<b>EPA 6020</b>			
RunID: <b>NV00922-ICP7_181008D</b>	QC Batch: <b>70882</b>			PrepDate	<b>10/4/2018</b>	Analyst: <b>CEI</b>	
Chromium	7.0	0.13	1.0	µg/L	1	10/9/2018 01:04 AM	

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-003

**Client Sample ID:** MW-705-Q318  
**Collection Date:** 10/2/2018 9:30:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181010A</b>	QC Batch: <b>R129198</b>			PrepDate			Analyst: <b>RAB</b>
Hexavalent Chromium	ND	0.033	0.20	µg/L	1		10/10/2018 12:51 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>MB-R129198</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170157</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	ND	0.20			

Sample ID <b>LCS-R129198</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170158</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	5.197	0.20	5.000	0	104 90 110

Sample ID <b>N032427-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170160</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	3.031	0.20	1.000	1.978	105 90 110

Sample ID <b>N032427-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170162</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	3.507	0.20	1.000	2.462	104 90 110

Sample ID <b>N032427-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170164</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Hexavalent Chromium	2.246	0.20	1.000	1.191	105 90 110

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032427-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170166</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2.943	0.20	1.000	1.863	108	90	110				

Sample ID <b>N032427-005AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170170</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2.812	0.20	1.000	1.801	101	90	110				

Sample ID <b>N032427-006AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170172</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.085	0.20	1.000	0	108	90	110				

Sample ID <b>N032427-007AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170174</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	3.445	0.20	1.000	2.428	102	90	110				

Sample ID <b>N032328-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170176</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.102	0.20	1.000	0.05280	105	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032427-003AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170179</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	2.269	0.20	1.000	1.191	108	90	110	2.246	1.04	20	

Sample ID <b>N032328-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170181</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	11.617	1.0	5.000	6.471	103	90	110				

Sample ID <b>N032328-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170183</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	11.620	1.0	5.000	6.544	102	90	110				

Sample ID <b>N032426-001ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170185</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	1.658	0.20						1.657	0.0905	20	

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>MB-70882</b>	SampType: <b>MBLK</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/4/2018</b>	RunNo: <b>129120</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70882</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3166977</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	0.207	1.0									
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Sample ID <b>LCS-70882</b>	SampType: <b>LCS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/4/2018</b>	RunNo: <b>129120</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70882</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3166978</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	10.909	1.0	10.00	0	109	85	115				
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Sample ID <b>N032318-013B-MS</b>	SampType: <b>MS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/4/2018</b>	RunNo: <b>129120</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70882</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3166984</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	16.143	1.0	10.00	5.708	104	75	125				
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Sample ID <b>N032318-013B-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date: <b>10/4/2018</b>	RunNo: <b>129120</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70882</b>	TestNo: <b>EPA 6020 EPA 3010A</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3166985</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	16.998	1.0	10.00	5.708	113	75	125	16.14	5.16	20	
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-001

**Client Sample ID:** MW-46-175-Q318  
**Collection Date:** 10/2/2018 8:39:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181012A</b>	QC Batch: <b>R129235</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	1.0	0.032	0.050		mg/L	1	10/12/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-002

**Client Sample ID:** MW-900-Q318  
**Collection Date:** 10/2/2018 8:49:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181012A</b>	QC Batch: <b>R129235</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	1.0	0.032	0.050		mg/L	1	10/12/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R129235</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171932</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R129235</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171933</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.505	0.050	0.5000	0	101 85 115

Sample ID <b>N032329-002CMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171937</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	5.200	0.25	2.500	2.636	103 75 125

Sample ID <b>N032329-002CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171938</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	4.553	0.25	2.500	2.636	76.7 75 125 5.200 13.3 20

Sample ID <b>N032305-001CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171940</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	3.630	0.25			3.570 1.68 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-001

**Client Sample ID:** MW-46-175-Q318  
**Collection Date:** 10/2/2018 8:39:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181009A</b>	QC Batch: <b>70882</b>			PrepDate	<b>10/4/2018</b>	Analyst: <b>CEI</b>
Molybdenum	190	5.4	12	µg/L	25	10/9/2018 05:14 PM
Selenium	ND	1.8	2.5	µg/L	5	10/9/2018 04:57 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D  
**Lab ID:** N032328-002

**Client Sample ID:** MW-900-Q318  
**Collection Date:** 10/2/2018 8:49:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP-MS**

**EPA 3010A**

**EPA 6020**

RunID: <b>NV00922-ICP7_181009A</b>	QC Batch: <b>70882</b>			PrepDate	<b>10/4/2018</b>	Analyst: <b>CEI</b>
Molybdenum	180	1.1	2.5	µg/L	5	10/9/2018 05:03 PM
Selenium	ND	1.8	2.5	µg/L	5	10/9/2018 05:03 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID	<b>N032318-013B-MS</b>	SampType:	<b>MS</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>10/4/2018</b>	RunNo:	<b>129145</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70882</b>	TestNo:	<b>EPA 6020</b>	<b>EPA 3010A</b>		Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3167819</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium		15.018		2.5	10.00	0		150	75	125				S

Sample ID	<b>N032318-013B-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>10/4/2018</b>	RunNo:	<b>129145</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70882</b>	TestNo:	<b>EPA 6020</b>	<b>EPA 3010A</b>		Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3167820</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium		12.354		2.5	10.00	0		124	75	125	15.02	19.5	20	

Sample ID	<b>MB-70882</b>	SampType:	<b>MBLK</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>10/4/2018</b>	RunNo:	<b>129120</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>70882</b>	TestNo:	<b>EPA 6020</b>	<b>EPA 3010A</b>		Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168830</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum		ND		0.50										
Selenium		ND		0.50										

Sample ID	<b>LCS-70882</b>	SampType:	<b>LCS</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>10/4/2018</b>	RunNo:	<b>129120</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>70882</b>	TestNo:	<b>EPA 6020</b>	<b>EPA 3010A</b>		Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168831</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum		9.670		0.50	10.00	0		96.7	85	115				
Selenium		10.677		0.50	10.00	0		107	85	115				

Sample ID	<b>N032318-013B-MS</b>	SampType:	<b>MS</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>10/4/2018</b>	RunNo:	<b>129120</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70882</b>	TestNo:	<b>EPA 6020</b>	<b>EPA 3010A</b>		Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168837</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum		13.619		0.50	10.00	2.326		113	75	125				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID	<b>N032318-013B-MSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:	<b>10/4/2018</b>	RunNo:	<b>129120</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70882</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168838</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum		14.837		0.50	10.00	2.326		125	75	125	13.62	8.56	20	S

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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# SAMPLE RECEIVING ITEMS



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 www.assetlaboratories.com

Client: Arcadis		Report to: Dan Bush		Bill to: Marty Bloes		EDD Requirement			QA/QC			Sample Receipt Condition																	
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis		Address:		Excel EDD			RTNE			1. Chilled <input checked="" type="checkbox"/> Y N																	
Address: Roseville, CA 95661		Email: dan.bush@arcadis.com daniel.moore@critegen.com		Address:		Geotracker			RWQCB			2. Headspace <input type="checkbox"/>																	
Phone: 916-786-3302		Address: 1410 Rocky Ridge Dr # 330		Email to: mbloes@pivox.com		Labspec			CalTrans			3. Container Intact <input checked="" type="checkbox"/>																	
Fax: Gantt Jeffers		Roseville, CA 95661		P.O.#		Others			LEVEL III			4. Seal Present <input checked="" type="checkbox"/>																	
Submitted By:		Phone: 916-786-3302		Phone: 949-727-1400, ext 200		Specify:			LEVEL IV			5. IR number <input checked="" type="checkbox"/>																	
Title: Geologist II		Fax:		Fax:		RWQCB			Regulatory			6. Method of Cooling: ICE																	
Signature:		Date: 10/2/2018		Sampled By: Spencer Doolittle		Global ID:			Specify State:			Sample Temp: 4.6°C																	
Project Name: PG&E Topock - GMP		Signature:		Date: 10/2/2018		Matrix						Courier: ASSET																	
Project Number: RC000753.801D						Ground x Sediment						Tracking No.:																	
						Potable Soil						Remarks																	
						NPDES Other Solid																							
						Surface																							
Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others	Cr(VI) FF (E218.6) (NH4)2, SO4, NH4, OH	Alkalinity, Total as CaCO3 (SM232DB)	Bromide, Sulfate, Chloride (EPA 300.0)	Specific Conductance (EPA 120.1)	Total Dissolved Solids (SM2540C)	Nitrate/Nitrite (SM4500NO3 F) Nitrate; H2SO4	Metals Dissolved (SW6020A FF) (As, Cr, Mn, Mo, Se); HNO3	Dissolved metals (SW6010B FF) (Cr, Mo, Se); HNO3	Dissolved metals (SW6010B FF) (Cr, Mn, Mo, Se); HNO3	Turn Around Time	No. of Container	Container Type	PRESERVATION											
1	N032328-01	MW-46-175-Q318	10/2/2018	8:39		X			X	X	X	X		m	4	P	BNS												
2	-02	MW-900-Q318	10/2/2018	8:49		X			X	X	X	X		m	4	P	BNS												
3	-03	MW-705-Q318	10/2/2018	9:30		X								m	1	P	B												
4																													
5																													
6																													
7																													
8																													
9																													
10																													
Relinquished by (Signature and Printed Name):  10/2/18 MB			Date/Time: 10/2/18 MB			Relinquished by (Signature and Printed Name):  10/2/18 @ 14:15			Date/Time: 10/2/18 @ 14:15			Turn Around Time (TAT)			Special Instruction: Title 22 Metals - Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Ti, V, Zn, K, Na														
Relinquished by (Signature and Printed Name):  10/2/18 @ 16:59			Date/Time: 10/2/18 @ 16:59			Relinquished by (Signature and Printed Name):  10/2/18 @ 16:59			Date/Time: 10/2/18 @ 16:59			<input type="checkbox"/> A < 24 Hrs or Same Day TAT <input type="checkbox"/> B = Next Workday <input type="checkbox"/> C = 2 Workdays <input type="checkbox"/> D = 3 Workdays <input checked="" type="checkbox"/> E = Routine 5-7 Workdays																	
Relinquished by (Signature and Printed Name):			Date/Time:			Relinquished by (Signature and Printed Name):			Date/Time:			TAT Starts at 8 AM the following day if samples received after 3:00PM.			Container Type:														
Terms:			5. Trip Blanks and Equipment Blanks are labile sample.			Preservatives:			H=HCL			N=HNO3			S=H2SO4			C=4°C			T=Tube			V=VOA			P=Pint		
1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report.			6. Asset Laboratories is not responsible for samples collected using incorrect methodology.			Z=Zn(AC)2			O=NaOH			T=Na2S2O3			J=Jar			B=Tedlar			G=Glass								
2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis.			7. Terms are net 30 days.			Others/Specify:			B			{(NH4)2SO4/NH4OH			M=Metal			M=Metal			C=Can								
Less than 24 Hrs.->200% Next Day->100% 2 Workdays->50% 3 Workdays->35% 4 Workdays->20%			8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed.																										
3. Custom EDD forms will be an additional 3% of the final project price.			9. For subcontract analysis, TAT and Surcharges will vary.																										
4. Add 10% surcharge for Level III Data Packages, 15% for Level IV Data Packages. Surcharge applied on total project price.																													
White=Laboratory Copy																		Yellow=Customer's Copy											

Fianl QC Review Performed By (Sign/Date):

10/2/18



# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 10/2/2018 Workorder: N032328  
 Rep sample Temp (Deg C): 4.6 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |  |  |  |
|---|--|--|--|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>   |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                                  |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                                  |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 11. All samples received within holding time?   | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                |  |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>   |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>                      | No <input type="checkbox"/>                                | NA <input type="checkbox"/>  |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input type="checkbox"/><br>Yes <input type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input checked="" type="checkbox"/><br>NA <input checked="" type="checkbox"/> |

Comments:

Checklist Completed By: YR  10/4/2018

Reviewed By:  LG 100418

# ASSET Laboratories

## WORK ORDER Summary

03-Oct-18

**WorkOrder:** N032328

**Client ID:** ARCUS02

**Project:** PG&E Topock - GMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 10/2/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032328-001A	MW-46-175-Q318	10/2/2018 8:39:00 AM	10/16/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-001B			10/16/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-001C			10/16/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-001D			10/16/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-002A	MW-900-Q318	10/2/2018 8:49:00 AM	10/16/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-002B			10/16/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-002C			10/16/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-002D			10/16/2018		EPA 3010A	AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 6020	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-003A	MW-705-Q318	10/2/2018 9:30:00 AM	10/16/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032328-004A	FOLDER	10/16/2018	10/16/2018		EDD	RWQCB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/16/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/16/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

## List of Analysts

### ASSET Laboratories Work Order: N032328

NAME	TEST METHOD
Quennie Manimtim	SM 4500-NO3F
Claire Ignacio	EPA 6020_Dissolved
Ria Abes	EPA 218.6
Lilia Ramit	EPA 120.1



# EPA 120.1



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R128996 Analyst: LSR  
 ASSET #: N032328 Date Analyzed: 3-Oct

Method: EPA 120.1

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
<b>Sample Information</b>						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X			/		
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.			X			/
11. LCS compounds within control limits.			X			/
12. MS/MSD, RPD's are within control limits	X			/		
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			/
14. Runlog complete and included in package.	X			/		
15. Spectrophotometer tape included (Spec work only)			X			/
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X			/		
18. Are analytical results correct?	X			/		
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct	/		
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer *Silvia Ramit*

Date: 10/11/2018

2nd Level Reviewer *Nancy* 10/20/2018

Date:

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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# Conductivity Logbook

Date: 10/3/18 1405

Analyst: LSN

Standard	Std ID	Reading	Comments
4911 <sup>MS</sup> / <sub>am</sub>	QMV-1807316	9.99 @ 24.9°C	% Rec: (90-110%)
1413	1805150	1420 @ 24.9°C	
9988	1807314	9930 @ 24.8°C	
99922	1809148	16130 @ 24.8°C	

Sample ID	Matrix	Reading	Comments
1 N032326-001B	Am	7860 @ 24.9°C	
2   2B		780 @ 24.9°C	
3   3A		6390 @ 24.2°C	
4   3A.DUP		6430 @ 23.8°C	
5 N032328-001B		1790 @ 22.9°C	
6   2B		1770 @ 22.1°C	
7 N032329-001B		4350 @ 21.8°C	
8   02B		7540 @ 22.1°C	
9			
10 1413 <sup>MS</sup> / <sub>am</sub>	QMV-180417B	1459 @ 24.3°C	2% 10/3/18 LSN
Dup 10000	180716A	10150 @ 24.4°C	Accept: 10% water, 20% soil
Std Chk: 99922	1809148	10220 @ 24.7°C	% Rec: (90-110%)

Date: \_\_\_\_\_

Analyst: \_\_\_\_\_

Julia Ramit 10/11/2018

Standard	Std ID	Reading	Comments
			% Rec: (90-110%)

Sample ID	Matrix	Reading	Comments
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Dup			Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Logbook # 6



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# EPA 218.6



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IC Technical Batch Review Checklist (ARCUS02)  
**ASSET LABORATORIES - LAS VEGAS**

IC ARCUS  
 REV 2.0  
 011416

QC Batch Number: R129198  
 ASSET #: N032328

Instrument ID: IC-07  
 Analyst: RBA  
 Date Analyzed: 10/10/2018

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)	X					
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/199? ± 30% for 218.6/218.7LL?	X					
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?	X					
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)	X					
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X					
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?	X					
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)	X					
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X					
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments:

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer RBA  
 2nd Level Reviewer *Nancy* 10/20/2018

Date: 10/19/18  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

## Sample Calculation

**METHOD:** EPA 218.6  
**TEST NAME:** HEXAVALENT CHROMIUM BY IC  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Hexavalent Chromium concentration, in  $\mu\text{g/L}$ , in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

A =  $\mu\text{g/L}$ , IC Cr+6 calculated concentration

DF = dilution factor

For Sample **N032328-001A**, the concentration in  $\mu\text{g/L}$  is calculated as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = 1.2942 * 5$$

$$\text{Cr}^{+6}, \mu\text{g/L} = 6.4710$$

Reporting results in two significant figures,

$$\text{Cr}^{+6}, \mu\text{g/L} = 6.5$$

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

**INJECTION LOG: 180921A**

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	ICV	ICV	1	Hexavalent Chromium	09/21/18 4:09 PM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/21/18 4:18 PM	Reported
11	ICB	ICB	1	Hexavalent Chromium	09/21/18 4:28 PM	Reported

## Injection Log Summary

### Sequence Details

Name:	IC-07_180921A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	25/Sep/18 09:28:56
No. of Injections:	14	Updated By:	ics 5000

### Injection Details

No.	Injection Name	Position	Volume μL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	ICV.ICV,1,	10	1000	Unknown		09/21/2018 16:09	Finished	ICV @5ppb, IWST-180622B
10	PQL@0.2ppb.CCV2,	11	1000	Unknown		09/21/2018 16:18	Finished	PQL @ 0.2ppb
11	ICB.ICB,1,	12	1000	Unknown		09/21/2018 16:28	Finished	ICB R180919A
12	SHUTDOWN	14	1000	Unknown		09/21/2018 16:45	Finished	
13	Eluent: R180917A	14	1000	Unknown		n.a.	Finished	Eluent
14	PCR: R180921A	15	1000	Unknown		n.a.	Finished	Post-Column Reagent

**INJECTION LOG: 181010A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	10/10/18 8:49 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	10/10/18 9:00 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	10/10/18 9:09 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	10/10/18 9:19 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	10/10/18 9:28 AM	Reported
14	MB-R129198	MBLK	1	Hexavalent Chromium	10/10/18 9:37 AM	Reported
15	LCS-R129198	LCS	1	Hexavalent Chromium	10/10/18 9:47 AM	Reported
16	N032427-001A	SAMP	1	Hexavalent Chromium	10/10/18 10:00 AM	Reported
17	N032427-001AMS	MS	1	Hexavalent Chromium	10/10/18 10:11 AM	Reported
18	N032427-002A	SAMP	1	Hexavalent Chromium	10/10/18 10:20 AM	Reported
19	N032427-002AMS	MS	1	Hexavalent Chromium	10/10/18 10:29 AM	Reported
20	N032427-003A	SAMP	1	Hexavalent Chromium	10/10/18 10:39 AM	Reported
21	N032427-003AMS	MS	1	Hexavalent Chromium	10/10/18 10:49 AM	Reported
22	N032427-004A	SAMP	1	Hexavalent Chromium	10/10/18 10:58 AM	Reported
23	N032427-004AMS	MS	1	Hexavalent Chromium	10/10/18 11:07 AM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	10/10/18 11:17 AM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	10/10/18 11:26 AM	Reported
26	N032427-005A	SAMP	1	Hexavalent Chromium	10/10/18 11:36 AM	Reported
27	N032427-005AMS	MS	1	Hexavalent Chromium	10/10/18 11:45 AM	Reported
28	N032427-006A	SAMP	1	Hexavalent Chromium	10/10/18 11:55 AM	Reported
29	N032427-006AMS	MS	1	Hexavalent Chromium	10/10/18 12:04 PM	Reported
30	N032427-007A	SAMP	1	Hexavalent Chromium	10/10/18 12:14 PM	Reported
31	N032427-007AMS	MS	1	Hexavalent Chromium	10/10/18 12:23 PM	Reported
32	N032328-001A	SAMP	1	Hexavalent Chromium	10/10/18 12:32 PM	Reported
33	N032328-001AMS	MS	1	Hexavalent Chromium	10/10/18 12:42 PM	Reported
34	N032328-003A	SAMP	1	Hexavalent Chromium	10/10/18 12:51 PM	Reported
35	N032328-003AMS	MS	1	Hexavalent Chromium	10/10/18 1:01 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	10/10/18 1:10 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	10/10/18 1:20 PM	Reported
38	N032427-003AMSD	MSD	1	Hexavalent Chromium	10/10/18 1:29 PM	Reported
39	N032328-001A	SAMP	5	Hexavalent Chromium	10/10/18 1:39 PM	Reported
40	N032328-001AMS	MS	5	Hexavalent Chromium	10/10/18 1:48 PM	Reported
41	N032328-002A	SAMP	5	Hexavalent Chromium	10/10/18 1:58 PM	Reported
42	N032328-002AMS	MS	5	Hexavalent Chromium	10/10/18 2:07 PM	Reported

**INJECTION LOG: 181010A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N032328-002A	SAMP	1	Hexavalent Chromium	10/10/18 2:17 PM	Reported
44	N032328-002AMS	MS	1	Hexavalent Chromium	10/10/18 2:26 PM	Reported
45	N032425-001A	SAMP	10	Hexavalent Chromium	10/10/18 2:35 PM	Not Reported
46	N032426-001A	SAMP	1	Hexavalent Chromium	10/10/18 2:45 PM	Reported
47	N032426-001ADUP	DUP	1	Hexavalent Chromium	10/10/18 2:54 PM	Reported
48	CCV-4	CCV1	1	Hexavalent Chromium	10/10/18 3:04 PM	Reported
49	CCB-4	CCB	1	Hexavalent Chromium	10/10/18 3:13 PM	Reported
50	N032426-002A	SAMP	1	Hexavalent Chromium	10/10/18 3:23 PM	Reported
51	N032426-003A	SAMP	1	Hexavalent Chromium	10/10/18 3:32 PM	Reported
52	N032428-001A	SAMP	1	Hexavalent Chromium	10/10/18 3:42 PM	Reported
53	N032428-002A	SAMP	1	Hexavalent Chromium	10/10/18 3:51 PM	Reported
54	N032428-003A	SAMP	1	Hexavalent Chromium	10/10/18 4:01 PM	Reported
55	N032428-004A	SAMP	1	Hexavalent Chromium	10/10/18 4:10 PM	Reported
56	N032428-005A	SAMP	1	Hexavalent Chromium	10/10/18 4:19 PM	Reported
57	N032428-006A	SAMP	1	Hexavalent Chromium	10/10/18 4:29 PM	Reported
58	N032425-001A	SAMP	20	Hexavalent Chromium	10/10/18 4:38 PM	Reported
59	N032426-003A	SAMP	1	Hexavalent Chromium	10/10/18 4:48 PM	Reported
60	CCV-5	CCV	1	Hexavalent Chromium	10/10/18 4:57 PM	Reported
61	CCB-5	CCB	1	Hexavalent Chromium	10/10/18 5:07 PM	Reported
62	LCS-R129199	LCS	1	Hexavalent Chromium	10/10/18 5:16 PM	Reported
63	MB-R129199	MBLK	1	Hexavalent Chromium	10/10/18 5:26 PM	Reported
64	N032429-008A	SAMP	1	Hexavalent Chromium	10/10/18 5:35 PM	Reported
65	N032429-006A	SAMP	1	Hexavalent Chromium	10/10/18 5:45 PM	Reported
66	N032429-011A	SAMP	1	Hexavalent Chromium	10/10/18 5:55 PM	Reported
67	N032429-008AMS	MS	1	Hexavalent Chromium	10/10/18 6:06 PM	Reported
68	N032429-008AMSD	MSD	1	Hexavalent Chromium	10/10/18 6:16 PM	Reported
69	N032429-006AMS	MS	1	Hexavalent Chromium	10/10/18 6:25 PM	Reported
70	N032429-011ADUP	DUP	1	Hexavalent Chromium	10/10/18 6:35 PM	Reported
71	N032428-007A	SAMP	1	Hexavalent Chromium	10/10/18 6:44 PM	Reported
72	CCV-6	CCV1	1	Hexavalent Chromium	10/10/18 6:53 PM	Reported
73	CCB-6	CCB	1	Hexavalent Chromium	10/10/18 7:03 PM	Reported
74	N032429-001A	SAMP	1	Hexavalent Chromium	10/10/18 7:12 PM	Reported
75	N032429-002A	SAMP	1	Hexavalent Chromium	10/10/18 7:22 PM	Reported
76	N032429-003A	SAMP	1	Hexavalent Chromium	10/10/18 7:31 PM	Reported
77	N032429-004A	SAMP	1	Hexavalent Chromium	10/10/18 7:41 PM	Reported
78	N032429-005A	SAMP	1	Hexavalent Chromium	10/10/18 7:50 PM	Reported
79	N032429-007A	SAMP	1	Hexavalent Chromium	10/10/18 8:00 PM	Reported
80	N032429-009A	SAMP	1	Hexavalent Chromium	10/10/18 8:09 PM	Reported
81	N032429-010A	SAMP	1	Hexavalent Chromium	10/10/18 8:19 PM	Reported
82	N032429-012A	SAMP	1	Hexavalent Chromium	10/10/18 8:28 PM	Reported
83	N032429-013A	SAMP	1	Hexavalent Chromium	10/10/18 8:38 PM	Reported
84	CCV-7	CCV	1	Hexavalent Chromium	10/10/18 8:47 PM	Reported



**INJECTION LOG: 181010A**

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
85	CCB-7	CCB	1	Hexavalent Chromium	10/10/18 8:56 PM	Reported
86	N032429-014A	SAMP	1	Hexavalent Chromium	10/10/18 9:06 PM	Reported
87	N032429-015A	SAMP	1	Hexavalent Chromium	10/10/18 9:15 PM	Reported
88	N032429-016A	SAMP	1	Hexavalent Chromium	10/10/18 9:25 PM	Reported
89	N032429-017A	SAMP	1	Hexavalent Chromium	10/10/18 9:34 PM	Reported
90	N032429-018A	SAMP	1	Hexavalent Chromium	10/10/18 9:44 PM	Reported
91	N032429-019A	SAMP	1	Hexavalent Chromium	10/10/18 9:53 PM	Reported
92	MB-3	MBLK	1	Hexavalent Chromium	10/10/18 10:03 PM	Not Reported
93	LCS-3	LCS	1	Hexavalent Chromium	10/10/18 10:12 PM	Not Reported
94	N032303-002A	SAMP	1	Hexavalent Chromium	10/10/18 10:22 PM	Not Reported
95	N032303-002AMS	MS	1	Hexavalent Chromium	10/10/18 10:31 PM	Not Reported
96	CCV-8	CCV1	1	Hexavalent Chromium	10/10/18 10:41 PM	Reported
97	CCB-8	CCB	1	Hexavalent Chromium	10/10/18 10:50 PM	Reported
98	N032304-005A	SAMP	1	Hexavalent Chromium	10/10/18 11:00 PM	Not Reported
99	N032304-005AMS	MS	1	Hexavalent Chromium	10/10/18 11:09 PM	Not Reported
100	N032304-006A	SAMP	1	Hexavalent Chromium	10/10/18 11:18 PM	Not Reported
101	N032304-006AMS	MS	1	Hexavalent Chromium	10/10/18 11:28 PM	Not Reported
102	N032304-007A	SAMP	1	Hexavalent Chromium	10/10/18 11:37 PM	Not Reported
103	N032304-007AMS	MS	1	Hexavalent Chromium	10/10/18 11:47 PM	Not Reported
104	N032304-012A	SAMP	1	Hexavalent Chromium	10/10/18 11:56 PM	Not Reported
105	N032304-012AMS	MS	1	Hexavalent Chromium	10/11/18 12:06 AM	Not Reported
106	N032303-002ADUP	DUP	1	Hexavalent Chromium	10/11/18 12:15 AM	Not Reported
107	N032304-006AMSD	MSD	1	Hexavalent Chromium	10/11/18 12:25 AM	Not Reported
108	CCV-9	CCV	1	Hexavalent Chromium	10/11/18 12:34 AM	Not Reported
109	CCB-9	CCB	1	Hexavalent Chromium	10/11/18 12:44 AM	Not Reported

## Injection Log Summary

## Sequence Details

Name:	IC-07_181010A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	11/Oct/18 01:14:22
No. of Injections:	112	Updated By:	ics 5000

## Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	BLANK	1	1000	Unknown		10/10/2018 08:49	Finished	BLANK
10	BLANK	2	1000	Unknown		10/10/2018 09:00	Finished	BLANK
11	CCV-1.CCV,1,	3	1000	Unknown		10/10/2018 09:09	Finished	CCV @5ppb, IWST-180622A
12	PQL@0.2ppb,CCV2,	4	1000	Unknown		10/10/2018 09:19	Finished	PQL @ 0.2ppb
13	CCB-1.CCB,1,	5	1000	Unknown		10/10/2018 09:28	Finished	CCB R181002B
14	MB-H2O.MBLK,1,	6	1000	Unknown		10/10/2018 09:37	Finished	MB R181002B
15	LCS-H2O.LCS,1,	7	1000	Unknown		10/10/2018 09:47	Finished	LCS @5ppb, IWST-180622B
16	N032427-001A,SAMF	1	1000	Unknown		10/10/2018 10:00	Finished	SAMP,10mL
17	N032427-001AMS,MS	2	1000	Unknown		10/10/2018 10:11	Finished	MS (1ppb), IWST-180622B,10
18	N032427-002A,SAMF	3	1000	Unknown		10/10/2018 10:20	Finished	SAMP,10mL
19	N032427-002AMS,MS	4	1000	Unknown		10/10/2018 10:29	Finished	MS (1ppb), IWST-180622B,10
20	N032427-003A,SAMF	5	1000	Unknown		10/10/2018 10:39	Finished	SAMP,10mL
21	N032427-003AMS,MS	6	1000	Unknown		10/10/2018 10:49	Finished	MS (1ppb), IWST-180622B,10
22	N032427-004A,SAMF	7	1000	Unknown		10/10/2018 10:58	Finished	SAMP,10mL
23	N032427-004AMS,MS	8	1000	Unknown		10/10/2018 11:07	Finished	MS (1ppb), IWST-180622B,10
24	CCV-2.CCV1,1,	9	1000	Unknown		10/10/2018 11:17	Finished	CCV @10ppb, IWST-180622A
25	CCB-2.CCB,1,	10	1000	Unknown		10/10/2018 11:26	Finished	CCB R181002B
26	N032427-005A,SAMF	11	1000	Unknown		10/10/2018 11:36	Finished	SAMP,10mL
27	N032427-005AMS,MS	12	1000	Unknown		10/10/2018 11:45	Finished	MS (1ppb), IWST-180622B,10
28	N032427-006A,SAMF	13	1000	Unknown		10/10/2018 11:55	Finished	SAMP,10mL
29	N032427-006AMS,MS	14	1000	Unknown		10/10/2018 12:04	Finished	MS (1ppb), IWST-180622B,10
30	N032427-007A,SAMF	15	1000	Unknown		10/10/2018 12:14	Finished	SAMP,10mL
31	N032427-007AMS,MS	16	1000	Unknown		10/10/2018 12:23	Finished	MS (1ppb), IWST-180622B,10
32	N032328-001A,SAMF	17	1000	Unknown		10/10/2018 12:32	Finished	SAMP,10mL
33	N032328-001AMS,MS	18	1000	Unknown		10/10/2018 12:42	Finished	MS (1ppb), IWST-180622B,10
34	N032328-003A,SAMF	19	1000	Unknown		10/10/2018 12:51	Finished	SAMP,10mL
35	N032328-003AMS,MS	20	1000	Unknown		10/10/2018 13:01	Finished	MS (1ppb), IWST-180622B,10
36	CCV-3.CCV,1,	21	1000	Unknown		10/10/2018 13:10	Finished	CCV @5ppb, IWST-180622A
37	CCB-3.CCB,1,	22	1000	Unknown		10/10/2018 13:20	Finished	CCB R181002B
38	N032427-003AMSD,MS	23	1000	Unknown		10/10/2018 13:29	Finished	MSD (1ppb), IWST-180622B,10
39	N032328-001A,SAMF	24	1000	Unknown		10/10/2018 13:39	Finished	SAMP,2>10mL
40	N032328-001AMS,MS	25	1000	Unknown		10/10/2018 13:48	Finished	MS (1ppb), IWST-180622B,10
41	N032328-002A,SAMF	26	1000	Unknown		10/10/2018 13:58	Finished	SAMP,2>10mL
42	N032328-002AMS,MS	27	1000	Unknown		10/10/2018 14:07	Finished	MS (1ppb), IWST-180622B,10
43	N032328-002A,SAMF	28	1000	Unknown		10/10/2018 14:17	Finished	SAMP,10mL
44	N032328-002AMS,MS	29	1000	Unknown		10/10/2018 14:26	Finished	MS (1ppb), IWST-180622B,10
45	N032425-001A,SAMF	30	1000	Unknown		10/10/2018 14:35	Finished	SAMP,1>10mL
46	N032426-001A,SAMF	31	1000	Unknown		10/10/2018 14:45	Finished	SAMP,10mL
47	N032426-001ADUP,MS	32	1000	Unknown		10/10/2018 14:54	Finished	DUP,10mL
48	CCV-4.CCV1,1,	33	1000	Unknown		10/10/2018 15:04	Finished	CCV @10ppb, IWST-180622A
49	CCB-4.CCB,1,	34	1000	Unknown		10/10/2018 15:13	Finished	CCB R181002B
50	N032426-002A,SAMF	35	1000	Unknown		10/10/2018 15:23	Finished	SAMP,10mL
51	N032426-003A,SAMF	36	1000	Unknown		10/10/2018 15:32	Finished	SAMP,10mL
52	N032428-001A,SAMF	37	1000	Unknown		10/10/2018 15:42	Finished	SAMP,10mL
53	N032428-002A,SAMF	38	1000	Unknown		10/10/2018 15:51	Finished	SAMP,10mL
54	N032428-003A,SAMF	39	1000	Unknown		10/10/2018 16:01	Finished	SAMP,10mL
55	N032428-004A,SAMF	40	1000	Unknown		10/10/2018 16:10	Finished	SAMP,10mL
56	N032428-005A,SAMF	41	1000	Unknown		10/10/2018 16:19	Finished	SAMP,10mL
57	N032428-006A,SAMF	42	1000	Unknown		10/10/2018 16:29	Finished	SAMP,10mL
58	N032425-001A,SAMF	43	1000	Unknown		10/10/2018 16:38	Finished	SAMP,0.5>10mL
59	N032426-003A,SAMF	44	1000	Unknown		10/10/2018 16:48	Finished	SAMP,0.5>10mL
60	CCV-5.CCV,1,	45	1000	Unknown		10/10/2018 16:57	Finished	CCV @5ppb, IWST-180622A

61	CCB-5.CCB,1,	46	1000	Unknown		10/10/2018 17:07	Finished	CCB R181002B
62	LCS-2.LCS,1,	47	1000	Unknown		10/10/2018 17:16	Finished	LCS @5ppb, IWST-180622B
63	MB-2.MBLK,1,	48	1000	Unknown		10/10/2018 17:26	Finished	MB R181002B
64	N032429-008A,SAMF	49	1000	Unknown		10/10/2018 17:35	Finished	SAMP,10mL
65	N032429-006A,SAMF	50	1000	Unknown		10/10/2018 17:45	Finished	SAMP,10mL
66	N032429-011A,SAMF	1	1000	Unknown		10/10/2018 17:55	Finished	SAMP,10mL
67	N032429-008AMS,M	2	1000	Unknown		10/10/2018 18:06	Finished	MS (5ppb), IWST-180622B,10
68	N032429-008AMSD,I	3	1000	Unknown		10/10/2018 18:16	Finished	MSD (5ppb), IWST-180622B,10
69	N032429-006AMS,M	4	1000	Unknown		10/10/2018 18:25	Finished	MS (5ppb), IWST-180622B,10
70	N032429-011ADUP,I	5	1000	Unknown		10/10/2018 18:35	Finished	DUP,10mL
71	N032428-007A,SAMF	6	1000	Unknown		10/10/2018 18:44	Finished	SAMP,10mL
72	CCV-6.CCV1,1,	7	1000	Unknown		10/10/2018 18:53	Finished	CCV @10ppb, IWST-180622A
73	CCB-6.CCB,1,	8	1000	Unknown		10/10/2018 19:03	Finished	CCB R181002B
74	N032429-001A,SAMF	9	1000	Unknown		10/10/2018 19:12	Finished	SAMP,10mL
75	N032429-002A,SAMF	10	1000	Unknown		10/10/2018 19:22	Finished	SAMP,10mL
76	N032429-003A,SAMF	11	1000	Unknown		10/10/2018 19:31	Finished	SAMP,10mL
77	N032429-004A,SAMF	12	1000	Unknown		10/10/2018 19:41	Finished	SAMP,10mL
78	N032429-005A,SAMF	13	1000	Unknown		10/10/2018 19:50	Finished	SAMP,10mL
79	N032429-007A,SAMF	14	1000	Unknown		10/10/2018 20:00	Finished	SAMP,10mL
80	N032429-009A,SAMF	15	1000	Unknown		10/10/2018 20:09	Finished	SAMP,10mL
81	N032429-010A,SAMF	16	1000	Unknown		10/10/2018 20:19	Finished	SAMP,10mL
82	N032429-012A,SAMF	17	1000	Unknown		10/10/2018 20:28	Finished	SAMP,10mL
83	N032429-013A,SAMF	18	1000	Unknown		10/10/2018 20:38	Finished	SAMP,10mL
84	CCV-7.CCV,1,	19	1000	Unknown		10/10/2018 20:47	Finished	CCV @5ppb, IWST-180622A
85	CCB-7.CCB,1,	20	1000	Unknown		10/10/2018 20:56	Finished	CCB R181002B
86	N032429-014A,SAMF	21	1000	Unknown		10/10/2018 21:06	Finished	SAMP,10mL
87	N032429-015A,SAMF	22	1000	Unknown		10/10/2018 21:15	Finished	SAMP,10mL
88	N032429-016A,SAMF	23	1000	Unknown		10/10/2018 21:25	Finished	SAMP,10mL
89	N032429-017A,SAMF	24	1000	Unknown		10/10/2018 21:34	Finished	SAMP,10mL
90	N032429-018A,SAMF	25	1000	Unknown		10/10/2018 21:44	Finished	SAMP,10mL
91	N032429-019A,SAMF	26	1000	Unknown		10/10/2018 21:53	Finished	SAMP,10mL
92	MB-3.MBLK,1,	27	1000	Unknown		10/10/2018 22:03	Finished	MB R181002B
93	LCS-3.LCS,1,	28	1000	Unknown		10/10/2018 22:12	Finished	LCS @5ppb, IWST-180622B
94	N032303-002A,SAMF	29	1000	Unknown		10/10/2018 22:22	Finished	SAMP,10mL
95	N032303-002AMS,M	30	1000	Unknown		10/10/2018 22:31	Finished	MS (5ppb), IWST-180622B,10
96	CCV-8.CCV1,1,	31	1000	Unknown		10/10/2018 22:41	Finished	CCV @10ppb, IWST-180622A
97	CCB-8.CCB,1,	32	1000	Unknown		10/10/2018 22:50	Finished	CCB R181002B
98	N032304-005A,SAMF	33	1000	Unknown		10/10/2018 23:00	Finished	SAMP,10mL
99	N032304-005AMS,M	34	1000	Unknown		10/10/2018 23:09	Finished	MS (5ppb), IWST-180622B,10
100	N032304-006A,SAMF	35	1000	Unknown		10/10/2018 23:18	Finished	SAMP,10mL
101	N032304-006AMS,M	36	1000	Unknown		10/10/2018 23:28	Finished	MS (5ppb), IWST-180622B,10
102	N032304-007A,SAMF	37	1000	Unknown		10/10/2018 23:37	Finished	SAMP,10mL
103	N032304-007AMS,M	38	1000	Unknown		10/10/2018 23:47	Finished	MS (5ppb), IWST-180622B,10
104	N032304-012A,SAMF	39	1000	Unknown		10/10/2018 23:56	Finished	SAMP,10mL
105	N032304-012AMS,M	40	1000	Unknown		10/11/2018 00:06	Finished	MS (5ppb), IWST-180622B,10
106	N032303-002ADUP,I	41	1000	Unknown		10/11/2018 00:15	Finished	DUP,10mL
107	N032304-006AMSD,I	42	1000	Unknown		10/11/2018 00:25	Finished	MSD (5ppb), IWST-180622B,10
108	CCV-9.CCV,1,	43	1000	Unknown		10/11/2018 00:34	Finished	CCV @5ppb, IWST-180622A
109	CCB-9.CCB,1,	44	1000	Unknown		10/11/2018 00:44	Finished	CCB R181002B
110	SHUTDOWN	45	1000	Unknown		10/11/2018 00:53	Finished	
111	Eluent: R181009A	46	1000	Unknown		n.a.	Finished	Eluent
112	PCR: R181009B	47	1000	Unknown		n.a.	Finished	Post-Column Reagent

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

## Hexavalent Chromium Preparation and Runlog

<b>Sample Preparation</b>						
Date Prepared: <u>10/2/18</u>				Reagent ID: _____		
Time Prepared: <u>1:00 PM</u>				Sulfuric Acid: <u>10704</u>		
Prepared By: <u>MSB</u>				Diphenylcarbazide: <u>CAN-100765</u>		
				NH4OH + NH4SO4 eluent: <u>MS10030</u>		
				NH4OH + NH4SO4 buffer: <u>MS999A</u>		
(ON NAME) <u>MSB</u>						
Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1) MS2318-2A	7.23	9.37	-200 uL	-200 uL	+3 drops NaOH	
2)   4A	8.64	9.40			+8 drops "	
3)   5A	<del>8.67</del>	<del>9.39</del>			<del>+8 drops</del> +1 mg	
4)   6A	<del>9.73</del>	<del>9.42</del>			<del>+9 drops</del> +1 mg	
5)   7A	8.74	9.35			+9 drops "	
6)   8A	9.01	9.34			+8 drops "	
7)   9A	8.99	9.30			+8 drops "	
8)   10A	8.79	9.41			+9 drops "	
9)   11A	8.61	9.37			+8 drops "	
10)   12A	8.79	9.36			+9 drops "	
11)   13A	8.71	9.41			+11 drops "	
12)   14A	8.87	9.31			+8 drops "	
13)   15A	9.30	-				
14) MS2319-1A	9.09	9.30			+8 drops "	
15)   2A	9.30	-				
3A	9.30	-				

<b>Sample Preparation</b>						
Date Prepared: <u>10/2/18</u>				Reagent ID: _____		
Time Prepared: <u>1:00 PM</u>				Sulfuric Acid: <u>10704</u>		
Prepared By: <u>MSA</u>				Diphenylcarbazide: <u>CAN-100765</u>		
				NH4OH + NH4SO4 eluent: <u>MS10030/MS1005E</u>		
				NH4OH + NH4SO4 buffer: <u>MS999A</u>		
(ON NAME) <u>MSB</u>						
Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1) MS2319-6A	9.36	-	-200 uL	-200 uL		
2) MS2320-1A	8.83	9.45			+8 drops NaOH	
3)   2A	8.78	9.31			+9 drops "	
4)   3A	9.35	-				
5)   4A	9.40	-				
6) MS2321-1A	9.20	9.34			+3 drops NaOH	
7)   2A	9.33	-				
8) MS2326-1C	9.25	9.33			+2 drops "	
9)   2C	9.32	-				
10)   3A	8.74	9.41			+10 drops "	
11) MS2328-1A	9.46	-				
12)   2A	9.51	-				
13)   3A	9.54	-				
14)						
15)						

Logbook No. 15



**ASSET LABORATORIES**

"Serving Clients with Passion and Professionalism"

CALIFORNIA | P: 562.219.7435 F: 562.219.7436  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703

ELAP Cert 2921

13 of 100 ID CA01638

NEVADA | P: 702.307.2659 F: 702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118

ELAP Cert 2676 | NV Cert NV00922

ORELAP/NELAP Cert 4046

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07  
Date Calibrated: 9/21/2018

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R <sup>2</sup>
Area,mAU*min	0.0462	0.2400	1.2761	2.5253	3.8020	5.0460	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST-170814H	IWST-180622A

Calibration Acceptance Criteria: > 0.999 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3170151</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.047	0.20	5.000	0	101	90	110				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3170152</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.187	0.20	0.2000	0	93.2	80	120				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170154</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.137	0.20	5.000	0	103	95	105				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170155</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.214	0.20	0.2000	0	107	80	120				

Sample ID <b>CCV-2</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170167</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.484	0.20	10.00	0	105	95	105				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170177</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.172	0.20	5.000	0	103	95	105				

Sample ID <b>CCV-4</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170186</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.441	0.20	10.00	0	104	95	105				

Sample ID <b>CCV-5</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170197</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.191	0.20	5.000	0	104	95	105				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3170153</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170156</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170168</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170178</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170187</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium ND 0.20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
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  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
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  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCB-5</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129198</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129198</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3170198</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

**Qualifiers:**

- |    |   |   |                                      |   |  |
|----|---|---|--------------------------------------|---|--|
| B  | Analyte detected in the associated Method Blank | E | Value above quantitation range       | H | Holding times for preparation or analysis exceeded           |
| ND | Not Detected at the Reporting Limit             | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 10/10/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.115	
CCV-1	4.156	
CCV-2	4.156	
CCV-3	4.156	
CCV-4	4.148	
CCV-5	4.156	
CCV-6	4.156	
CCV-7	4.156	
CCV-8	4.156	

**Average** 4.155  
**Actual RT Window** 4.075 - 4.235  
**Applied RT Window** 3.955 - 4.355

MB-R129198	N.A.	N.A.
LCS-R129198	4.156	PASS
N032427-001A	4.140	PASS
N032427-001AMS	4.140	PASS
N032427-002A	4.131	PASS
N032427-002AMS	4.131	PASS
N032427-003A	4.140	PASS
N032427-003AMS	4.148	PASS
N032427-004A	4.140	PASS
N032427-004AMS	4.140	PASS
N032427-005A	4.131	PASS
N032427-005AMS	4.131	PASS
N032427-006A	N.A.	N.A.
N032427-006AMS	4.148	PASS
N032427-007A	4.131	PASS
N032427-007AMS	4.131	PASS
N032328-001A	N.A.	N.A.
N032328-001AMS	N.A.	N.A.
N032328-003A	4.140	PASS
N032328-003AMS	4.131	PASS

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Instrument ID: IC-07

### Analytical Sequence

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<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.115	
CCV-1	4.156	
CCV-2	4.156	
CCV-3	4.156	
CCV-4	4.148	
CCV-5	4.156	
CCV-6	4.156	
CCV-7	4.156	
CCV-8	4.156	

<b>Average</b>	4.155
<b>Actual RT Window</b>	4.075 - 4.235
<b>Applied RT Window</b>	3.955 - 4.355

N032427-003AMSD	4.140	PASS
N032328-001A	4.081	PASS
N032328-001AMS	4.081	PASS
N032328-002A	4.081	PASS
N032328-002AMS	4.081	PASS
N032328-002A	N.A.	N.A.
N032328-002AMS	N.A.	N.A.
N032425-001A	4.156	PASS
N032426-001A	4.073	PASS
N032426-001ADUP	4.073	PASS
N032426-002A	4.081	PASS
N032426-003A	4.048	PASS
N032428-001A	4.090	PASS
N032428-002A	N.A.	N.A.
N032428-003A	4.148	PASS
N032428-004A	4.140	PASS
N032428-005A	4.148	PASS
N032428-006A	4.148	PASS
N032425-001A	4.148	PASS
N032426-003A	4.048	PASS



## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 10/10/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.115	
CCV-1	4.156	
CCV-2	4.156	
CCV-3	4.156	
CCV-4	4.148	
CCV-5	4.156	
CCV-6	4.156	
CCV-7	4.156	
CCV-8	4.156	

**Average** 4.155  
**Actual RT Window** 4.075 - 4.235  
**Applied RT Window** 3.955 - 4.355

LCS-R129199	4.156	PASS
MB-R129199	N.A.	N.A.
N032429-008A	4.148	PASS
N032429-006A	4.148	PASS
N032429-011A	4.148	PASS
N032429-008AMS	4.156	PASS
N032429-008AMSD	4.148	PASS
N032429-006AMS	4.148	PASS
N032429-011ADUP	4.148	PASS
N032428-007A	4.148	PASS
N032429-001A	4.148	PASS
N032429-002A	4.148	PASS
N032429-003A	4.148	PASS
N032429-004A	4.148	PASS
N032429-005A	4.148	PASS
N032429-007A	4.148	PASS
N032429-009A	4.148	PASS
N032429-010A	4.148	PASS
N032429-012A	4.140	PASS
N032429-013A	4.148	PASS

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 10/10/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.115	
CCV-1	4.156	
CCV-2	4.156	
CCV-3	4.156	
CCV-4	4.148	
CCV-5	4.156	
CCV-6	4.156	
CCV-7	4.156	
CCV-8	4.156	

**Average** 4.155  
**Actual RT Window** 4.075 - 4.235  
**Applied RT Window** 3.955 - 4.355

N032429-014A	4.148	PASS
N032429-015A	4.123	PASS
N032429-016A	N.A.	N.A.
N032429-017A	N.A.	N.A.
N032429-018A	N.A.	N.A.
N032429-019A	4.131	PASS
MB-3	N.A.	N.A.
LCS-3	4.148	PASS
N032303-002A	4.065	PASS
N032303-002AMS	4.065	PASS
N032304-005A	4.131	PASS
N032304-005AMS	4.090	PASS
N032304-006A	4.090	PASS
N032304-006AMS	4.098	PASS
N032304-007A	4.123	PASS
N032304-007AMS	4.123	PASS
N032304-012A	4.148	PASS
N032304-012AMS	4.140	PASS
N032303-002ADUP	4.065	PASS
N032304-006AMSD	4.098	PASS

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
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NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
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## METHOD DETECTION LIMIT 2017

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**  
 Method Number: EPA 218.6  
 Analysis Date(s): 5/5/2017, 5/8/2017, 5/9/2017, 5/10/2017, 5/11/2017, 5/12/2017, 5/15/2017  
 Analyst: Ria Abes

Matrix: **WATER**  
 Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

	Datafile	170505	170508	170509	170510	170511	170512	170515						
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	t <sub>(n-1)</sub> value	MDL	PQL	Remarks	
Hexavalent Chromium	0.1949	0.2135	0.1840	0.1828	0.2011	0.1936	0.1911	0.20	0.0105	3.143	<b>0.0331</b>	<b>0.20</b>	OK,meets criteria	

Students' t Values at 99% CL

#	t <sub>(n-1)</sub>
10	2.821
9	2.896
8	2.998
7	3.143



**ASSET LABORATORIES**  
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CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

## LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Hexavalent Chromium by IC**                      Matrix: **WATER**  
 Method Number: EPA Method 218.6/7199                      Unit: µg/L  
 Analysis Date(s): 3/21/2018  
 Analyst: Ria Abes  
  
 Instrument Name: **IC-07**

Compound	MDL	LOD Spike Conc., µg/L	LOD actual Conc., µg/L
Hexavalent Chromium	0.0331	0.100	0.116

Compound	PQL	PQL Spike Conc., µg/L	PQL actual Conc., µg/L	% Recovery
Hexavalent Chromium	0.200	0.200	0.201	<u>100</u>



# RAW DATA



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436



NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

# INITIAL CALIBRATION



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

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"Serving Clients with Passion and Professionalism"

INJECTION LOG: 180921A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	ICV	ICV	1	Hexavalent Chromium	09/21/18 4:09 PM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/21/18 4:18 PM	Reported
11	ICB	ICB	1	Hexavalent Chromium	09/21/18 4:28 PM	Reported

*rba* 9/30/2018

*Nancy* 10/8/2018

IC7 RBA 9/26/2018 8:55 AM



## Injection Log Summary

### Sequence Details

Name:	IC-07_180921A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	25/Sep/18 09:28:56
No. of Injections:	14	Updated By:	ics 5000

### Injection Details

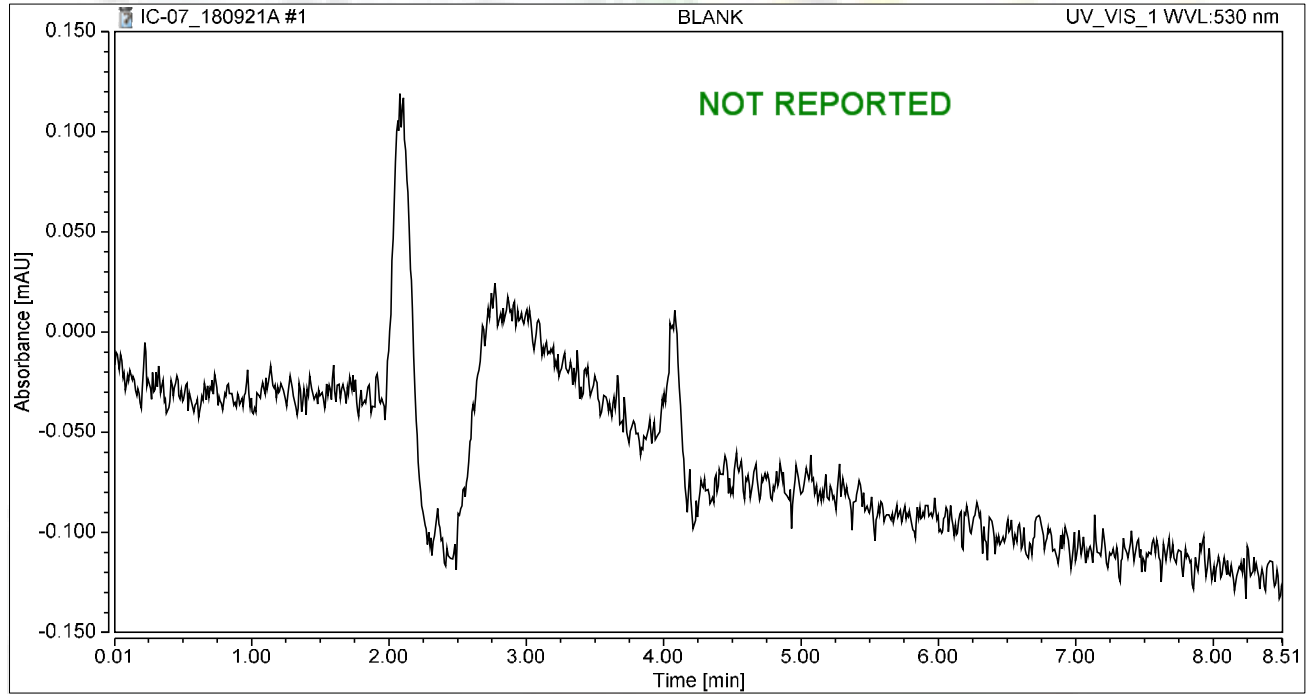
No.	Injection Name	Position	Volume μL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	ICV.ICV,1,	10	1000	Unknown		09/21/2018 16:09	Finished	ICV @5ppb, IWST-180622B
10	PQL@0.2ppb,CCV2,	11	1000	Unknown		09/21/2018 16:18	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	12	1000	Unknown		09/21/2018 16:28	Finished	ICB R180919A
12	SHUTDOWN	14	1000	Unknown		09/21/2018 16:45	Finished	
13	Eluent: R180917A	14	1000	Unknown		n.a.	Finished	Eluent
14	PCR: R180921A	15	1000	Unknown		n.a.	Finished	Post-Column Reagent

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

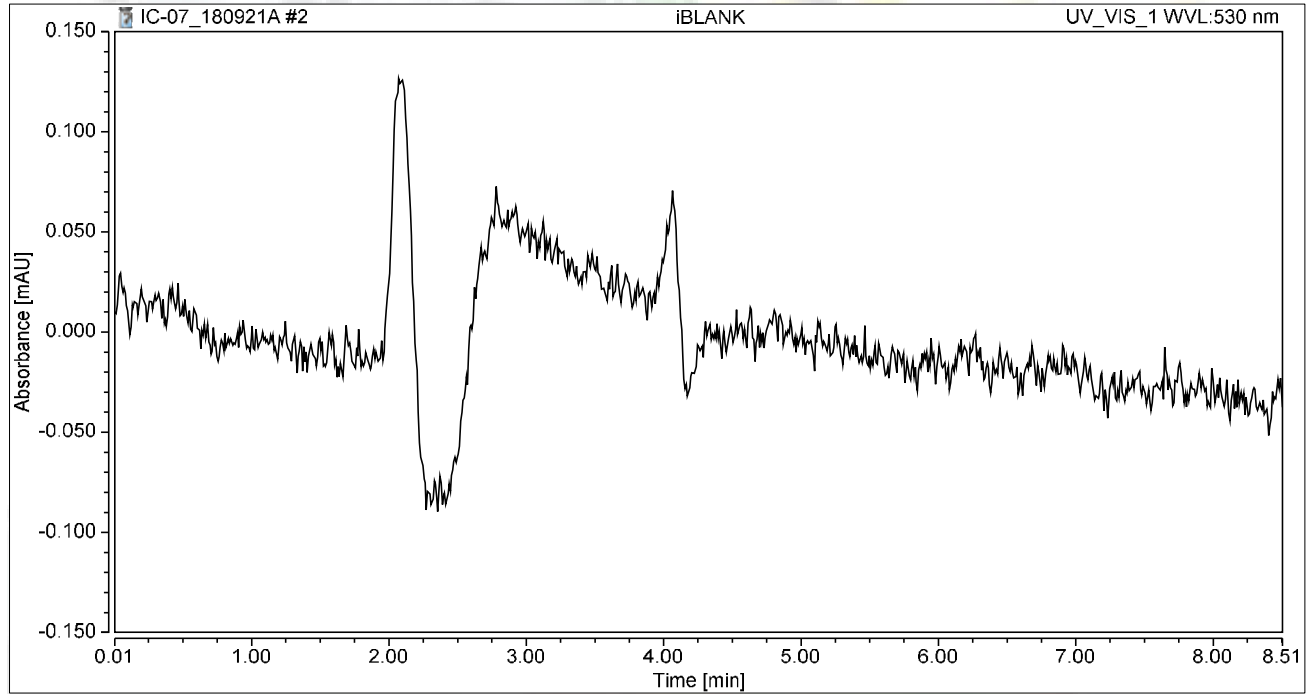
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	iBLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

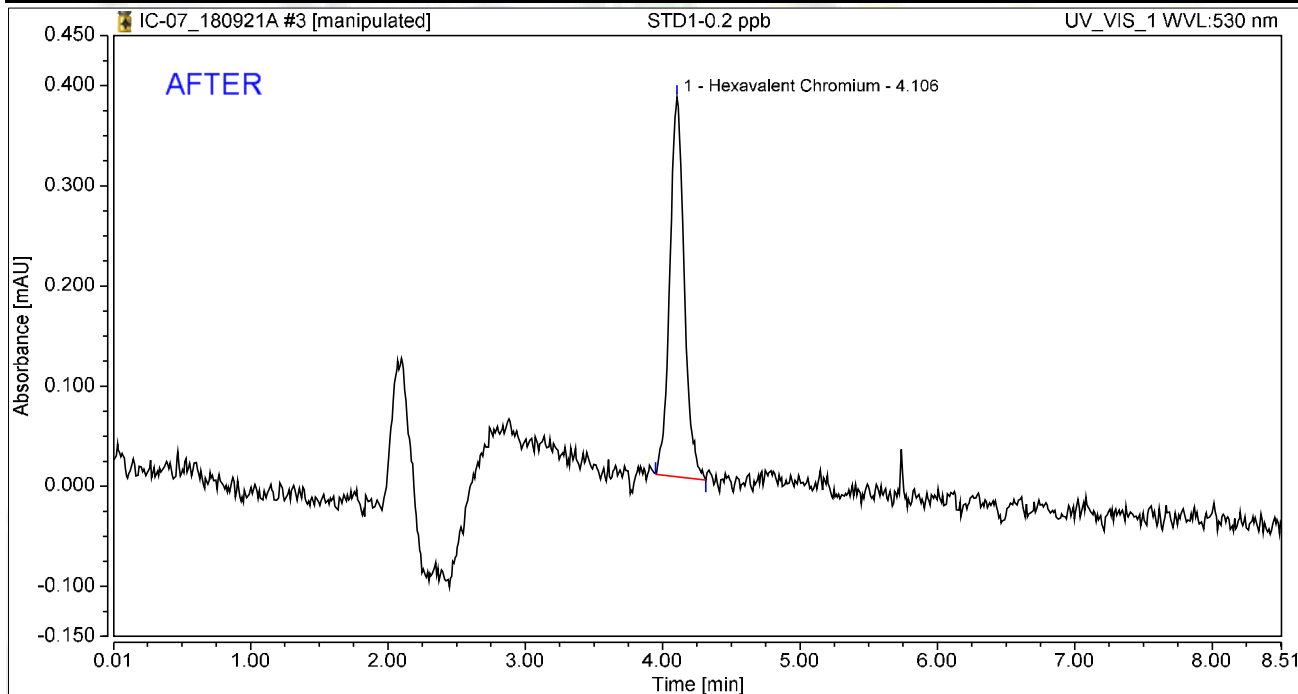
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.046	0.379	100.00	100.00	0.1830
<b>Total:</b>			<b>0.046</b>	<b>0.379</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/30/2018

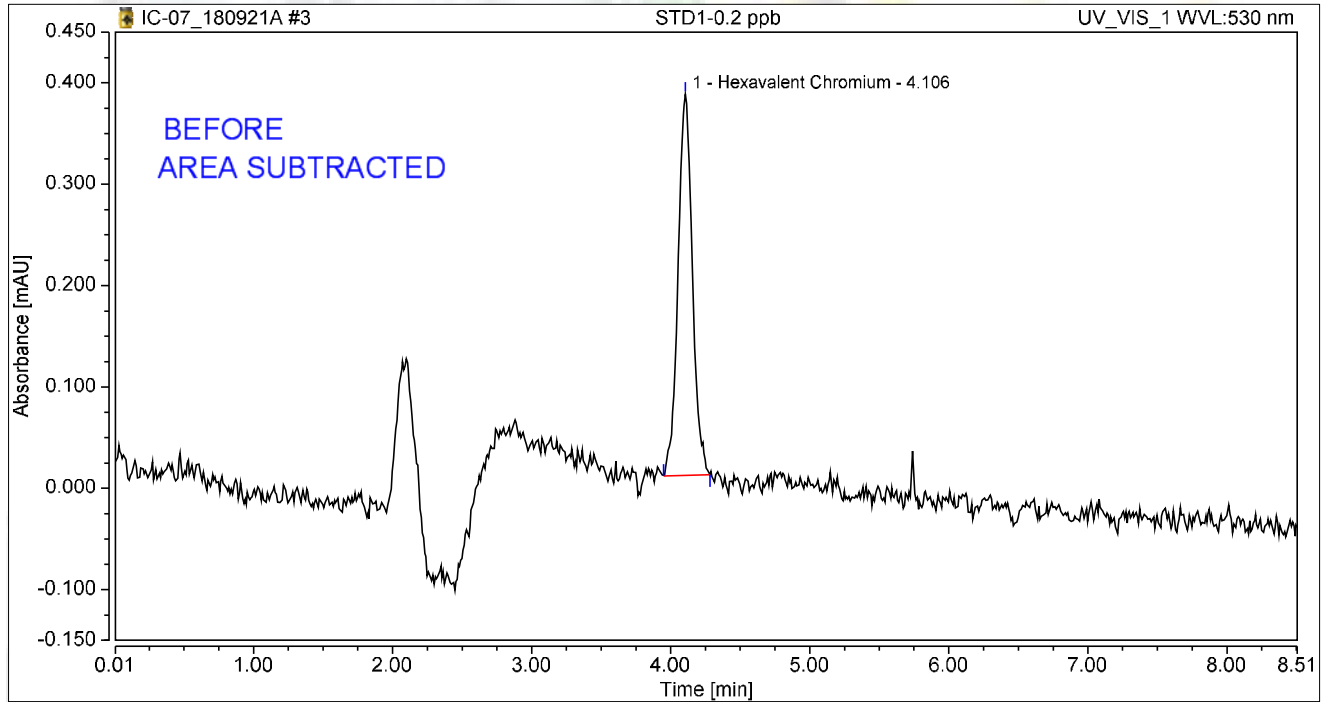
Reviewed by:  
*Murray* 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.045	0.376	100.00	100.00	0.1723
<b>Total:</b>			<b>0.045</b>	<b>0.376</b>	<b>100.00</b>	<b>100.00</b>	

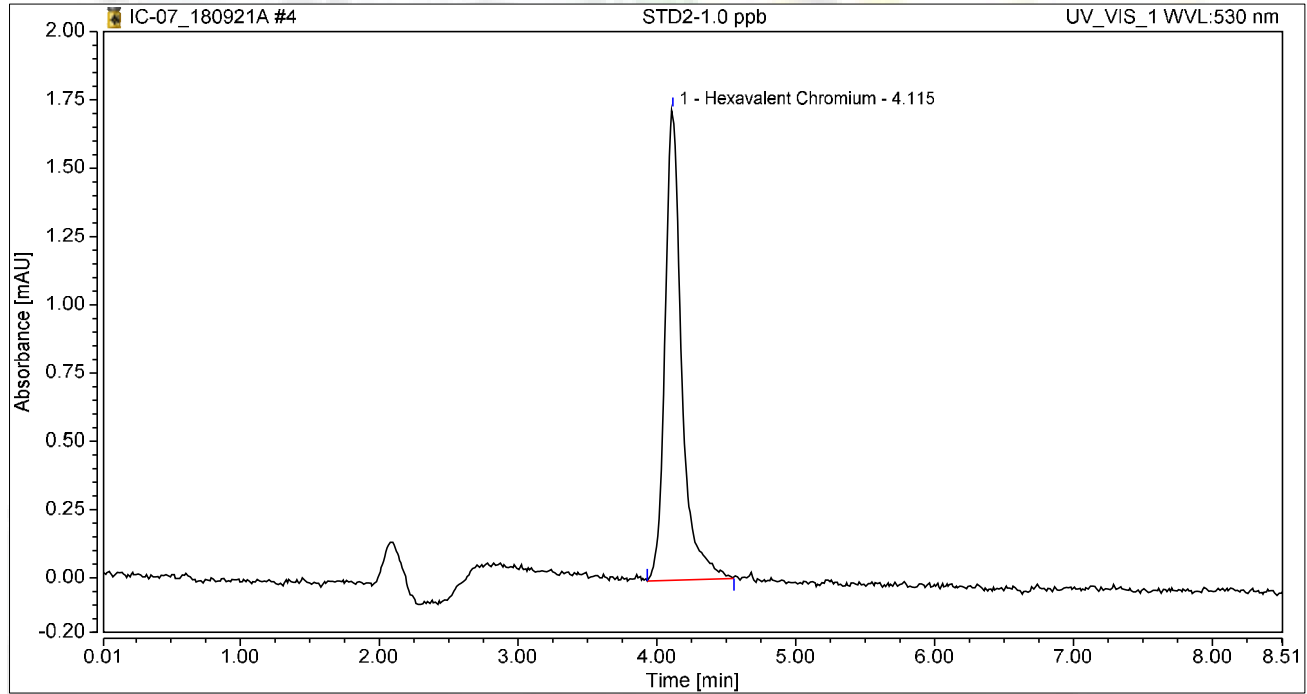
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD2-1.0 ppb	Run Time (min):	8.49
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	02	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:47	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

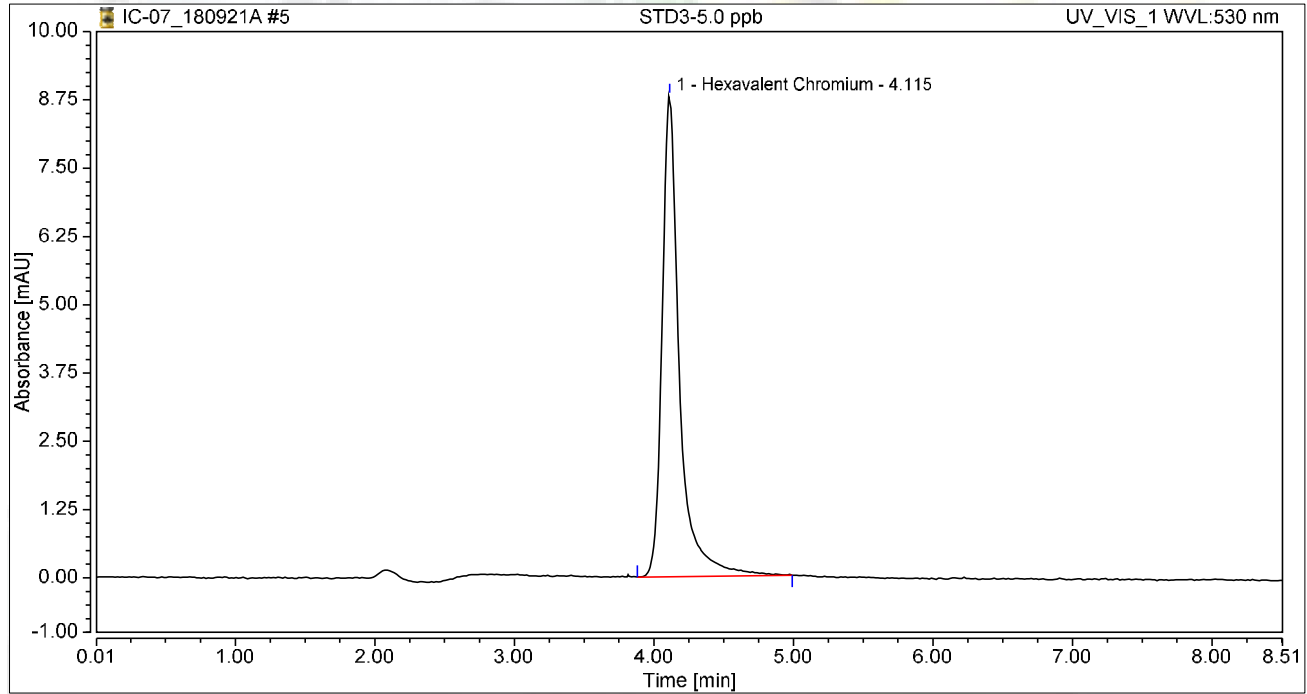
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.240	1.724	100.00	100.00	0.9494
<b>Total:</b>			<b>0.240</b>	<b>1.724</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD3-5.0 ppb	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	03	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

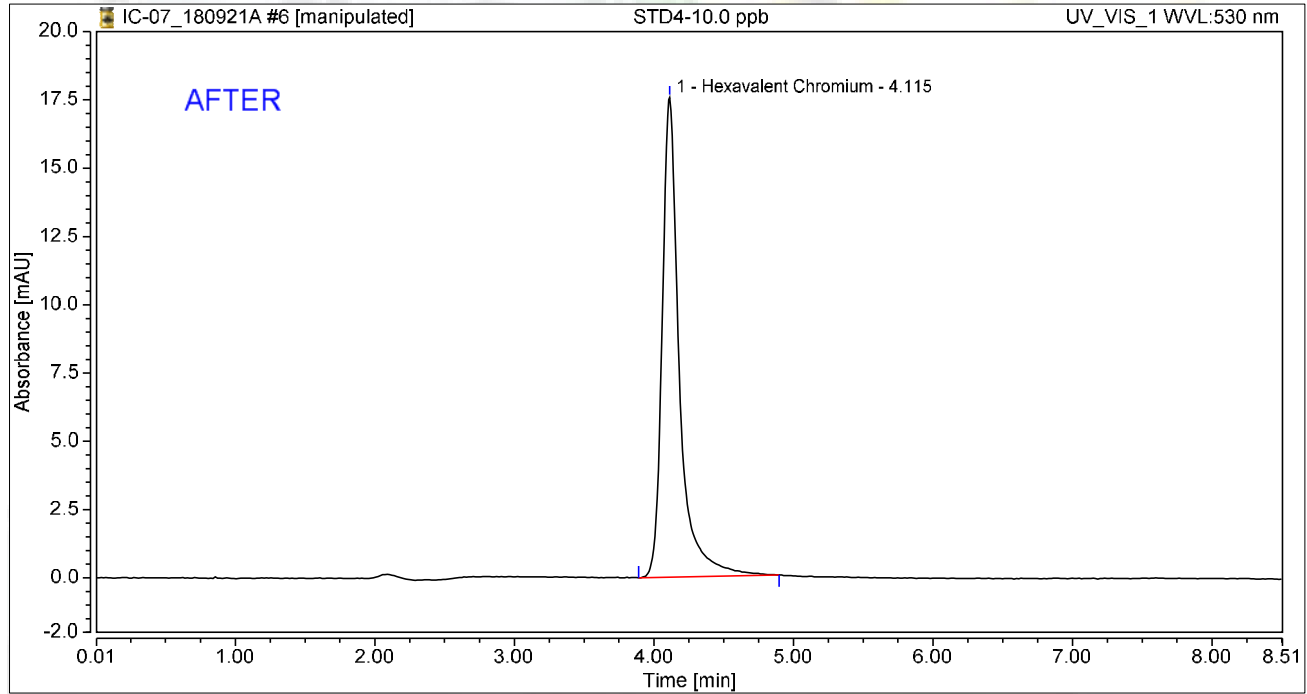
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.276	8.809	100.00	100.00	5.0487
<b>Total:</b>			<b>1.276</b>	<b>8.809</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.525	17.564	100.00	100.00	9.9908
<b>Total:</b>			<b>2.525</b>	<b>17.564</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Reviewed by:

My first report integration  
Merry 10/8/2018

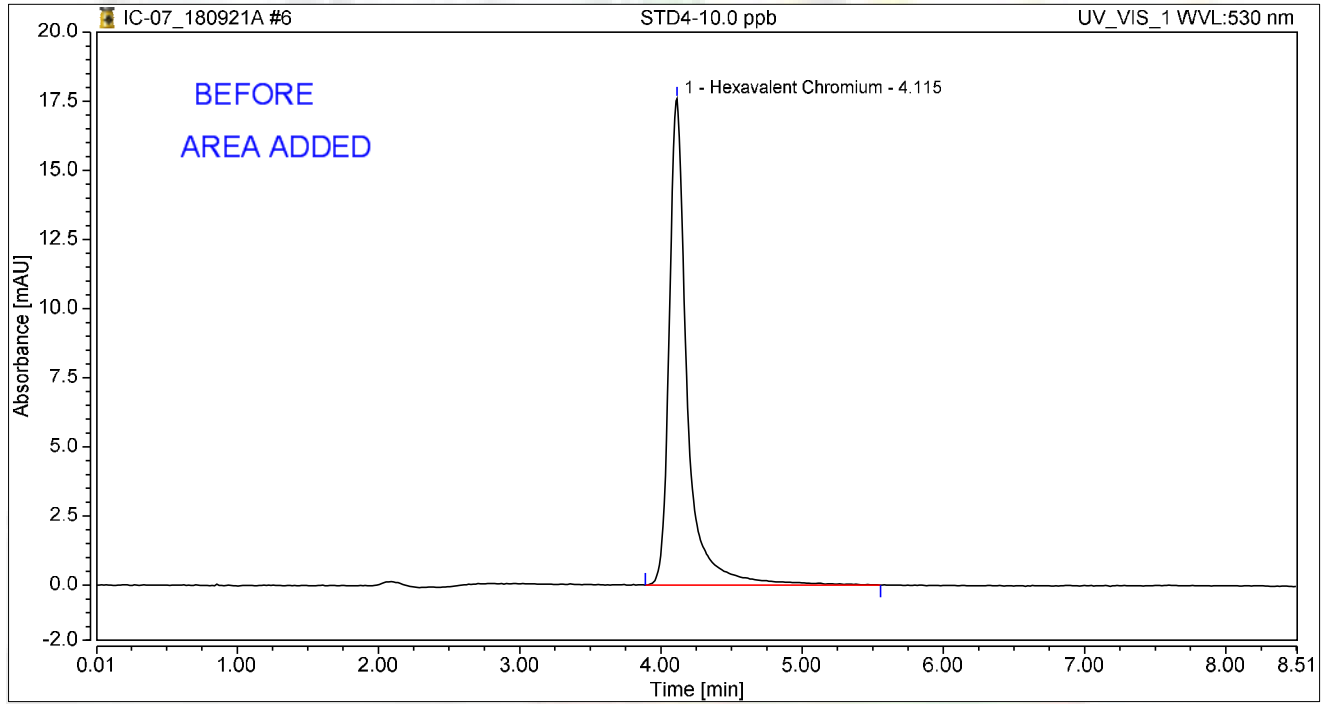


### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.611	17.589	100.00	100.00	10.0182
<b>Total:</b>			<b>2.611</b>	<b>17.589</b>	<b>100.00</b>	<b>100.00</b>	

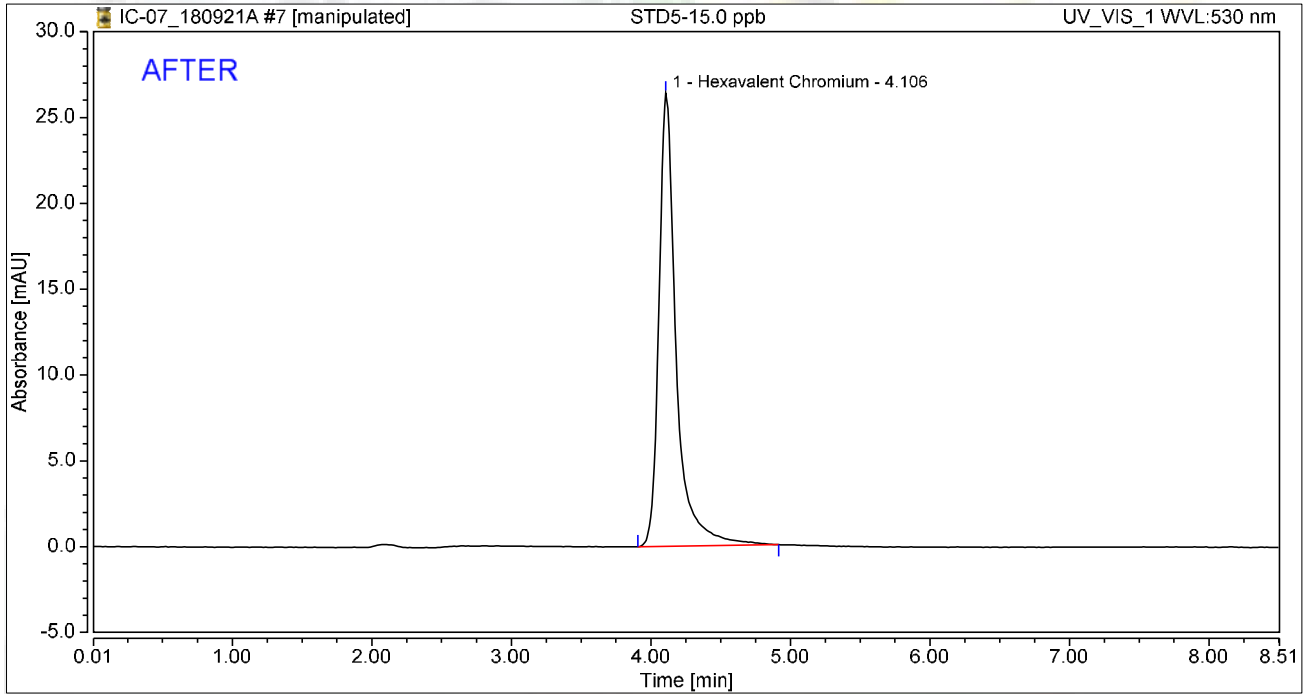
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	3.802	26.404	100.00	100.00	15.0421
<b>Total:</b>			<b>3.802</b>	<b>26.404</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

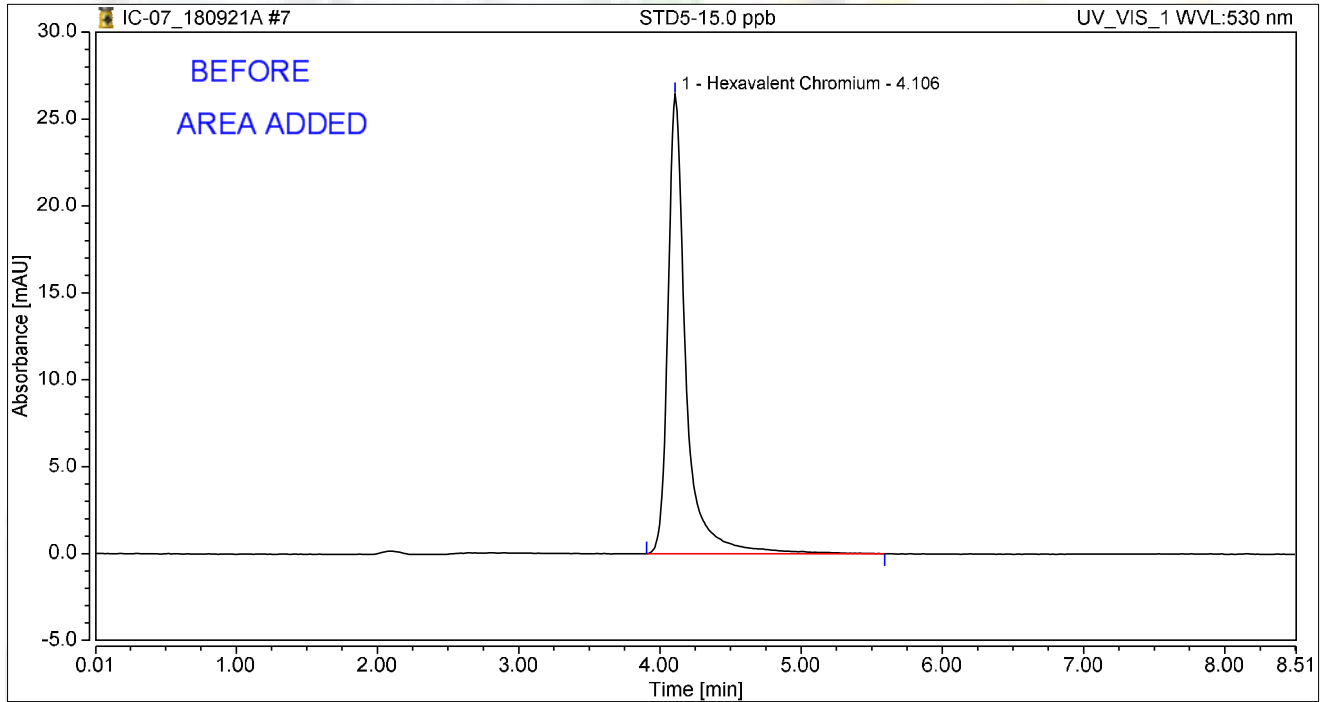
Reviewed by:  
 Nancy 10/8/2018  
 My first report/integration

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	3.918	26.433	100.00	100.00	15.0352
<b>Total:</b>			<b>3.918</b>	<b>26.433</b>	<b>100.00</b>	<b>100.00</b>	

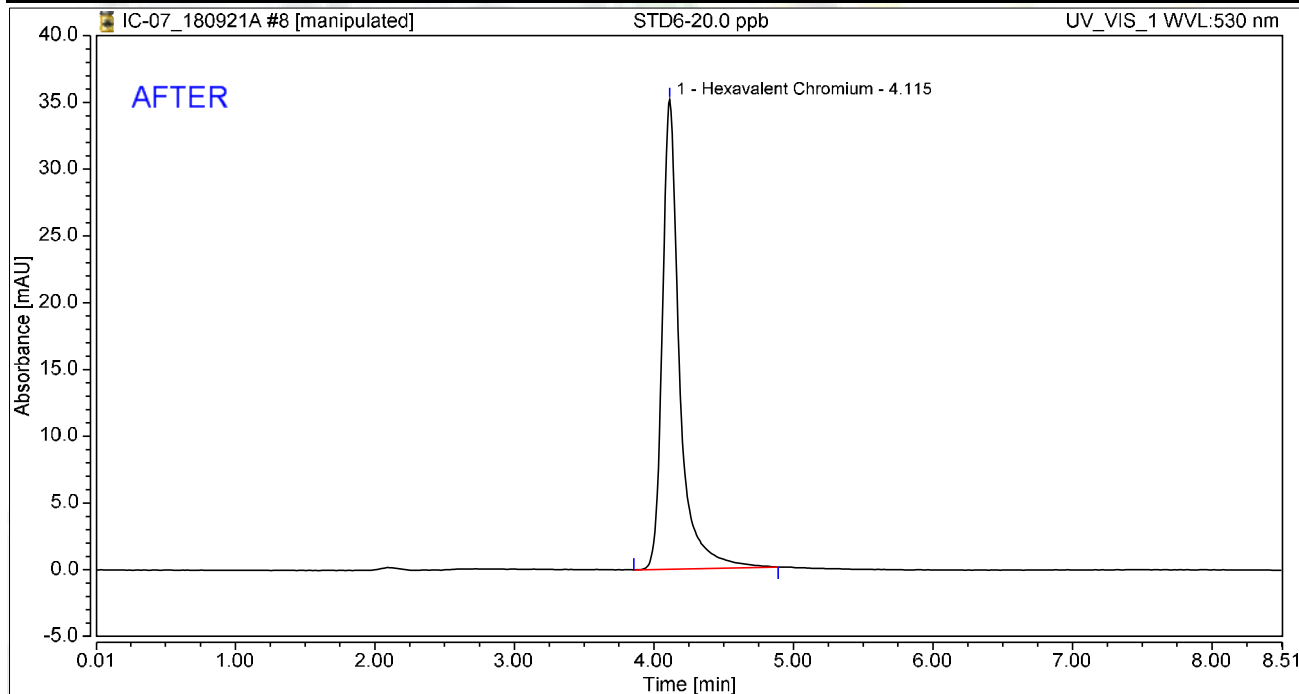
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:25	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	5.046	35.157	100.00	100.00	19.9635
<b>Total:</b>			<b>5.046</b>	<b>35.157</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 9/30/2018

Reviewed by:  
*Arney* 10/8/2018

My first report/Integration

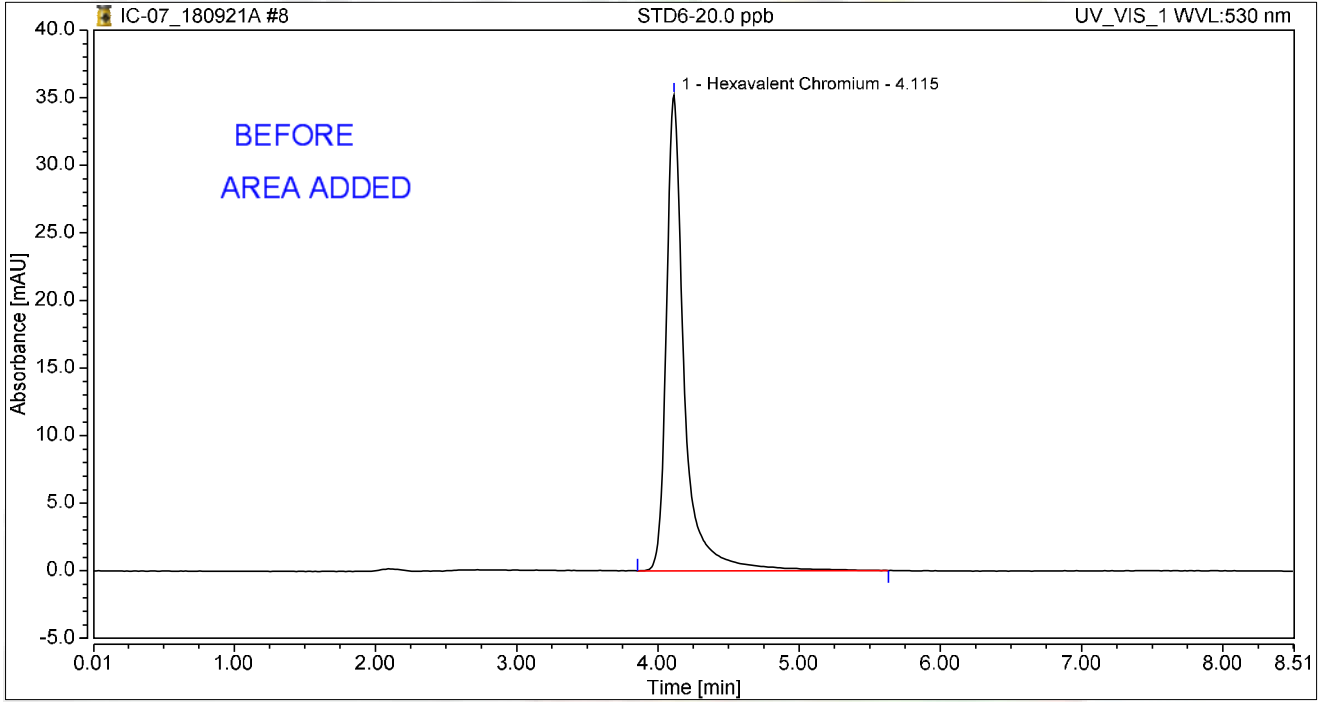
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:25	Sample Weight:	1.0000

**Chromatogram**

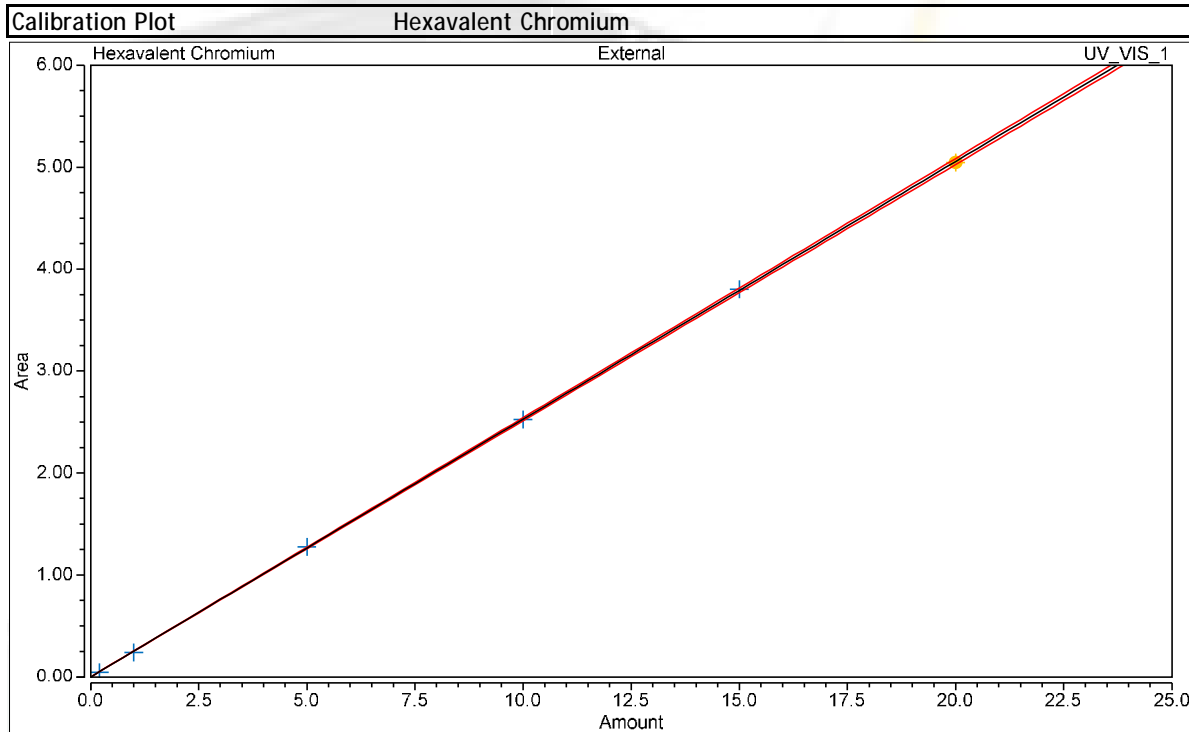


**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	5.210	35.207	100.00	100.00	19.9945
<b>Total:</b>			<b>5.210</b>	<b>35.207</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Initial Calibration Summary			
Calibration Details		Hexavalent Chromium	
Calibration Type	Lin	Offset (C0)	0.0000
Evaluation Type	Area	Slope (C1)	0.2528
Number of Calibration Points	6	Curve (C2)	0.0000
Number of disabled Calibration Points	0	R-Square	0.99997



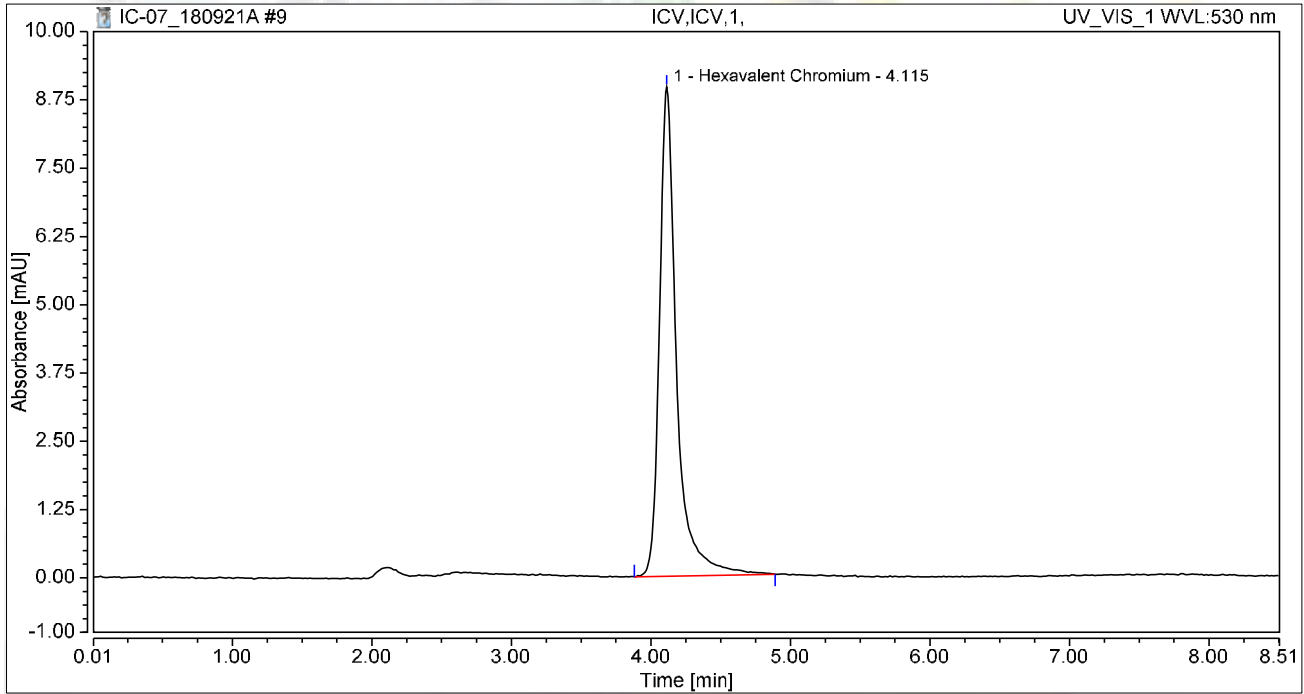
Calibration Results		Hexavalent Chromium				
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
3	STD1-0.2 ppb	01	0.2000	0.0462	0.046	0.379
4	STD2-1.0 ppb	02	1.0000	0.2400	0.240	1.724
5	STD3-5.0 ppb	03	5.0000	1.2761	1.276	8.809
6	STD4-10.0 ppb	04	10.0000	2.5253	2.525	17.564
7	STD5-15.0 ppb	05	15.0000	3.8020	3.802	26.404
8	STD6-20.0 ppb	06	20.0000	5.0460	5.046	35.157

### Chromatogram and Results

**Injection Details**

Injection Name:	ICV,ICV,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

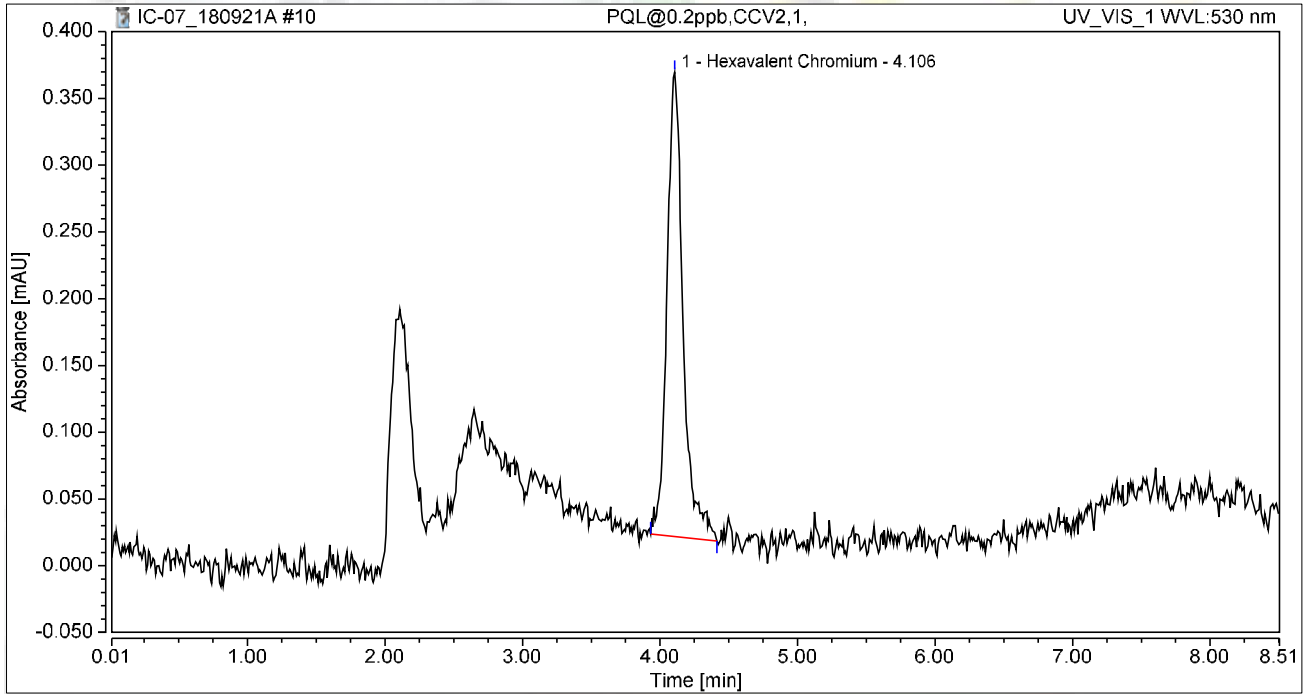
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.276	8.956	100.00	100.00	5.0467
<b>Total:</b>			<b>1.276</b>	<b>8.956</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.047	0.348	100.00	100.00	0.1865
<b>Total:</b>			<b>0.047</b>	<b>0.348</b>	<b>100.00</b>	<b>100.00</b>	

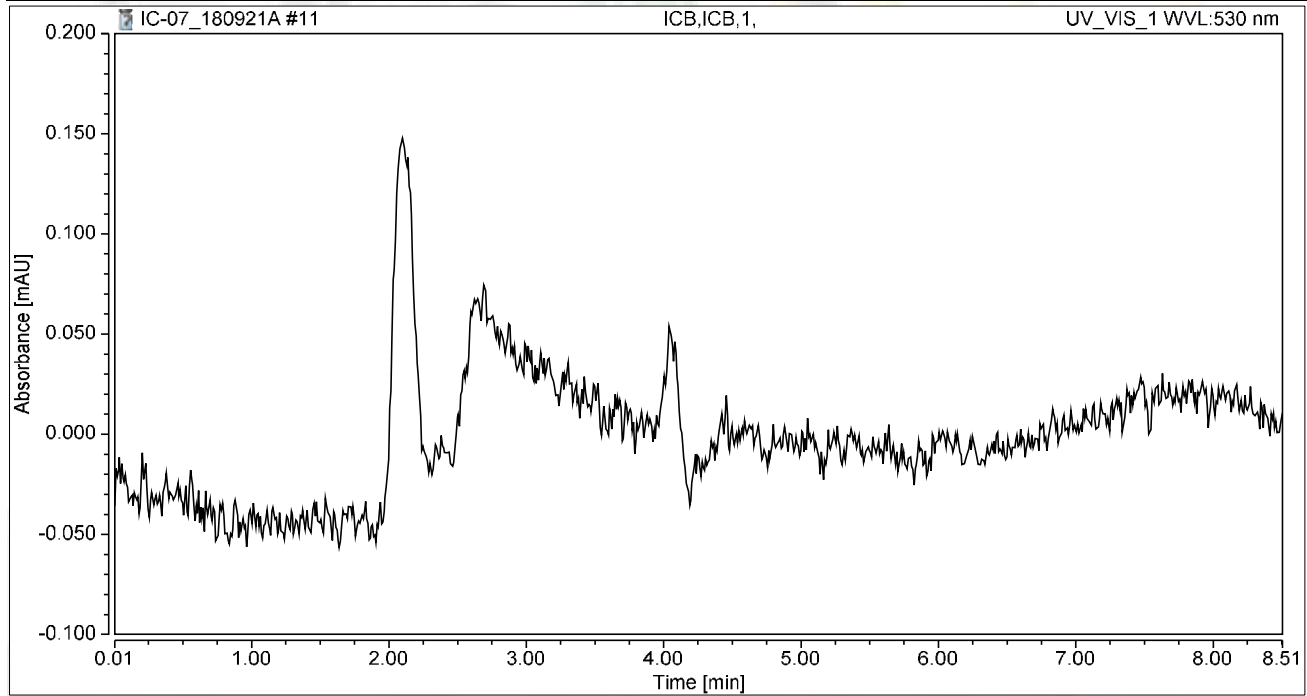


### Chromatogram and Results

**Injection Details**

Injection Name:	ICB,ICB,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436



3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

INJECTION LOG: 181010A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	10/10/18 8:49 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	10/10/18 9:00 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	10/10/18 9:09 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	10/10/18 9:19 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	10/10/18 9:28 AM	Reported
14	MB-R129199	MBLK	1	Hexavalent Chromium	10/10/18 9:37 AM	Reported
15	LCS-R129199	LCS	1	Hexavalent Chromium	10/10/18 9:47 AM	Reported
16	N032427-001A	SAMP	1	Hexavalent Chromium	10/10/18 10:00 AM	Reported
17	N032427-001AMS	MS	1	Hexavalent Chromium	10/10/18 10:11 AM	Reported
18	N032427-002A	SAMP	1	Hexavalent Chromium	10/10/18 10:20 AM	Reported
19	N032427-002AMS	MS	1	Hexavalent Chromium	10/10/18 10:29 AM	Reported
20	N032427-003A	SAMP	1	Hexavalent Chromium	10/10/18 10:39 AM	Reported
21	N032427-003AMS	MS	1	Hexavalent Chromium	10/10/18 10:49 AM	Reported
22	N032427-004A	SAMP	1	Hexavalent Chromium	10/10/18 10:58 AM	Reported
23	N032427-004AMS	MS	1	Hexavalent Chromium	10/10/18 11:07 AM	Reported
24	CCV-2	CCV1	1	Hexavalent Chromium	10/10/18 11:17 AM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	10/10/18 11:26 AM	Reported
26	N032427-005A	SAMP	1	Hexavalent Chromium	10/10/18 11:36 AM	Reported
27	N032427-005AMS	MS	1	Hexavalent Chromium	10/10/18 11:45 AM	Reported
28	N032427-006A	SAMP	1	Hexavalent Chromium	10/10/18 11:55 AM	Reported
29	N032427-006AMS	MS	1	Hexavalent Chromium	10/10/18 12:04 PM	Reported
30	N032427-007A	SAMP	1	Hexavalent Chromium	10/10/18 12:14 PM	Reported
31	N032427-007AMS	MS	1	Hexavalent Chromium	10/10/18 12:23 PM	Reported
32	N032328-001A	SAMP	1	Hexavalent Chromium	10/10/18 12:32 PM	Not Reported
33	N032328-001AMS	MS	1	Hexavalent Chromium	10/10/18 12:42 PM	Not Reported
34	N032328-003A	SAMP	1	Hexavalent Chromium	10/10/18 12:51 PM	Reported
35	N032328-003AMS	MS	1	Hexavalent Chromium	10/10/18 1:01 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	10/10/18 1:10 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	10/10/18 1:20 PM	Reported
38	N032427-003AMSD	MSD	1	Hexavalent Chromium	10/10/18 1:29 PM	Reported
39	N032328-001A	SAMP	5	Hexavalent Chromium	10/10/18 1:39 PM	Reported
40	N032328-001AMS	MS	5	Hexavalent Chromium	10/10/18 1:48 PM	Reported
41	N032328-002A	SAMP	5	Hexavalent Chromium	10/10/18 1:58 PM	Reported
42	N032328-002AMS	MS	5	Hexavalent Chromium	10/10/18 2:07 PM	Reported
43	N032328-002A	SAMP	1	Hexavalent Chromium	10/10/18 2:17 PM	Not Reported
44	N032328-002AMS	MS	1	Hexavalent Chromium	10/10/18 2:26 PM	Not Reported
45	N032425-001A	SAMP	10	Hexavalent Chromium	10/10/18 2:35 PM	Not Reported
46	N032426-001A	SAMP	1	Hexavalent Chromium	10/10/18 2:45 PM	Reported
47	N032426-001ADUP	DUP	1	Hexavalent Chromium	10/10/18 2:54 PM	Reported
48	CCV-4	CCV1	1	Hexavalent Chromium	10/10/18 3:04 PM	Reported
49	CCB-4	CCB	1	Hexavalent Chromium	10/10/18 3:13 PM	Reported

*Nancy* 10/16/2018

RBA / IC-07 10/16/2018 3:25:36 PM

*nba* 10/16/2018

**INJECTION LOG: 181010A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
50	N032426-002A	SAMP	1	Hexavalent Chromium	10/10/18 3:23 PM	Reported
51	N032426-003A	SAMP	1	Hexavalent Chromium	10/10/18 3:32 PM	Reported
52	N032428-001A	SAMP	1	Hexavalent Chromium	10/10/18 3:42 PM	Reported
53	N032428-002A	SAMP	1	Hexavalent Chromium	10/10/18 3:51 PM	Reported
54	N032428-003A	SAMP	1	Hexavalent Chromium	10/10/18 4:01 PM	Reported
55	N032428-004A	SAMP	1	Hexavalent Chromium	10/10/18 4:10 PM	Reported
56	N032428-005A	SAMP	1	Hexavalent Chromium	10/10/18 4:19 PM	Reported
57	N032428-006A	SAMP	1	Hexavalent Chromium	10/10/18 4:29 PM	Reported
58	N032425-001A	SAMP	20	Hexavalent Chromium	10/10/18 4:38 PM	Reported
59	N032426-003A	SAMP	1	Hexavalent Chromium	10/10/18 4:48 PM	Reported
60	CCV-5	CCV	1	Hexavalent Chromium	10/10/18 4:57 PM	Reported
61	CCB-5	CCB	1	Hexavalent Chromium	10/10/18 5:07 PM	Reported
62	LCS-R129186	LCS	1	Hexavalent Chromium	10/10/18 5:16 PM	Reported
63	MB-R129186	MBLK	1	Hexavalent Chromium	10/10/18 5:26 PM	Reported
64	N032429-008A	SAMP	1	Hexavalent Chromium	10/10/18 5:35 PM	Reported
65	N032429-006A	SAMP	1	Hexavalent Chromium	10/10/18 5:45 PM	Reported
66	N032429-011A	SAMP	1	Hexavalent Chromium	10/10/18 5:55 PM	Reported
67	N032429-008AMS	MS	1	Hexavalent Chromium	10/10/18 6:06 PM	Reported
68	N032429-008AMSD	MSD	1	Hexavalent Chromium	10/10/18 6:16 PM	Reported
69	N032429-006AMS	MS	1	Hexavalent Chromium	10/10/18 6:25 PM	Reported
70	N032429-011ADUP	DUP	1	Hexavalent Chromium	10/10/18 6:35 PM	Reported
71	N032428-007A	SAMP	1	Hexavalent Chromium	10/10/18 6:44 PM	Reported
72	CCV-6	CCV1	1	Hexavalent Chromium	10/10/18 6:53 PM	Reported
73	CCB-6	CCB	1	Hexavalent Chromium	10/10/18 7:03 PM	Reported
74	N032429-001A	SAMP	1	Hexavalent Chromium	10/10/18 7:12 PM	Reported
75	N032429-002A	SAMP	1	Hexavalent Chromium	10/10/18 7:22 PM	Reported
76	N032429-003A	SAMP	1	Hexavalent Chromium	10/10/18 7:31 PM	Reported
77	N032429-004A	SAMP	1	Hexavalent Chromium	10/10/18 7:41 PM	Reported
78	N032429-005A	SAMP	1	Hexavalent Chromium	10/10/18 7:50 PM	Reported
79	N032429-007A	SAMP	1	Hexavalent Chromium	10/10/18 8:00 PM	Reported
80	N032429-009A	SAMP	1	Hexavalent Chromium	10/10/18 8:09 PM	Reported
81	N032429-010A	SAMP	1	Hexavalent Chromium	10/10/18 8:19 PM	Reported
82	N032429-012A	SAMP	1	Hexavalent Chromium	10/10/18 8:28 PM	Reported
83	N032429-013A	SAMP	1	Hexavalent Chromium	10/10/18 8:38 PM	Reported
84	CCV-7	CCV	1	Hexavalent Chromium	10/10/18 8:47 PM	Reported
85	CCB-7	CCB	1	Hexavalent Chromium	10/10/18 8:56 PM	Reported
86	N032429-014A	SAMP	1	Hexavalent Chromium	10/10/18 9:06 PM	Reported
87	N032429-015A	SAMP	1	Hexavalent Chromium	10/10/18 9:15 PM	Reported
88	N032429-016A	SAMP	1	Hexavalent Chromium	10/10/18 9:25 PM	Reported
89	N032429-017A	SAMP	1	Hexavalent Chromium	10/10/18 9:34 PM	Reported
90	N032429-018A	SAMP	1	Hexavalent Chromium	10/10/18 9:44 PM	Reported
91	N032429-019A	SAMP	1	Hexavalent Chromium	10/10/18 9:53 PM	Reported
92	MB-3	MBLK	1	Hexavalent Chromium	10/10/18 10:03 PM	Not Reported
93	LCS-3	LCS	1	Hexavalent Chromium	10/10/18 10:12 PM	Not Reported
94	N032303-002A	SAMP	1	Hexavalent Chromium	10/10/18 10:22 PM	Not Reported
95	N032303-002AMS	MS	1	Hexavalent Chromium	10/10/18 10:31 PM	Not Reported
96	CCV-8	CCV1	1	Hexavalent Chromium	10/10/18 10:41 PM	Reported
97	CCB-8	CCB	1	Hexavalent Chromium	10/10/18 10:50 PM	Reported
98	N032304-005A	SAMP	1	Hexavalent Chromium	10/10/18 11:00 PM	Not Reported

**INJECTION LOG: 181010A****Instrument ID: IC-07**

<b>Sample No</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Peak Name</b>	<b>Injection Date/Time</b>	<b>Comments</b>
99	N032304-005AMS	MS	1	Hexavalent Chromium	10/10/18 11:09 PM	Not Reported
100	N032304-006A	SAMP	1	Hexavalent Chromium	10/10/18 11:18 PM	Not Reported
101	N032304-006AMS	MS	1	Hexavalent Chromium	10/10/18 11:28 PM	Not Reported
102	N032304-007A	SAMP	1	Hexavalent Chromium	10/10/18 11:37 PM	Not Reported
103	N032304-007AMS	MS	1	Hexavalent Chromium	10/10/18 11:47 PM	Not Reported
104	N032304-012A	SAMP	1	Hexavalent Chromium	10/10/18 11:56 PM	Not Reported
105	N032304-012AMS	MS	1	Hexavalent Chromium	10/11/18 12:06 AM	Not Reported
106	N032303-002ADUP	DUP	1	Hexavalent Chromium	10/11/18 12:15 AM	Not Reported
107	N032304-006AMSD	MSD	1	Hexavalent Chromium	10/11/18 12:25 AM	Not Reported
108	CCV-9	CCV	1	Hexavalent Chromium	10/11/18 12:34 AM	Not Reported
109	CCB-9	CCB	1	Hexavalent Chromium	10/11/18 12:44 AM	Not Reported

### Injection Log Summary

**Sequence Details**

Name:	IC-07_181010A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	11/Oct/18 01:14:22
No. of Injections:	112	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	BLANK	1	1000	Unknown		10/10/2018 08:49	Finished	BLANK
10	BLANK	2	1000	Unknown		10/10/2018 09:00	Finished	BLANK
11	CCV-1.CCV,1,	3	1000	Unknown		10/10/2018 09:09	Finished	CCV @5ppb, IWST-180622A
12	PQL@0.2ppb,CCV2,	4	1000	Unknown		10/10/2018 09:19	Finished	PQL @ 0.2ppb
13	CCB-1.CCB,1,	5	1000	Unknown		10/10/2018 09:28	Finished	CCB R181002B
14	MB-H2O.MBLK,1,	6	1000	Unknown		10/10/2018 09:37	Finished	MB R181002B
15	LCS-H2O.LCS,1,	7	1000	Unknown		10/10/2018 09:47	Finished	LCS @5ppb, IWST-180622B
16	N032427-001A,SAMP	1	1000	Unknown		10/10/2018 10:00	Finished	SAMP,10mL
17	N032427-001AMS,MS	2	1000	Unknown		10/10/2018 10:11	Finished	MS (1ppb), IWST-180622B,10
18	N032427-002A,SAMP	3	1000	Unknown		10/10/2018 10:20	Finished	SAMP,10mL
19	N032427-002AMS,MS	4	1000	Unknown		10/10/2018 10:29	Finished	MS (1ppb), IWST-180622B,10
20	N032427-003A,SAMP	5	1000	Unknown		10/10/2018 10:39	Finished	SAMP,10mL
21	N032427-003AMS,MS	6	1000	Unknown		10/10/2018 10:49	Finished	MS (1ppb), IWST-180622B,10
22	N032427-004A,SAMP	7	1000	Unknown		10/10/2018 10:58	Finished	SAMP,10mL
23	N032427-004AMS,MS	8	1000	Unknown		10/10/2018 11:07	Finished	MS (1ppb), IWST-180622B,10
24	CCV-2.CCV1,1,	9	1000	Unknown		10/10/2018 11:17	Finished	CCV @10ppb, IWST-180622A
25	CCB-2.CCB,1,	10	1000	Unknown		10/10/2018 11:26	Finished	CCB R181002B
26	N032427-005A,SAMP	11	1000	Unknown		10/10/2018 11:36	Finished	SAMP,10mL
27	N032427-005AMS,MS	12	1000	Unknown		10/10/2018 11:45	Finished	MS (1ppb), IWST-180622B,10
28	N032427-006A,SAMP	13	1000	Unknown		10/10/2018 11:55	Finished	SAMP,10mL
29	N032427-006AMS,MS	14	1000	Unknown		10/10/2018 12:04	Finished	MS (1ppb), IWST-180622B,10
30	N032427-007A,SAMP	15	1000	Unknown		10/10/2018 12:14	Finished	SAMP,10mL
31	N032427-007AMS,MS	16	1000	Unknown		10/10/2018 12:23	Finished	MS (1ppb), IWST-180622B,10
32	N032328-001A,SAMP	17	1000	Unknown		10/10/2018 12:32	Finished	SAMP,10mL
33	N032328-001AMS,MS	18	1000	Unknown		10/10/2018 12:42	Finished	MS (1ppb), IWST-180622B,10
34	N032328-003A,SAMP	19	1000	Unknown		10/10/2018 12:51	Finished	SAMP,10mL
35	N032328-003AMS,MS	20	1000	Unknown		10/10/2018 13:01	Finished	MS (1ppb), IWST-180622B,10
36	CCV-3.CCV,1,	21	1000	Unknown		10/10/2018 13:10	Finished	CCV @5ppb, IWST-180622A
37	CCB-3.CCB,1,	22	1000	Unknown		10/10/2018 13:20	Finished	CCB R181002B
38	N032427-003AMS,MS	23	1000	Unknown		10/10/2018 13:29	Finished	MSD (1ppb), IWST-180622B,10
39	N032328-001A,SAMP	24	1000	Unknown		10/10/2018 13:39	Finished	SAMP,2>10mL
40	N032328-001AMS,MS	25	1000	Unknown		10/10/2018 13:48	Finished	MS (1ppb), IWST-180622B,10
41	N032328-002A,SAMP	26	1000	Unknown		10/10/2018 13:58	Finished	SAMP,2>10mL
42	N032328-002AMS,MS	27	1000	Unknown		10/10/2018 14:07	Finished	MS (1ppb), IWST-180622B,10
43	N032328-002A,SAMP	28	1000	Unknown		10/10/2018 14:17	Finished	SAMP,10mL
44	N032328-002AMS,MS	29	1000	Unknown		10/10/2018 14:26	Finished	MS (1ppb), IWST-180622B,10
45	N032425-001A,SAMP	30	1000	Unknown		10/10/2018 14:35	Finished	SAMP,1>10mL
46	N032426-001A,SAMP	31	1000	Unknown		10/10/2018 14:45	Finished	SAMP,10mL
47	N032426-001ADUP,D	32	1000	Unknown		10/10/2018 14:54	Finished	DUP,10mL
48	CCV-4.CCV1,1,	33	1000	Unknown		10/10/2018 15:04	Finished	CCV @10ppb, IWST-180622A
49	CCB-4.CCB,1,	34	1000	Unknown		10/10/2018 15:13	Finished	CCB R181002B
50	N032426-002A,SAMP	35	1000	Unknown		10/10/2018 15:23	Finished	SAMP,10mL
51	N032426-003A,SAMP	36	1000	Unknown		10/10/2018 15:32	Finished	SAMP,10mL
52	N032428-001A,SAMP	37	1000	Unknown		10/10/2018 15:42	Finished	SAMP,10mL
53	N032428-002A,SAMP	38	1000	Unknown		10/10/2018 15:51	Finished	SAMP,10mL
54	N032428-003A,SAMP	39	1000	Unknown		10/10/2018 16:01	Finished	SAMP,10mL
55	N032428-004A,SAMP	40	1000	Unknown		10/10/2018 16:10	Finished	SAMP,10mL
56	N032428-005A,SAMP	41	1000	Unknown		10/10/2018 16:19	Finished	SAMP,10mL
57	N032428-006A,SAMP	42	1000	Unknown		10/10/2018 16:29	Finished	SAMP,10mL
58	N032425-001A,SAMP	43	1000	Unknown		10/10/2018 16:38	Finished	SAMP,0.5>10mL
59	N032426-003A,SAMP	44	1000	Unknown		10/10/2018 16:48	Finished	SAMP,0.5>10mL
60	CCV-5.CCV,1,	45	1000	Unknown		10/10/2018 16:57	Finished	CCV @5ppb, IWST-180622A

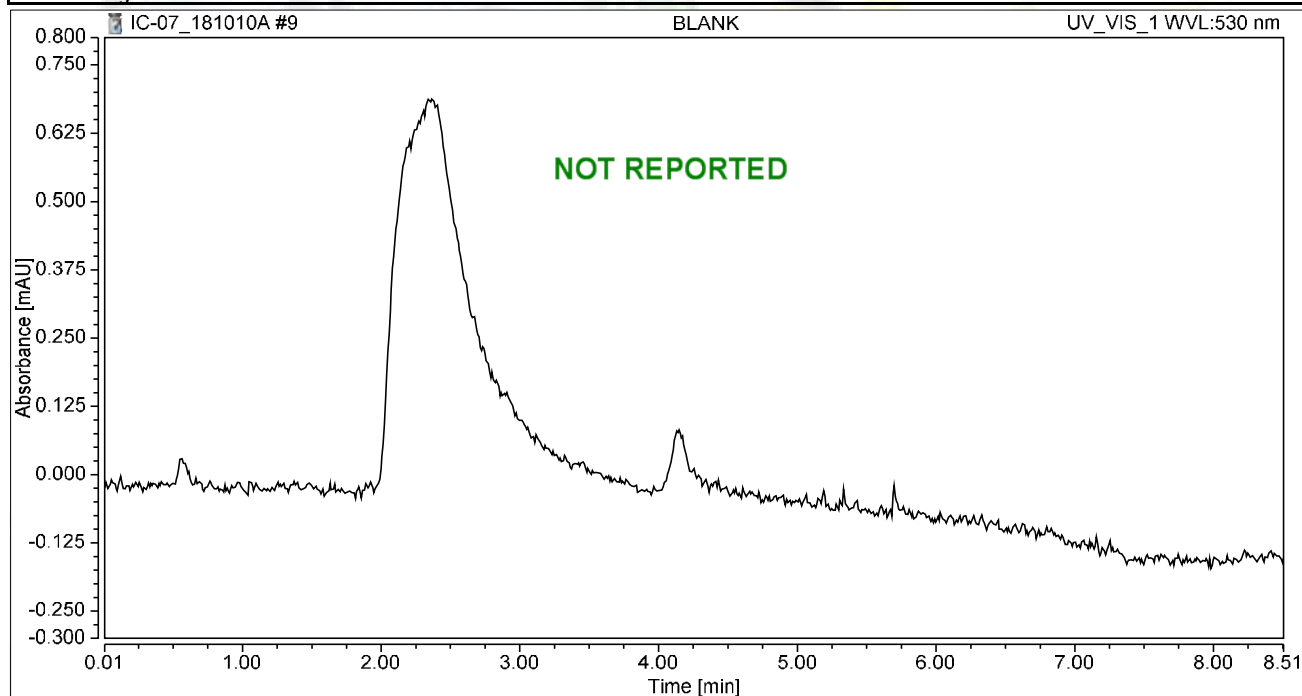
61	CCB-5.CCB,1,	46	1000	Unknown	10/10/2018 17:07	Finished	CCB R181002B
62	LCS-2.LCS,1,	47	1000	Unknown	10/10/2018 17:16	Finished	LCS @5ppb, IWST-180622B
63	MB-2.MBLK,1,	48	1000	Unknown	10/10/2018 17:26	Finished	MB R181002B
64	N032429-008A,SAMF	49	1000	Unknown	10/10/2018 17:35	Finished	SAMP,10mL
65	N032429-006A,SAMF	50	1000	Unknown	10/10/2018 17:45	Finished	SAMP,10mL
66	N032429-011A,SAMF	1	1000	Unknown	10/10/2018 17:55	Finished	SAMP,10mL
67	N032429-008AMS,MS	2	1000	Unknown	10/10/2018 18:06	Finished	MS (5ppb), IWST-180622B,10
68	N032429-008AMSD,N	3	1000	Unknown	10/10/2018 18:16	Finished	MSD (5ppb), IWST-180622B,10
69	N032429-006AMS,MS	4	1000	Unknown	10/10/2018 18:25	Finished	MS (5ppb), IWST-180622B,10
70	N032429-011ADUP,D	5	1000	Unknown	10/10/2018 18:35	Finished	DUP,10mL
71	N032428-007A,SAMF	6	1000	Unknown	10/10/2018 18:44	Finished	SAMP,10mL
72	CCV-6.CCV1,1,	7	1000	Unknown	10/10/2018 18:53	Finished	CCV @10ppb, IWST-180622A
73	CCB-6.CCB,1,	8	1000	Unknown	10/10/2018 19:03	Finished	CCB R181002B
74	N032429-001A,SAMF	9	1000	Unknown	10/10/2018 19:12	Finished	SAMP,10mL
75	N032429-002A,SAMF	10	1000	Unknown	10/10/2018 19:22	Finished	SAMP,10mL
76	N032429-003A,SAMF	11	1000	Unknown	10/10/2018 19:31	Finished	SAMP,10mL
77	N032429-004A,SAMF	12	1000	Unknown	10/10/2018 19:41	Finished	SAMP,10mL
78	N032429-005A,SAMF	13	1000	Unknown	10/10/2018 19:50	Finished	SAMP,10mL
79	N032429-007A,SAMF	14	1000	Unknown	10/10/2018 20:00	Finished	SAMP,10mL
80	N032429-009A,SAMF	15	1000	Unknown	10/10/2018 20:09	Finished	SAMP,10mL
81	N032429-010A,SAMF	16	1000	Unknown	10/10/2018 20:19	Finished	SAMP,10mL
82	N032429-012A,SAMF	17	1000	Unknown	10/10/2018 20:28	Finished	SAMP,10mL
83	N032429-013A,SAMF	18	1000	Unknown	10/10/2018 20:38	Finished	SAMP,10mL
84	CCV-7.CCV,1,	19	1000	Unknown	10/10/2018 20:47	Finished	CCV @5ppb, IWST-180622A
85	CCB-7.CCB,1,	20	1000	Unknown	10/10/2018 20:56	Finished	CCB R181002B
86	N032429-014A,SAMF	21	1000	Unknown	10/10/2018 21:06	Finished	SAMP,10mL
87	N032429-015A,SAMF	22	1000	Unknown	10/10/2018 21:15	Finished	SAMP,10mL
88	N032429-016A,SAMF	23	1000	Unknown	10/10/2018 21:25	Finished	SAMP,10mL
89	N032429-017A,SAMF	24	1000	Unknown	10/10/2018 21:34	Finished	SAMP,10mL
90	N032429-018A,SAMF	25	1000	Unknown	10/10/2018 21:44	Finished	SAMP,10mL
91	N032429-019A,SAMF	26	1000	Unknown	10/10/2018 21:53	Finished	SAMP,10mL
92	MB-3.MBLK,1,	27	1000	Unknown	10/10/2018 22:03	Finished	MB R181002B
93	LCS-3.LCS,1,	28	1000	Unknown	10/10/2018 22:12	Finished	LCS @5ppb, IWST-180622B
94	N032303-002A,SAMF	29	1000	Unknown	10/10/2018 22:22	Finished	SAMP,10mL
95	N032303-002AMS,MS	30	1000	Unknown	10/10/2018 22:31	Finished	MS (5ppb), IWST-180622B,10
96	CCV-8.CCV1,1,	31	1000	Unknown	10/10/2018 22:41	Finished	CCV @10ppb, IWST-180622A
97	CCB-8.CCB,1,	32	1000	Unknown	10/10/2018 22:50	Finished	CCB R181002B
98	N032304-005A,SAMF	33	1000	Unknown	10/10/2018 23:00	Finished	SAMP,10mL
99	N032304-005AMS,MS	34	1000	Unknown	10/10/2018 23:09	Finished	MS (5ppb), IWST-180622B,10
100	N032304-006A,SAMF	35	1000	Unknown	10/10/2018 23:18	Finished	SAMP,10mL
101	N032304-006AMS,MS	36	1000	Unknown	10/10/2018 23:28	Finished	MS (5ppb), IWST-180622B,10
102	N032304-007A,SAMF	37	1000	Unknown	10/10/2018 23:37	Finished	SAMP,10mL
103	N032304-007AMS,MS	38	1000	Unknown	10/10/2018 23:47	Finished	MS (5ppb), IWST-180622B,10
104	N032304-012A,SAMF	39	1000	Unknown	10/10/2018 23:56	Finished	SAMP,10mL
105	N032304-012AMS,MS	40	1000	Unknown	10/11/2018 00:06	Finished	MS (5ppb), IWST-180622B,10
106	N032303-002ADUP,D	41	1000	Unknown	10/11/2018 00:15	Finished	DUP,10mL
107	N032304-006AMSD,N	42	1000	Unknown	10/11/2018 00:25	Finished	MSD (5ppb), IWST-180622B,10
108	CCV-9.CCV,1,	43	1000	Unknown	10/11/2018 00:34	Finished	CCV @5ppb, IWST-180622A
109	CCB-9.CCB,1,	44	1000	Unknown	10/11/2018 00:44	Finished	CCB R181002B
110	SHUTDOWN	45	1000	Unknown	10/11/2018 00:53	Finished	
111	Eluent: R181009A	46	1000	Unknown	n.a.	Finished	Eluent
112	PCR: R181009B	47	1000	Unknown	n.a.	Finished	Post-Column Reagent

### Chromatogram and Results

**Injection Details**

Injection Name:	<b>BLANK</b>	Run Time (min):	<b>8.50</b>
Vial Number:	<b>1</b>	Injection Volume:	<b>1000.00</b>
Injection Type:	<b>Unknown</b>	Channel:	<b>UV_VIS_1</b>
Calibration Level:		Wavelength:	<b>530.0</b>
Instrument Method:	<b>Hex Chrom 4 mm</b>	Bandwidth:	<b>n.a.</b>
Processing Method:	<b>180921_IC-07_Cr6_218_6_HIGH</b>	Dilution Factor:	<b>1.0000</b>
Injection Date/Time:	<b>10/Oct/18 08:49</b>	Sample Weight:	<b>1.0000</b>

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

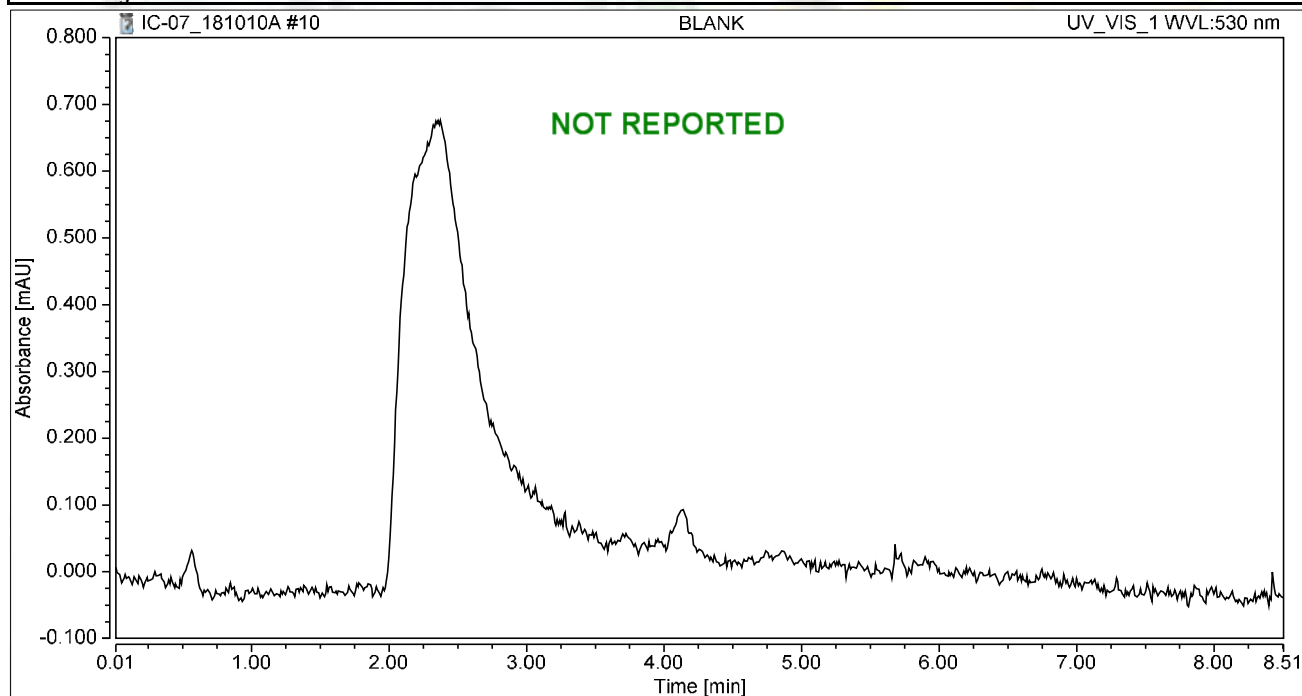


### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.49
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 09:00	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

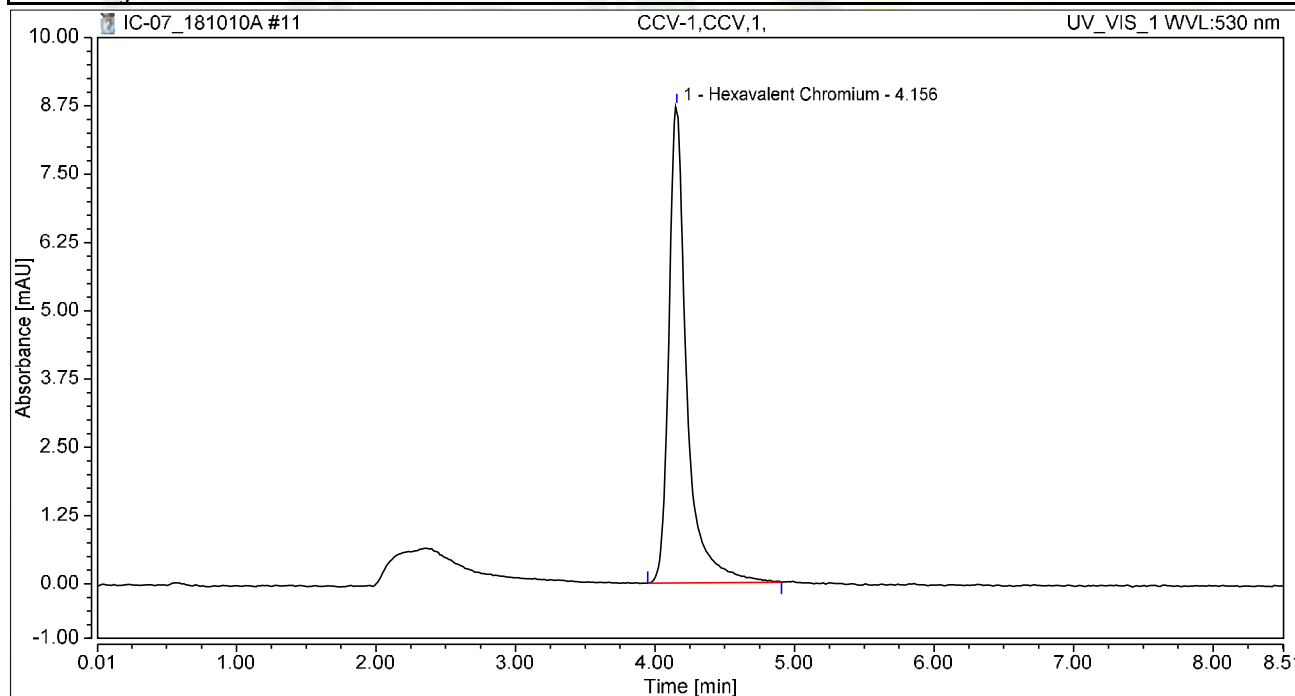
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-1,CCV,1,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 09:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

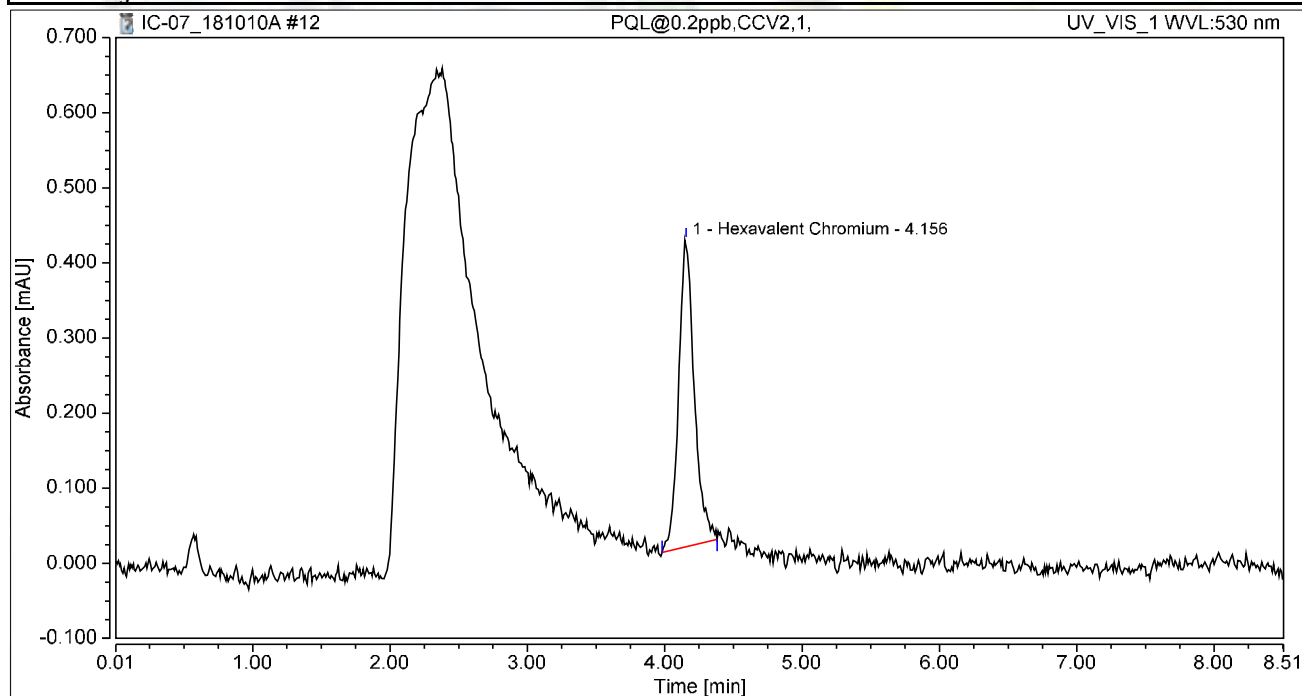
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.156	1.299	8.736	100.00	100.00	5.1374
<b>Total:</b>			<b>1.299</b>	<b>8.736</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 09:19	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

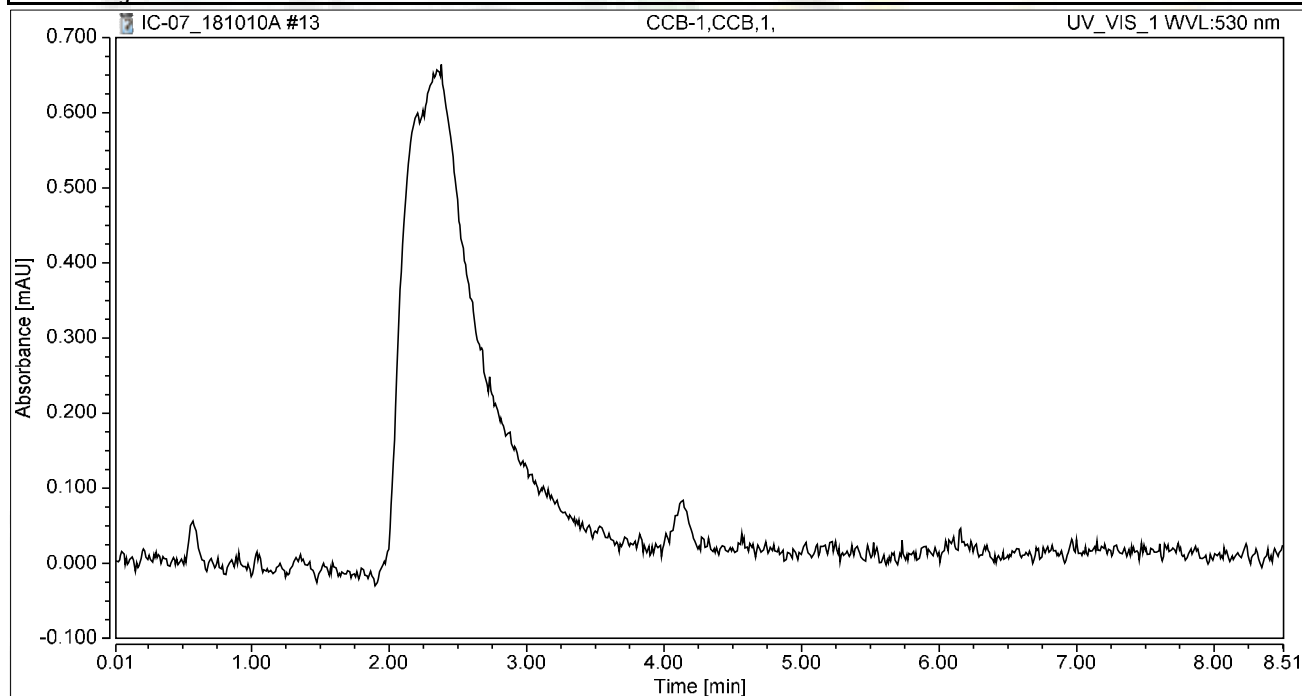
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.156	0.054	0.409	100.00	100.00	0.2139
<b>Total:</b>			<b>0.054</b>	<b>0.409</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-1,CCB,1,	Run Time (min):	8.49
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 09:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

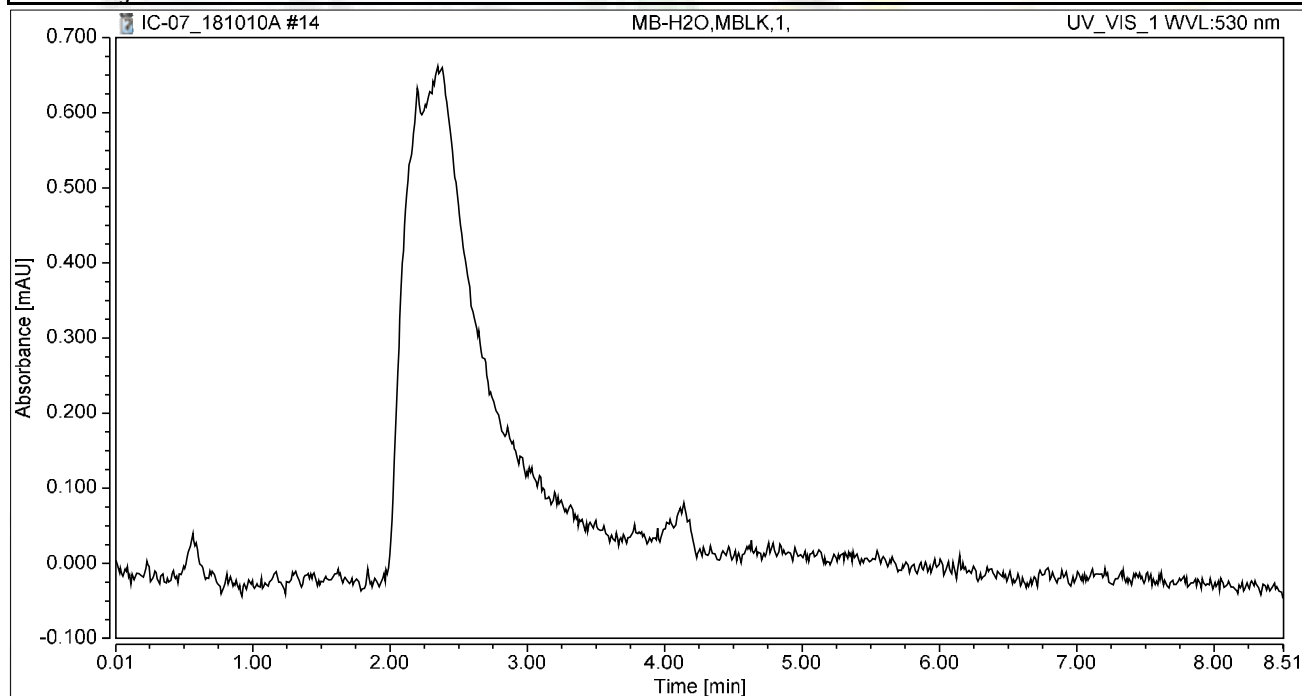
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	MB-H2O,MBLK,1,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 09:37	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

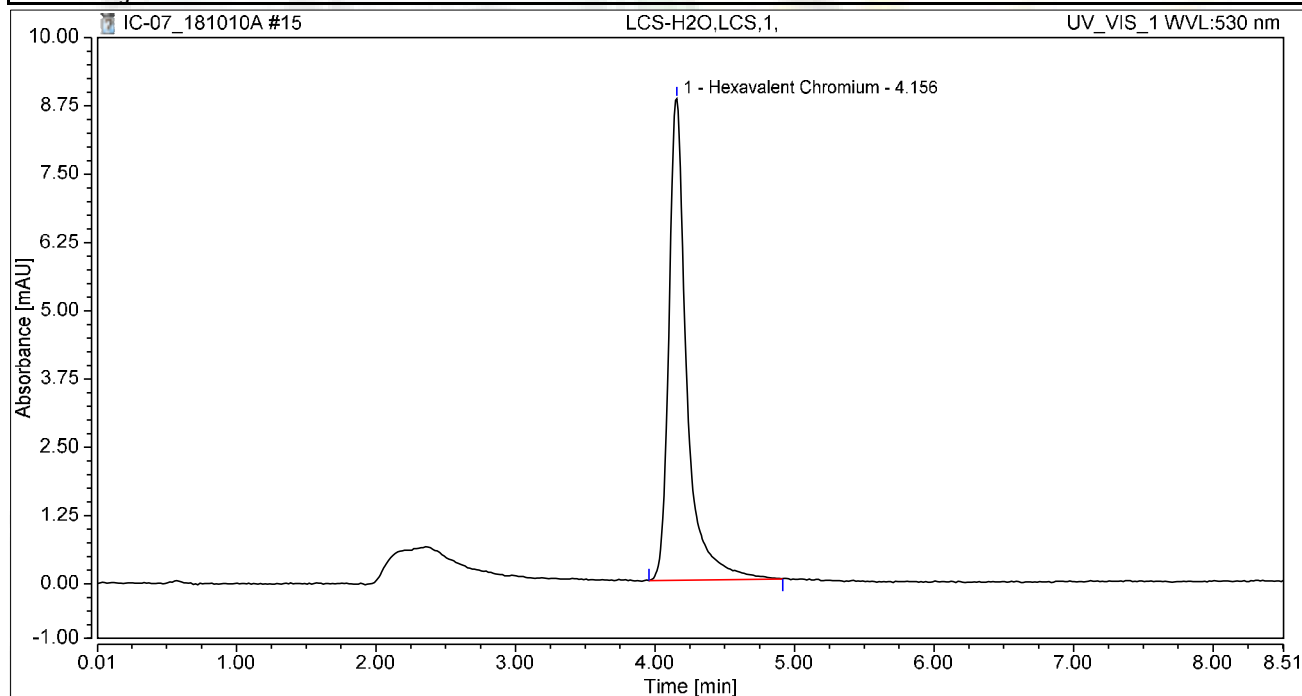
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	LCS-H2O,LCS,1,	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 09:47	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

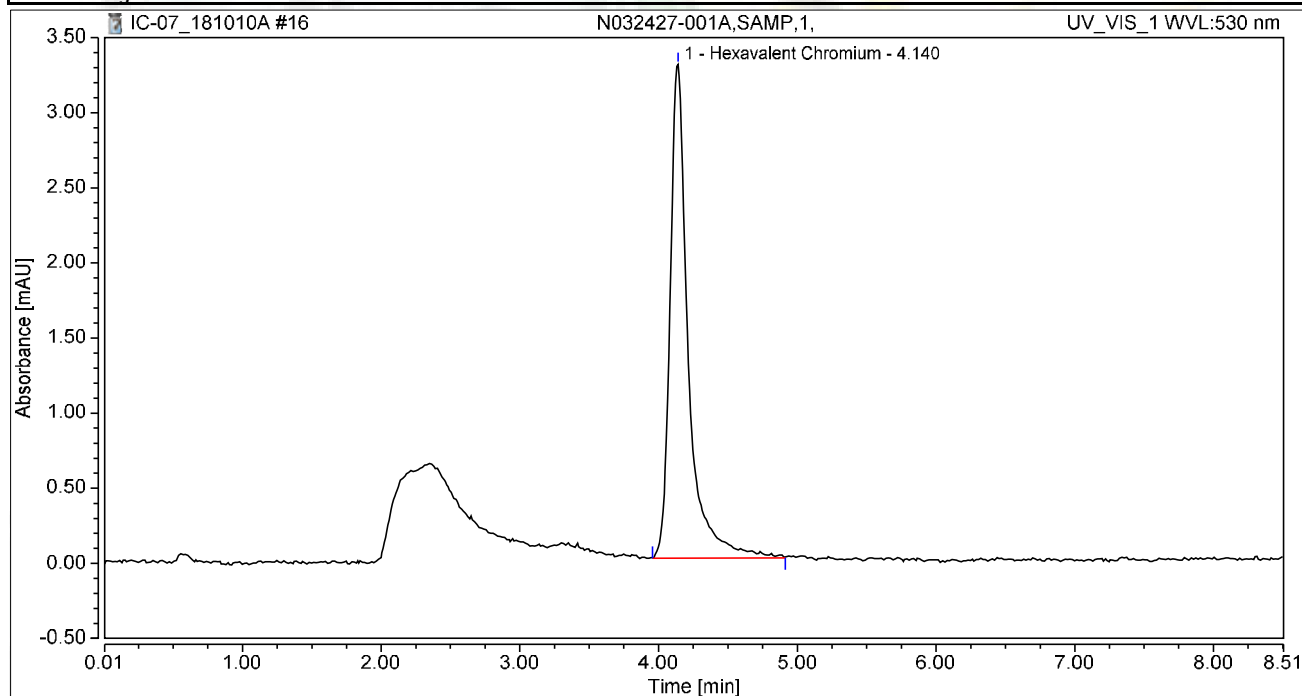
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.156	1.314	8.819	100.00	100.00	5.1967
<b>Total:</b>			<b>1.314</b>	<b>8.819</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032427-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 10:00	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

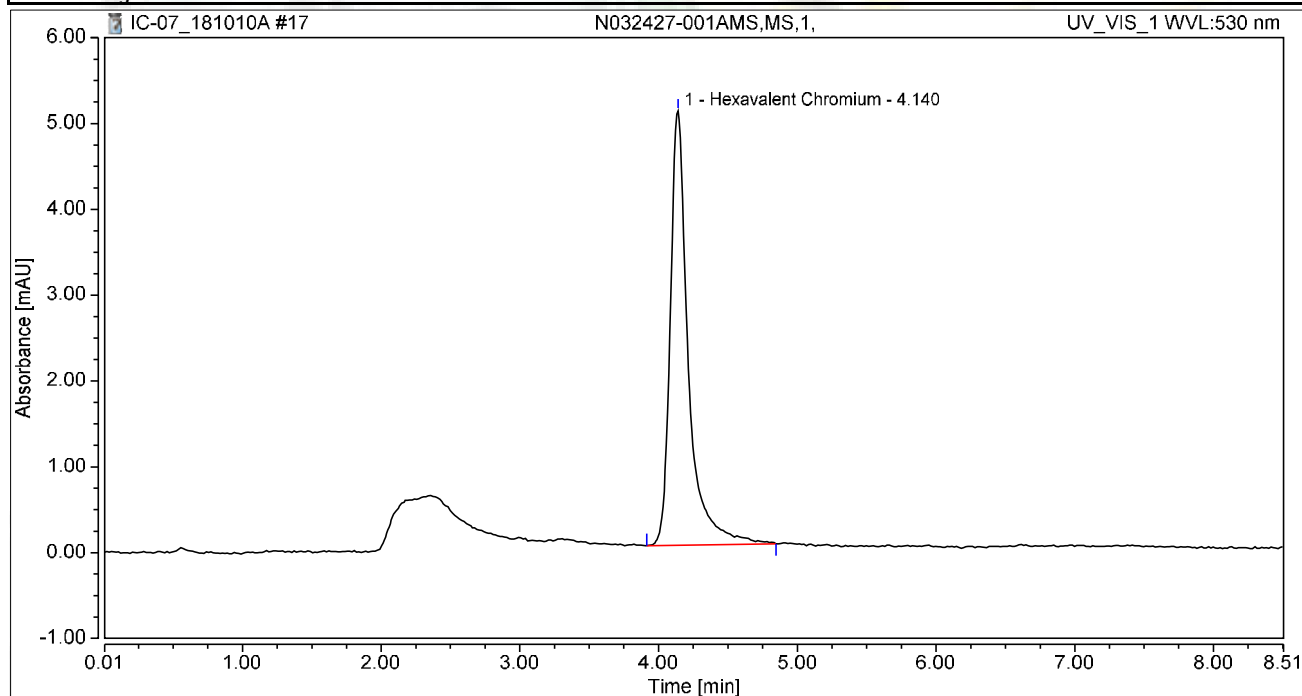
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	0.500	3.286	100.00	100.00	1.9778
<b>Total:</b>			<b>0.500</b>	<b>3.286</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032427-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 10:11	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	0.766	5.061	100.00	100.00	3.0306
<b>Total:</b>			<b>0.766</b>	<b>5.061</b>	<b>100.00</b>	<b>100.00</b>	

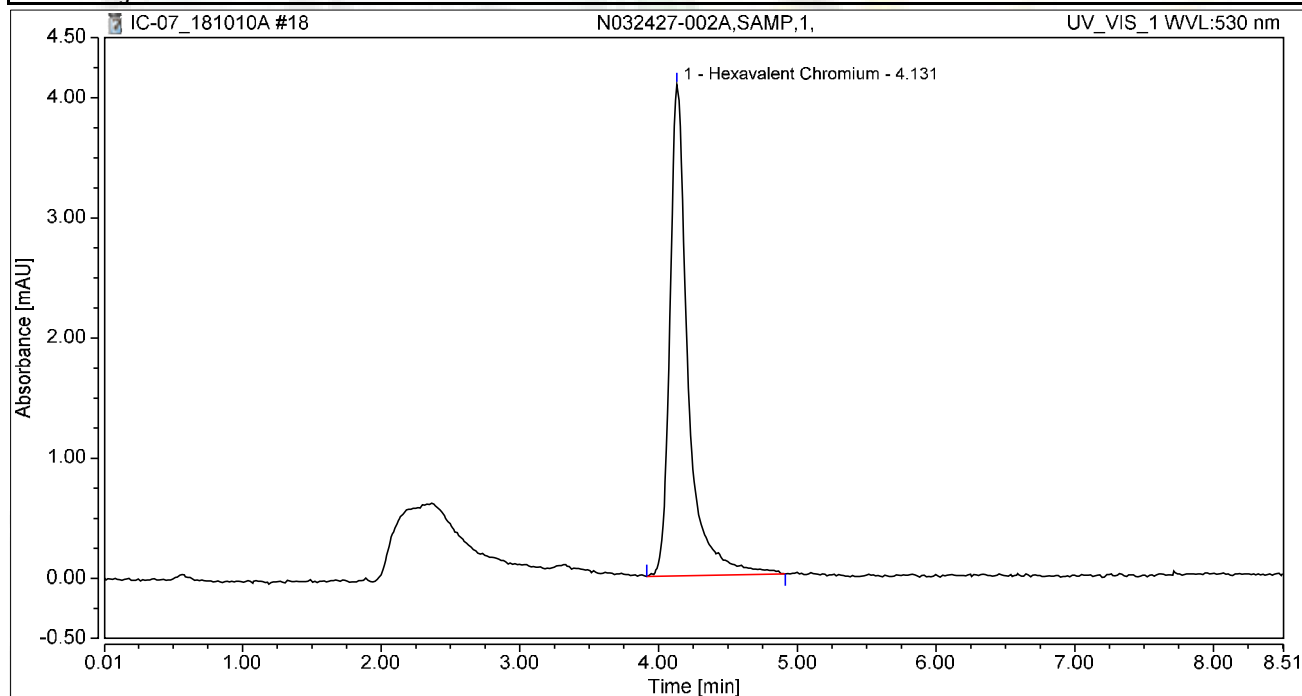


### Chromatogram and Results

**Injection Details**

Injection Name:	N032427-002A,SAMP,1,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 10:20	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

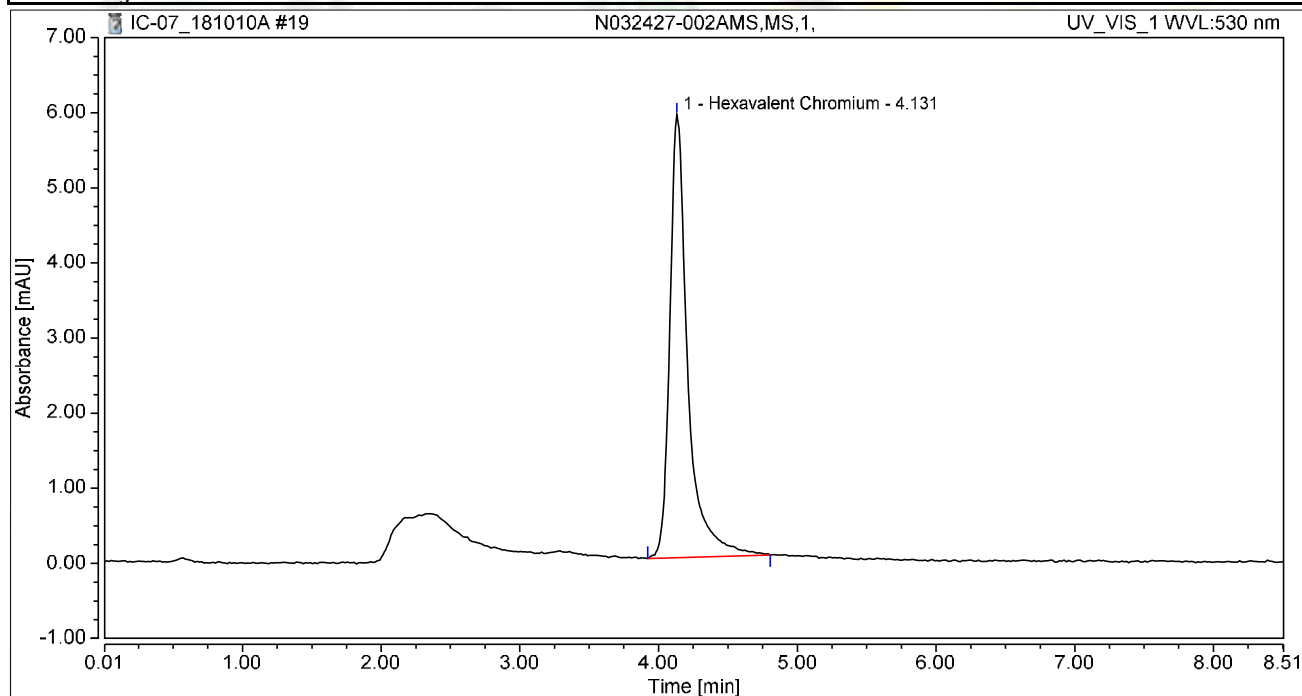
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.622	4.087	100.00	100.00	2.4624
<b>Total:</b>			<b>0.622</b>	<b>4.087</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032427-002AMS,MS,1,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 10:29	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

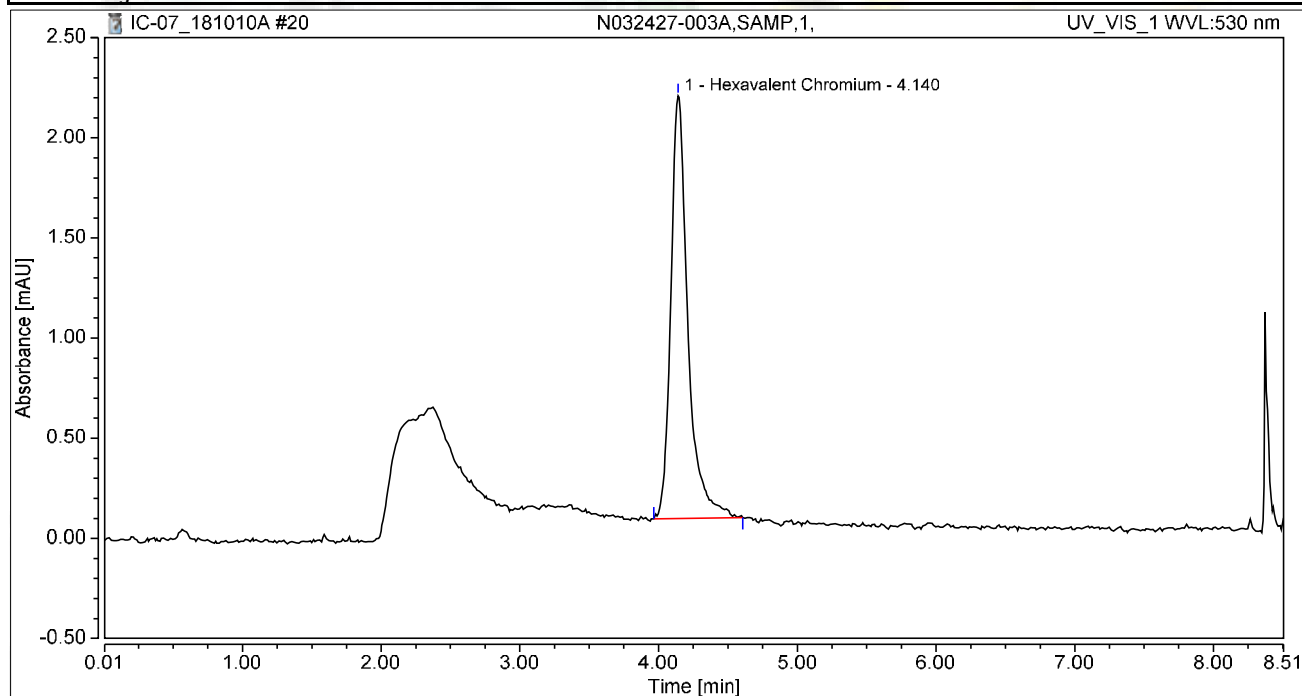
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.886	5.894	100.00	100.00	3.5069
<b>Total:</b>			<b>0.886</b>	<b>5.894</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032427-003A,SAMP,1,	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 10:39	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

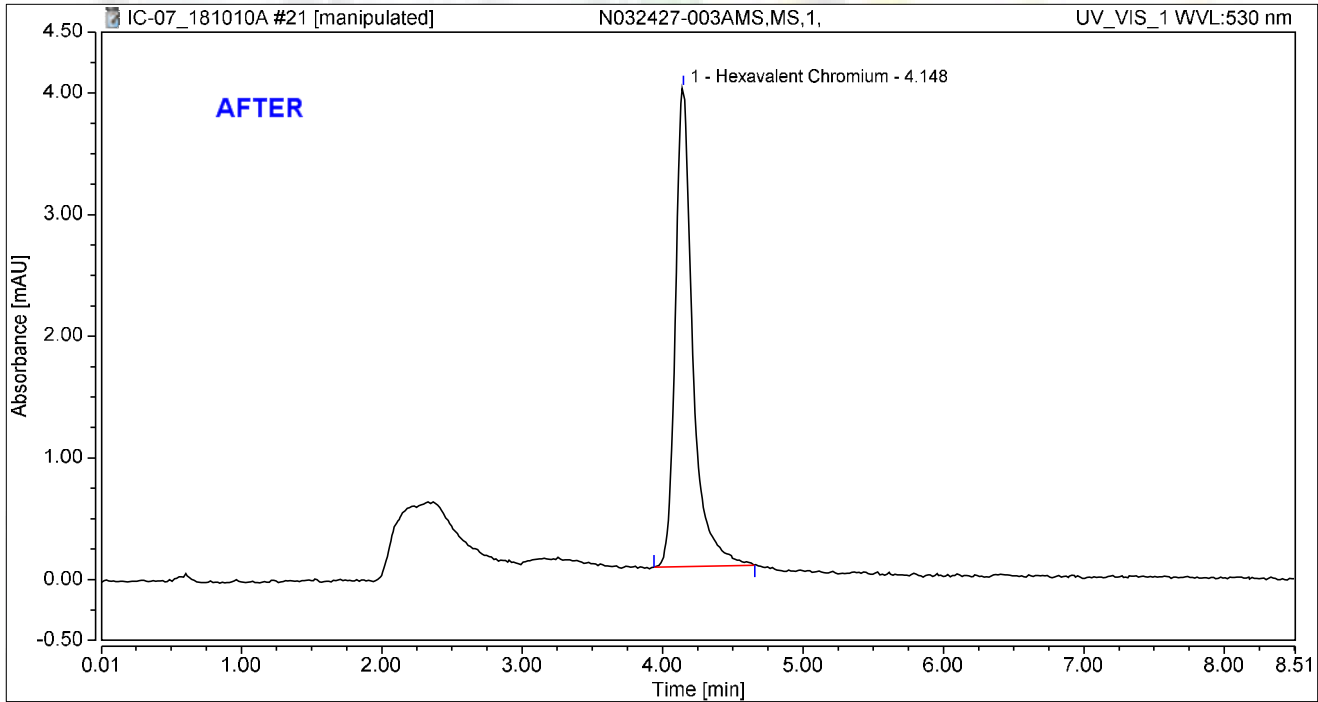
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	0.301	2.111	100.00	100.00	1.1914
<b>Total:</b>			<b>0.301</b>	<b>2.111</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032427-003AMS,MS,1,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 10:49	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	0.568	3.936	100.00	100.00	2.2459
<b>Total:</b>			<b>0.568</b>	<b>3.936</b>	<b>100.00</b>	<b>100.00</b>	

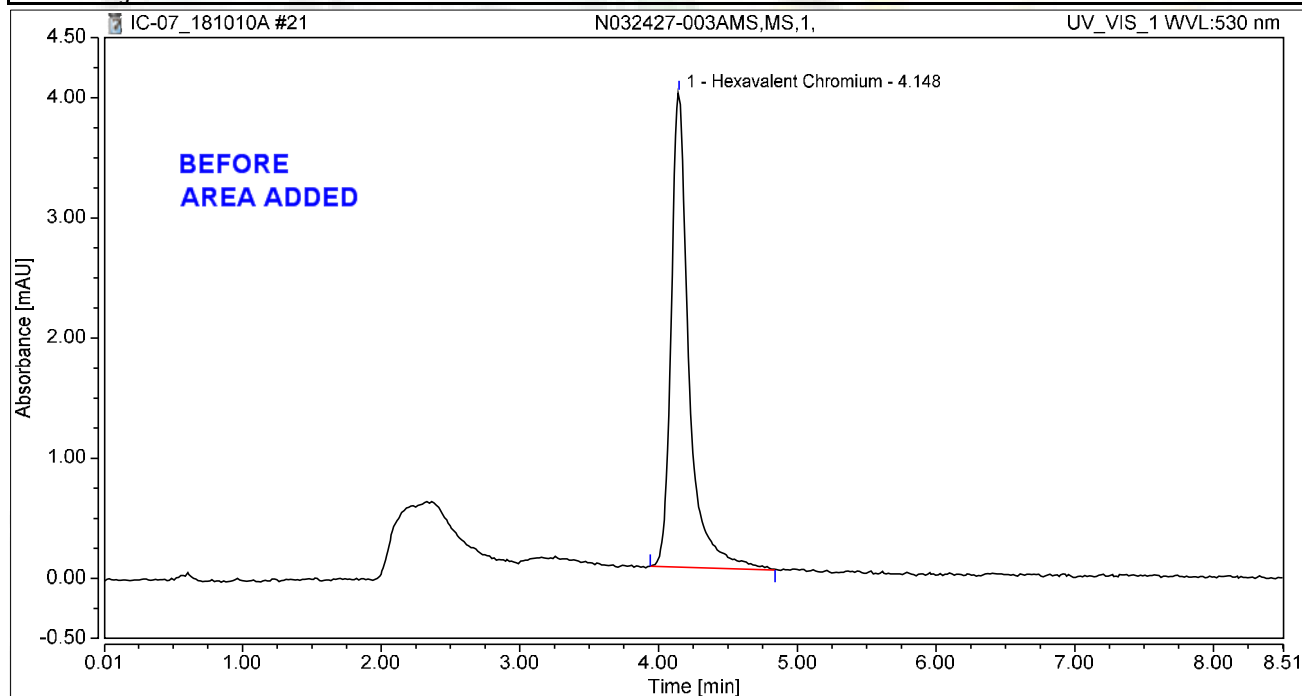
rba 10/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032427-003AMS,MS,1,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 10:49	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	0.588	3.948	100.00	100.00	2.3253
<b>Total:</b>			<b>0.588</b>	<b>3.948</b>	<b>100.00</b>	<b>100.00</b>	

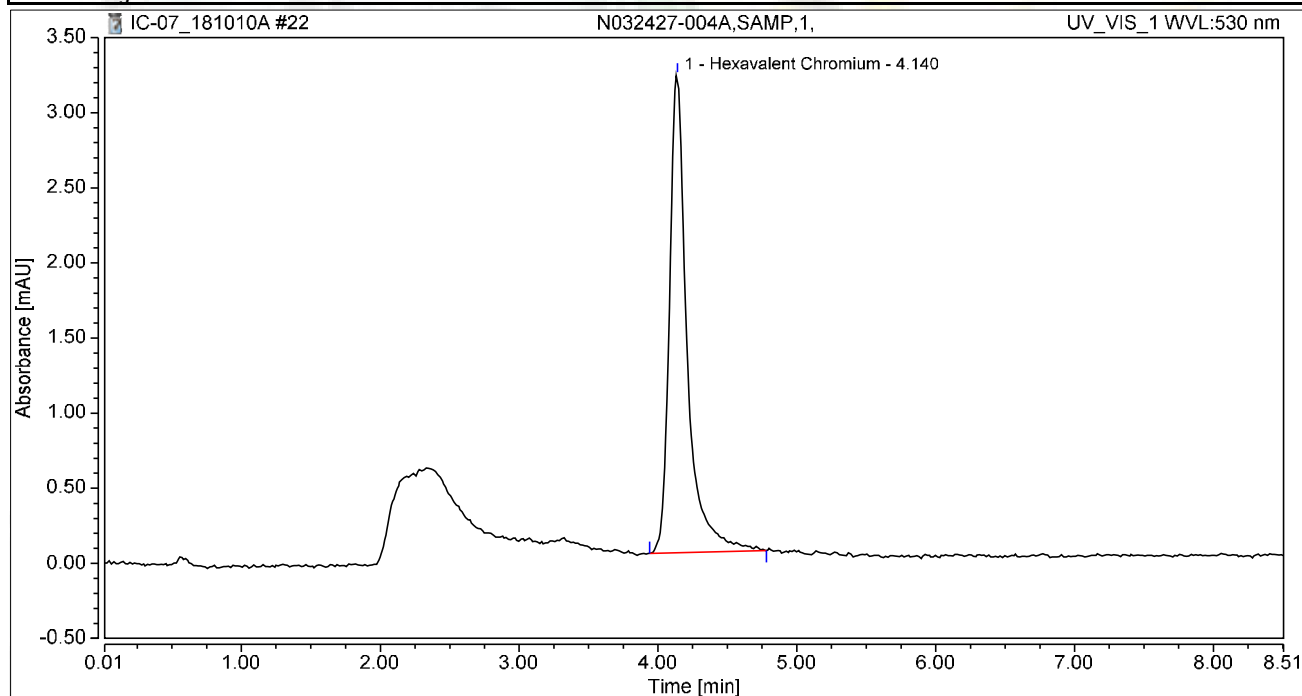
rba 10/16/2018

### Chromatogram and Results

#### Injection Details

Injection Name:	N032427-004A,SAMP,1,	Run Time (min):	8.49
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 10:58	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

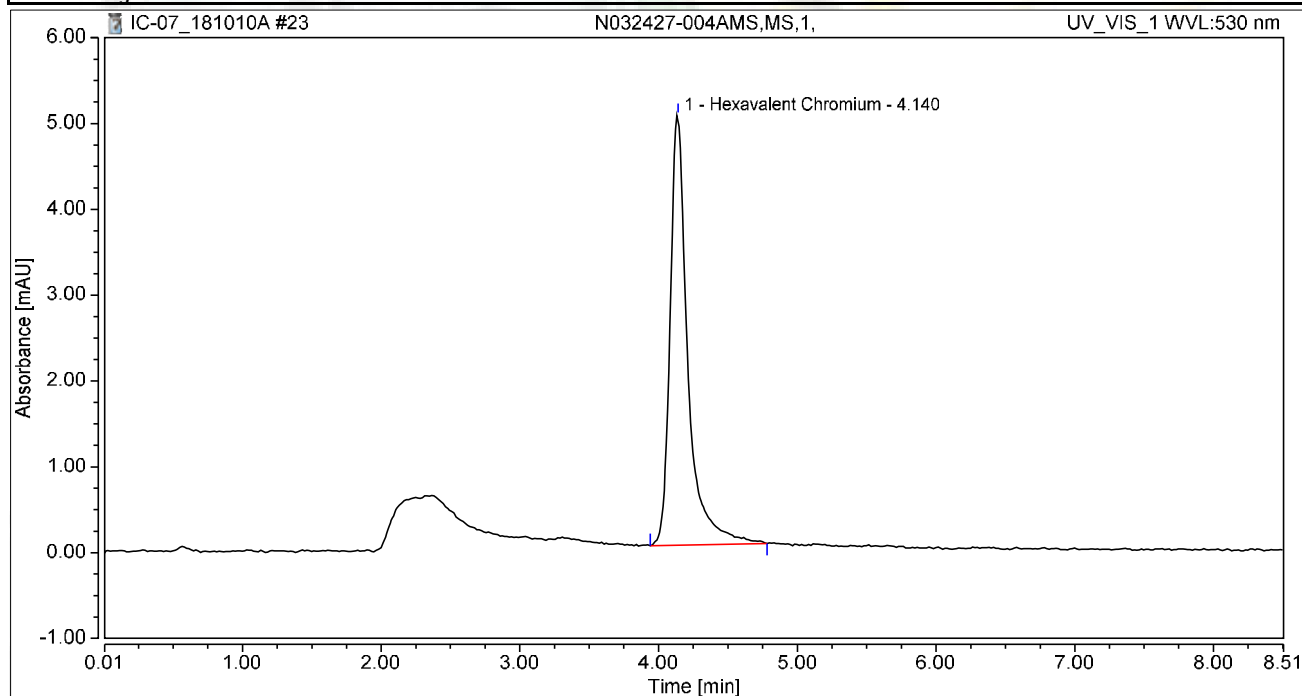
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	0.471	3.181	100.00	100.00	1.8630
<b>Total:</b>			<b>0.471</b>	<b>3.181</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032427-004AMS,MS,1,	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 11:07	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

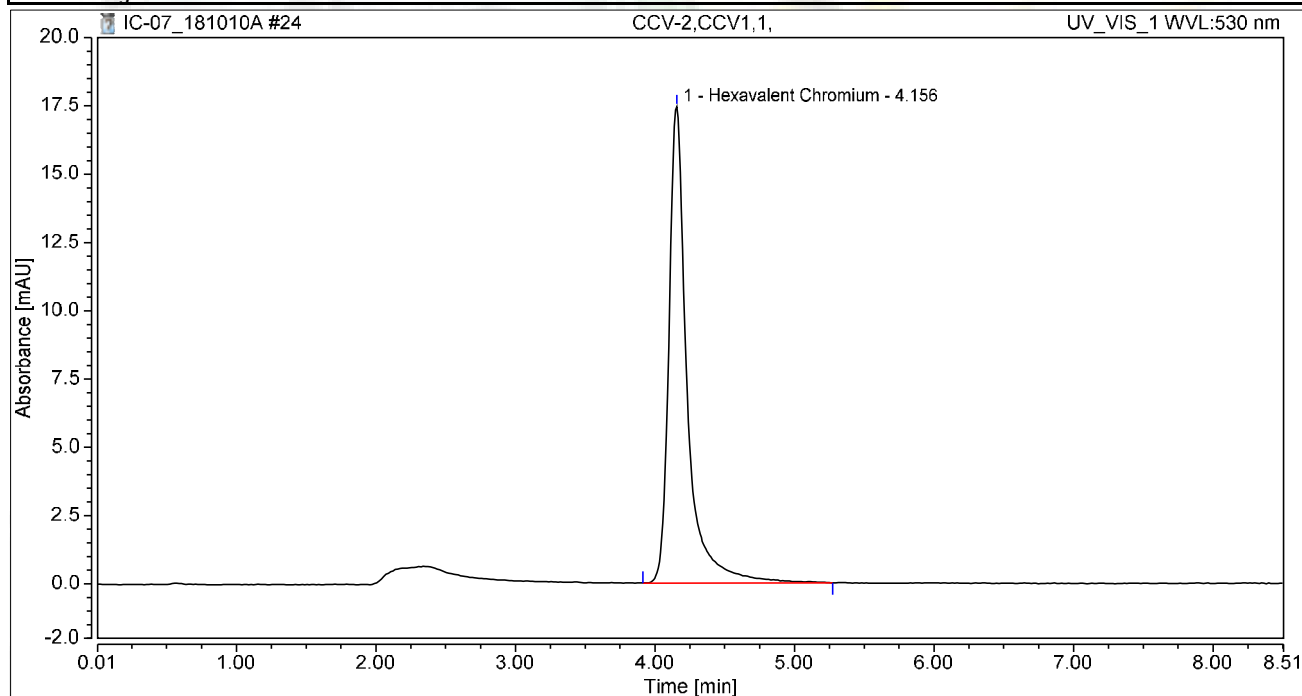
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	0.744	5.005	100.00	100.00	2.9430
<b>Total:</b>			<b>0.744</b>	<b>5.005</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-2,CCV1,1,	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 11:17	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.156	2.650	17.441	100.00	100.00	10.4840
<b>Total:</b>			<b>2.650</b>	<b>17.441</b>	<b>100.00</b>	<b>100.00</b>	

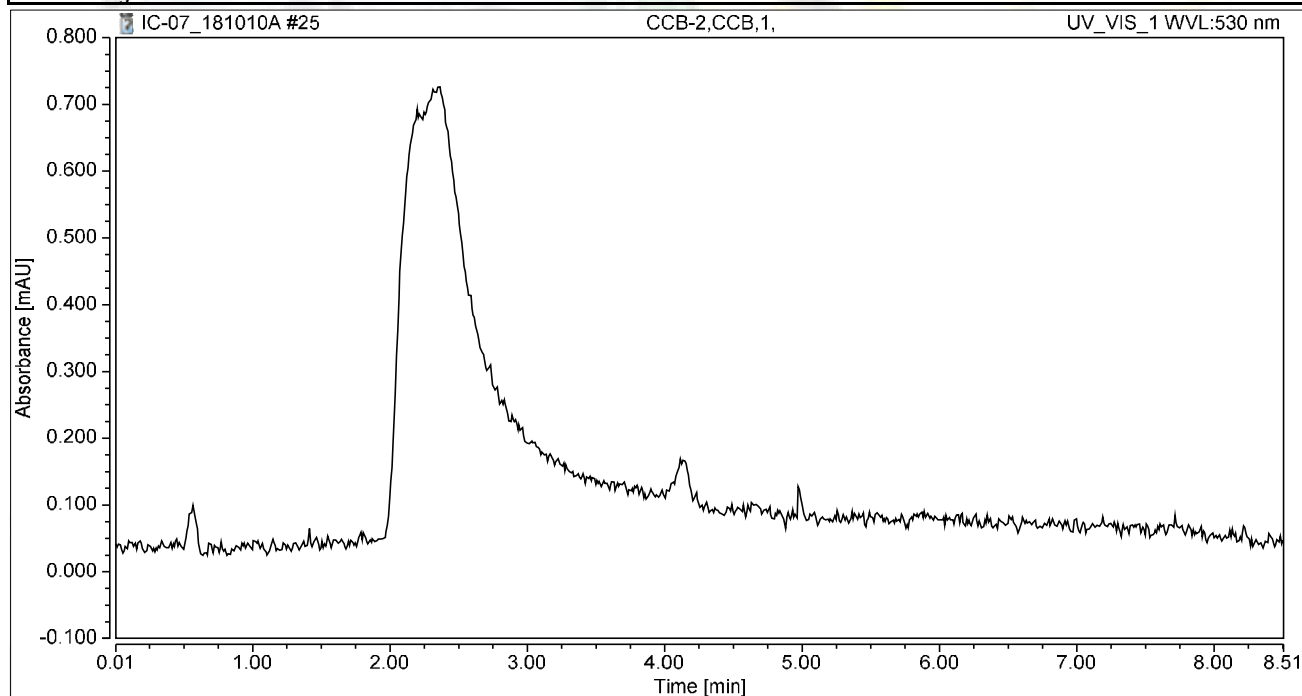


### Chromatogram and Results

#### Injection Details

Injection Name:	CCB-2,CCB,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 11:26	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

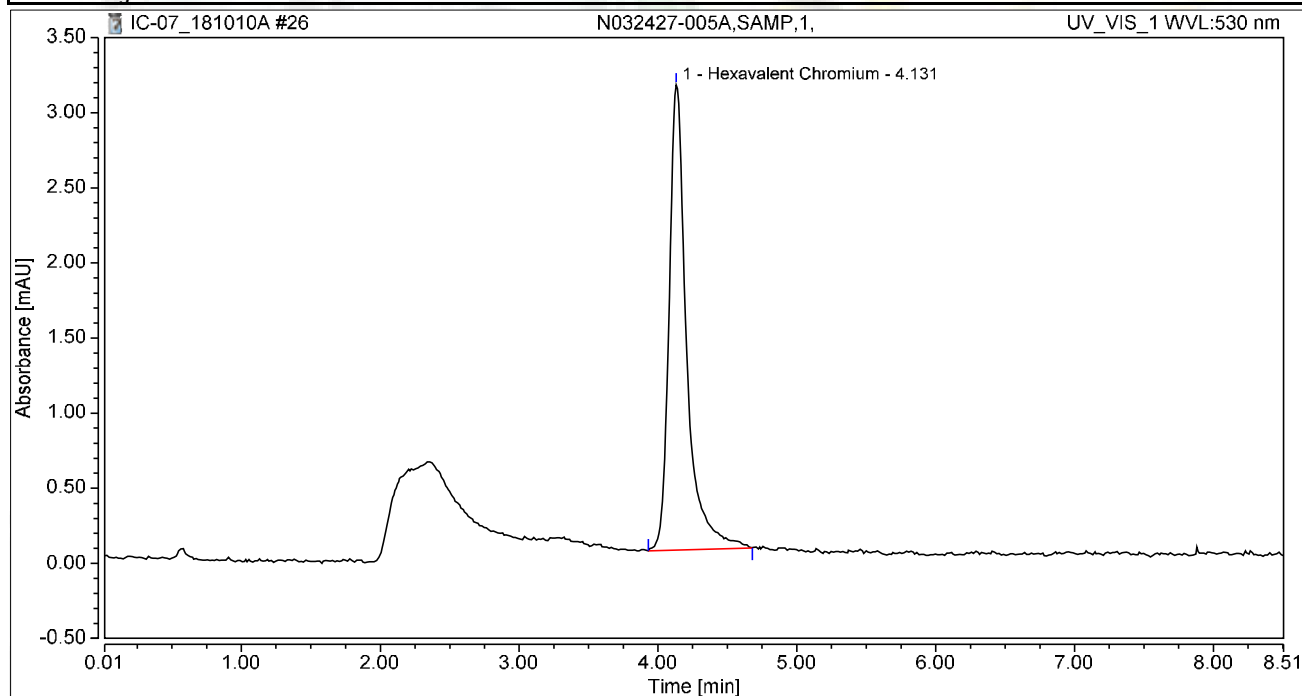
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032427-005A,SAMP,1,	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 11:36	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

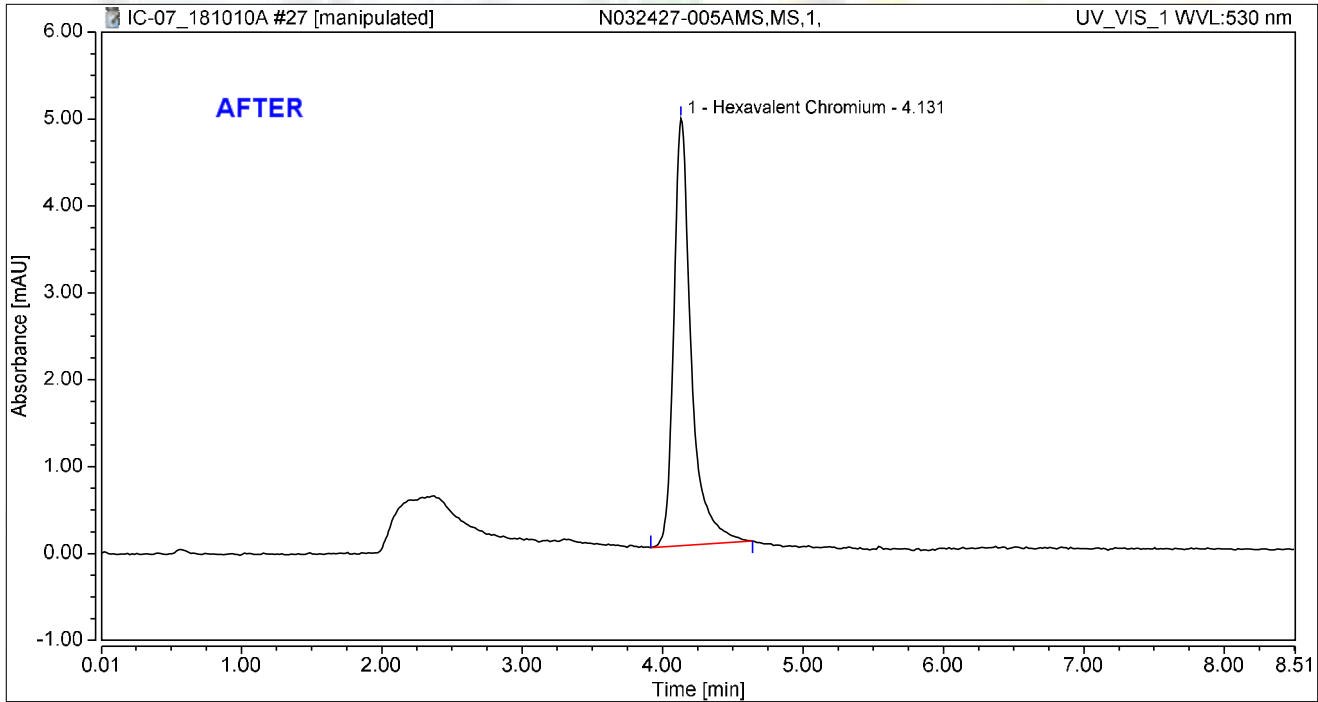
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.455	3.097	100.00	100.00	1.8010
<b>Total:</b>			<b>0.455</b>	<b>3.097</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032427-005AMS,MS,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 11:45	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.711	4.916	100.00	100.00	2.8117
<b>Total:</b>			<b>0.711</b>	<b>4.916</b>	<b>100.00</b>	<b>100.00</b>	

rba 10/16/2018

Reviewed by:

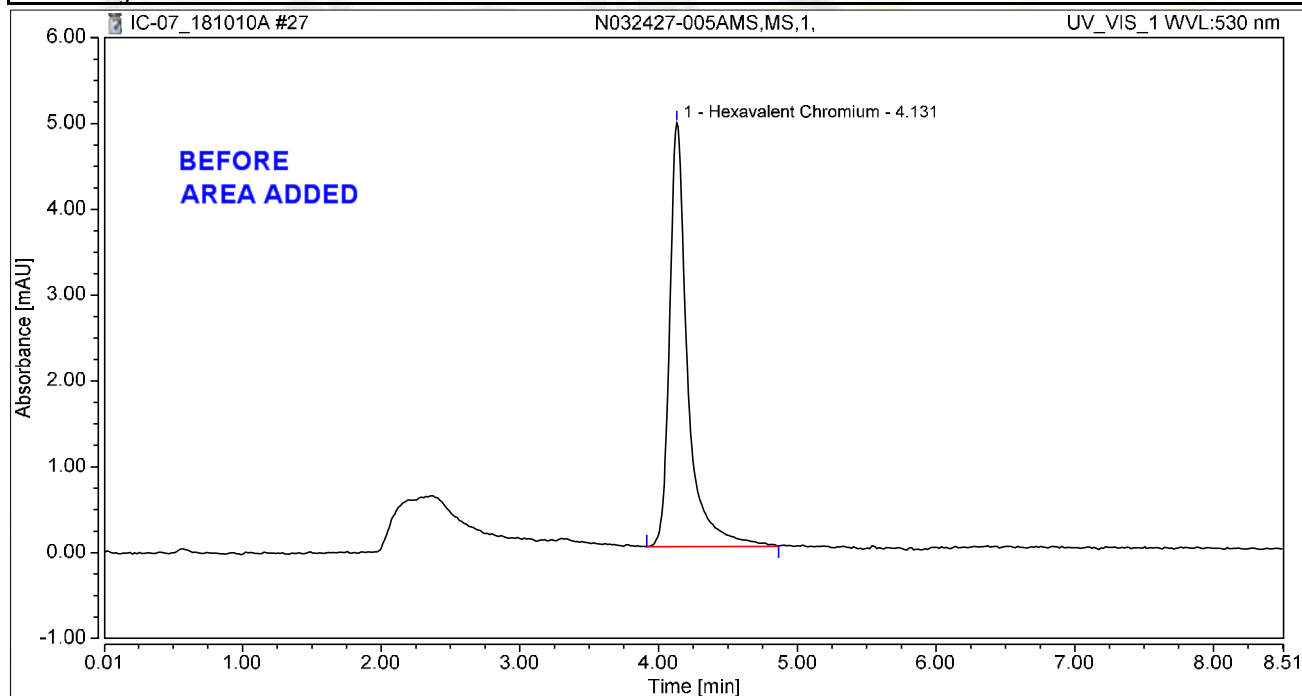
My first report/Integration *Nancy* 10/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032427-005AMS,MS,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 11:45	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.744	4.937	100.00	100.00	2.9422
<b>Total:</b>			<b>0.744</b>	<b>4.937</b>	<b>100.00</b>	<b>100.00</b>	

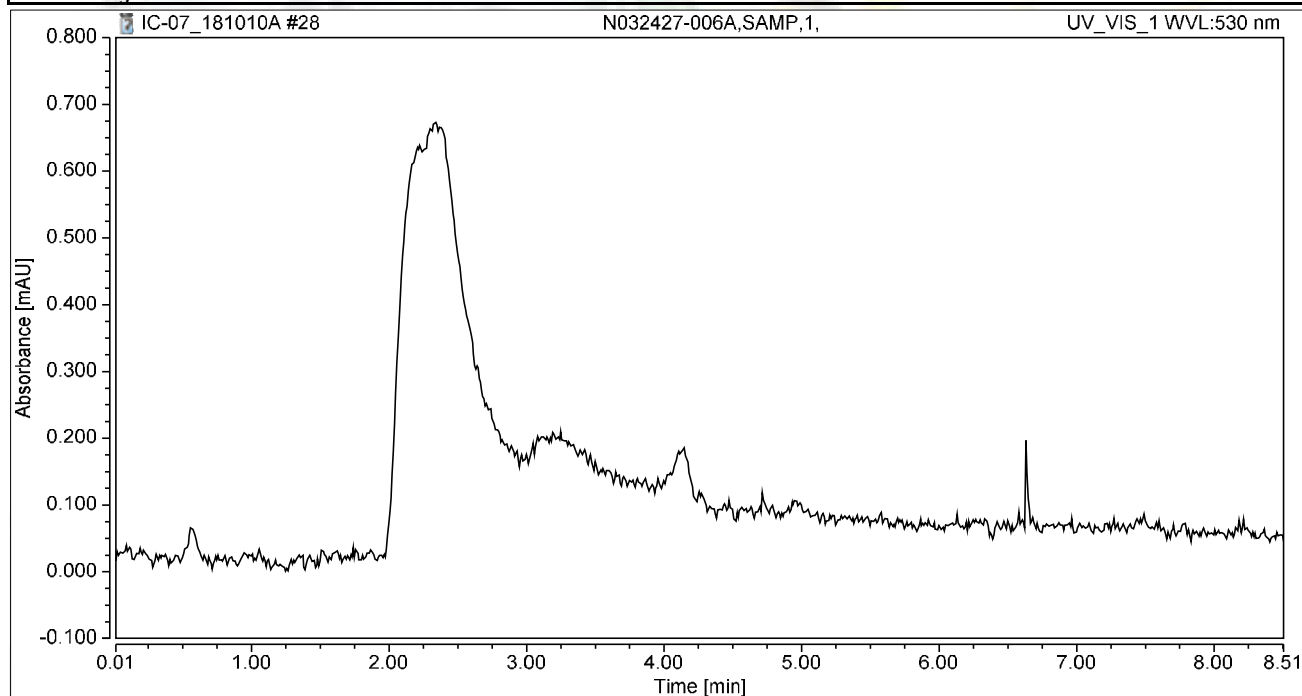
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### Chromatogram and Results

**Injection Details**

Injection Name:	N032427-006A,SAMP,1,	Run Time (min):	8.49
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 11:55	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

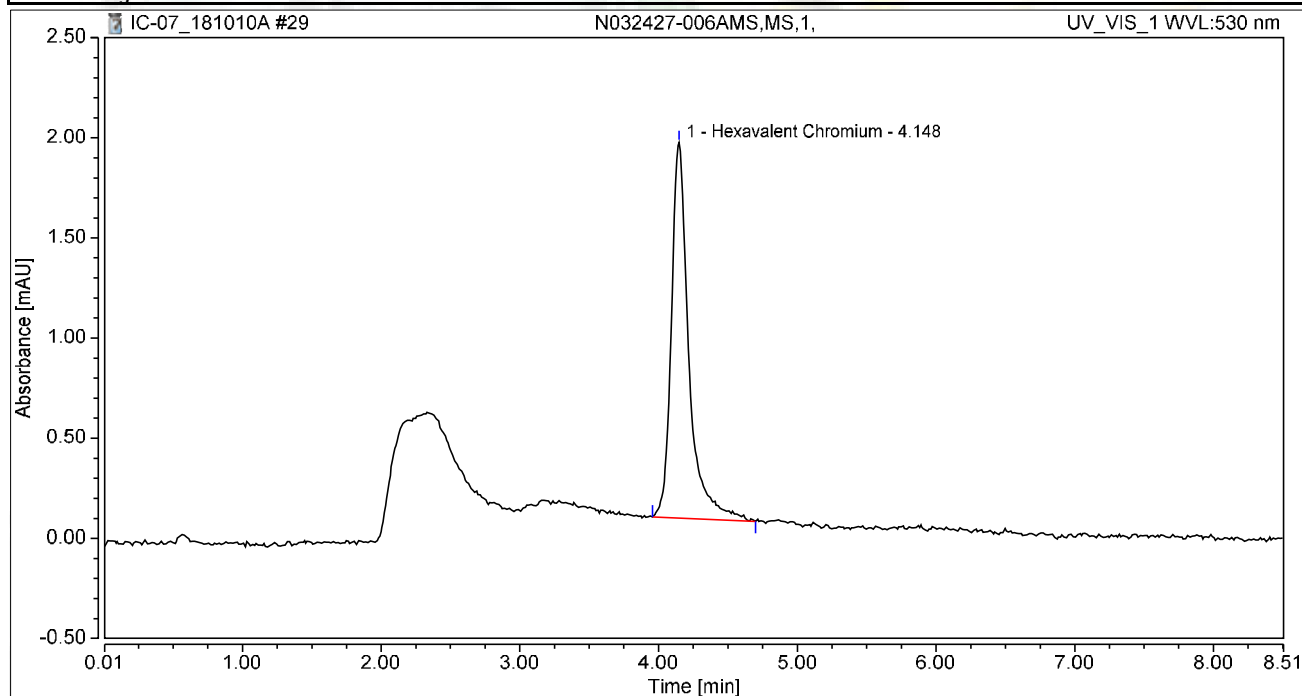
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032427-006AMS,MS,1,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 12:04	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

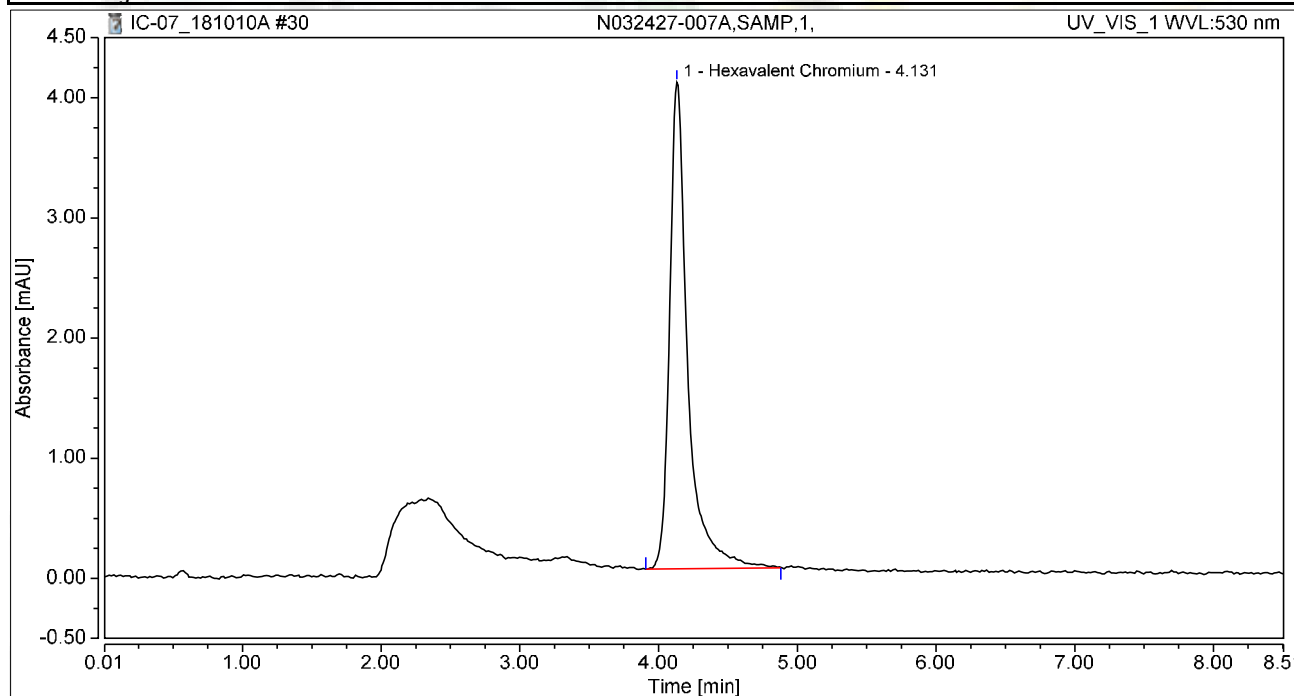
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	0.274	1.874	100.00	100.00	1.0846
<b>Total:</b>			<b>0.274</b>	<b>1.874</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032427-007A,SAMP,1,	Run Time (min):	8.50
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 12:14	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

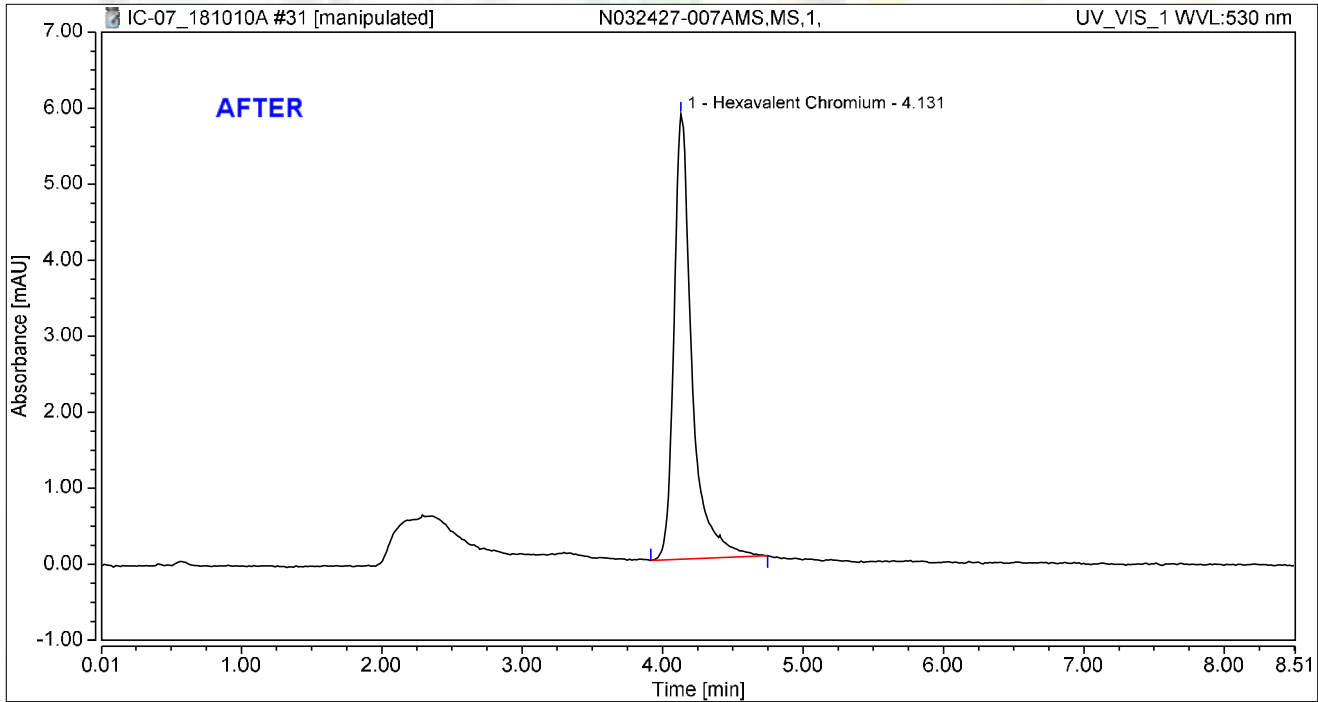
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.614	4.050	100.00	100.00	2.4281
<b>Total:</b>			<b>0.614</b>	<b>4.050</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032427-007AMS,MS,1,	Run Time (min):	8.50
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 12:23	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.871	5.858	100.00	100.00	3.4449
<b>Total:</b>			<b>0.871</b>	<b>5.858</b>	<b>100.00</b>	<b>100.00</b>	

*nba* 10/16/2018

Reviewed by:  
*Nancy* 10/16/2018

My first report/Integration

Chromeleon (c) Dionex  
Version 7.1.1.1127

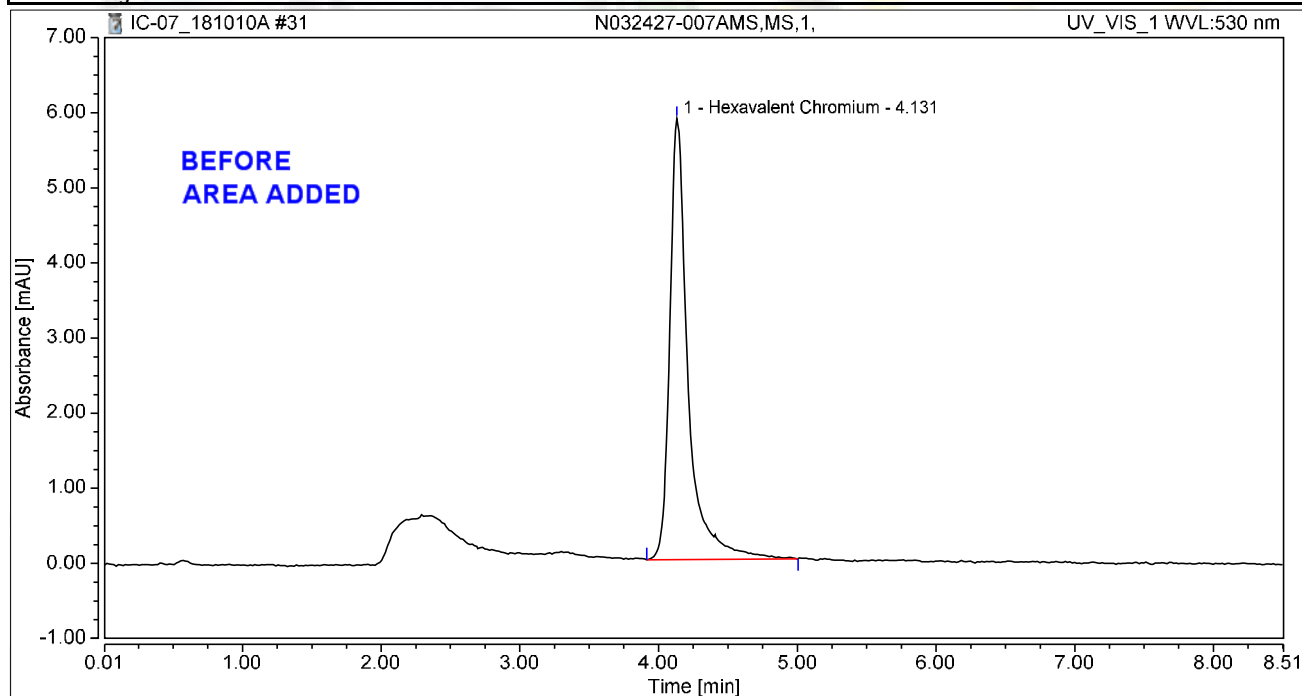


### Chromatogram and Results

**Injection Details**

Injection Name:	N032427-007AMS,MS,1,	Run Time (min):	8.50
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 12:23	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.899	5.872	100.00	100.00	3.5572
<b>Total:</b>			<b>0.899</b>	<b>5.872</b>	<b>100.00</b>	<b>100.00</b>	

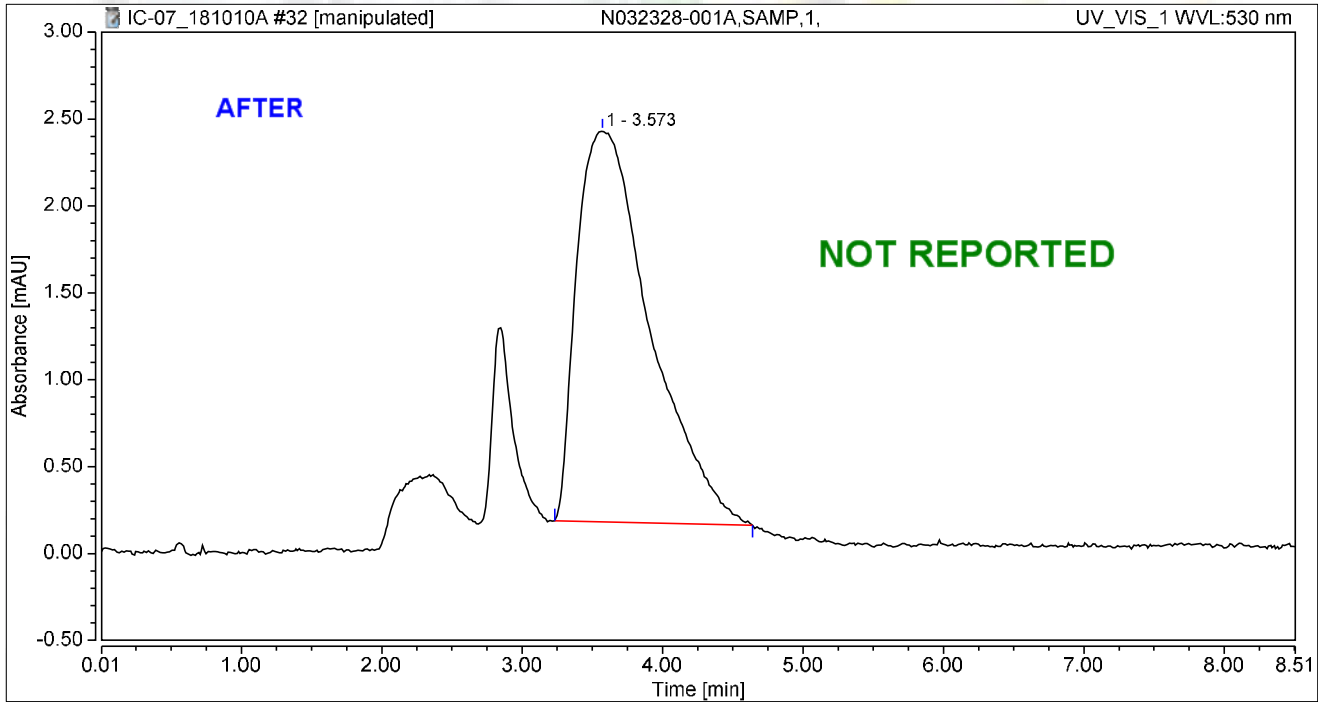
*rba* 10/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032328-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 12:32	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1		3.573	1.358	2.249	100.00	100.00	n.a.
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>1.358</b>	<b>2.249</b>	<b>100.00</b>	<b>100.00</b>	

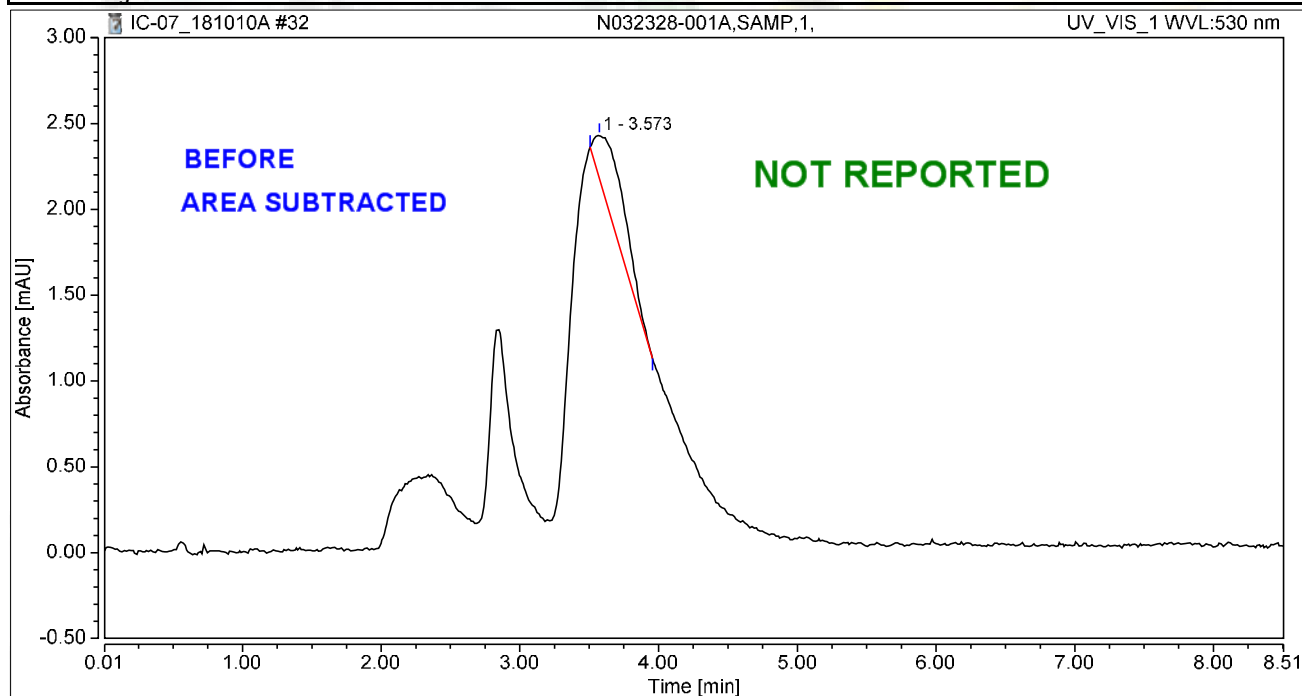
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### Chromatogram and Results

**Injection Details**

Injection Name:	N032328-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 12:32	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1		3.573	0.096	0.252	100.00	100.00	n.a.
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.096</b>	<b>0.252</b>	<b>100.00</b>	<b>100.00</b>	

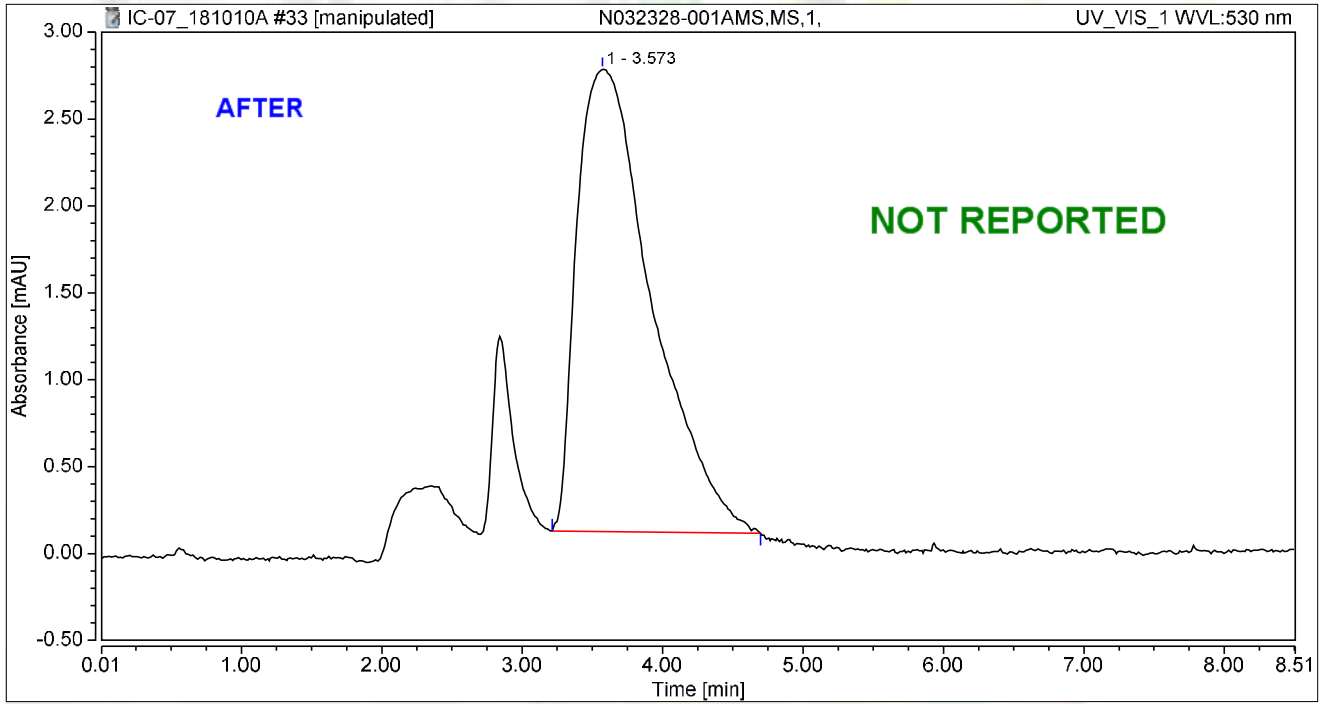
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### Chromatogram and Results

#### Injection Details

Injection Name:	N032328-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	18	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 12:42	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1		3.573	1.644	2.660	100.00	100.00	n.a.
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>1.644</b>	<b>2.660</b>	<b>100.00</b>	<b>100.00</b>	

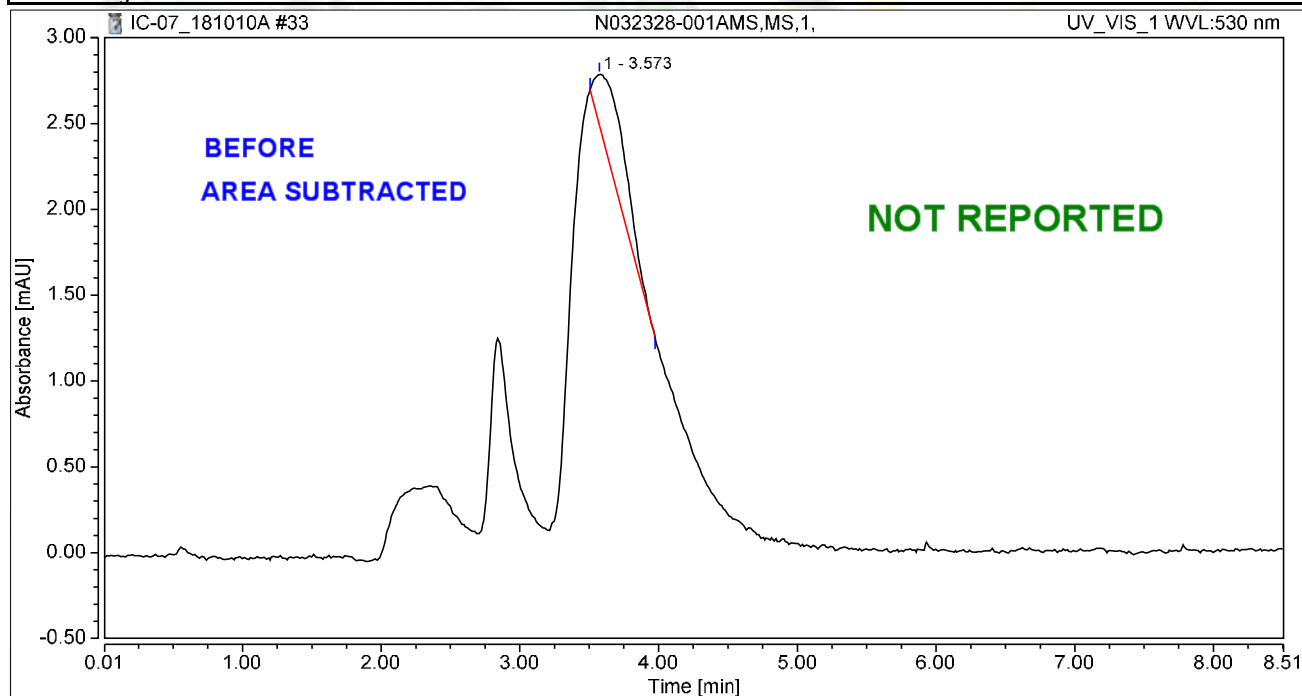
*jba* 10/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032328-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	18	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 12:42	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1		3.573	0.115	0.295	100.00	100.00	n.a.
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.115</b>	<b>0.295</b>	<b>100.00</b>	<b>100.00</b>	

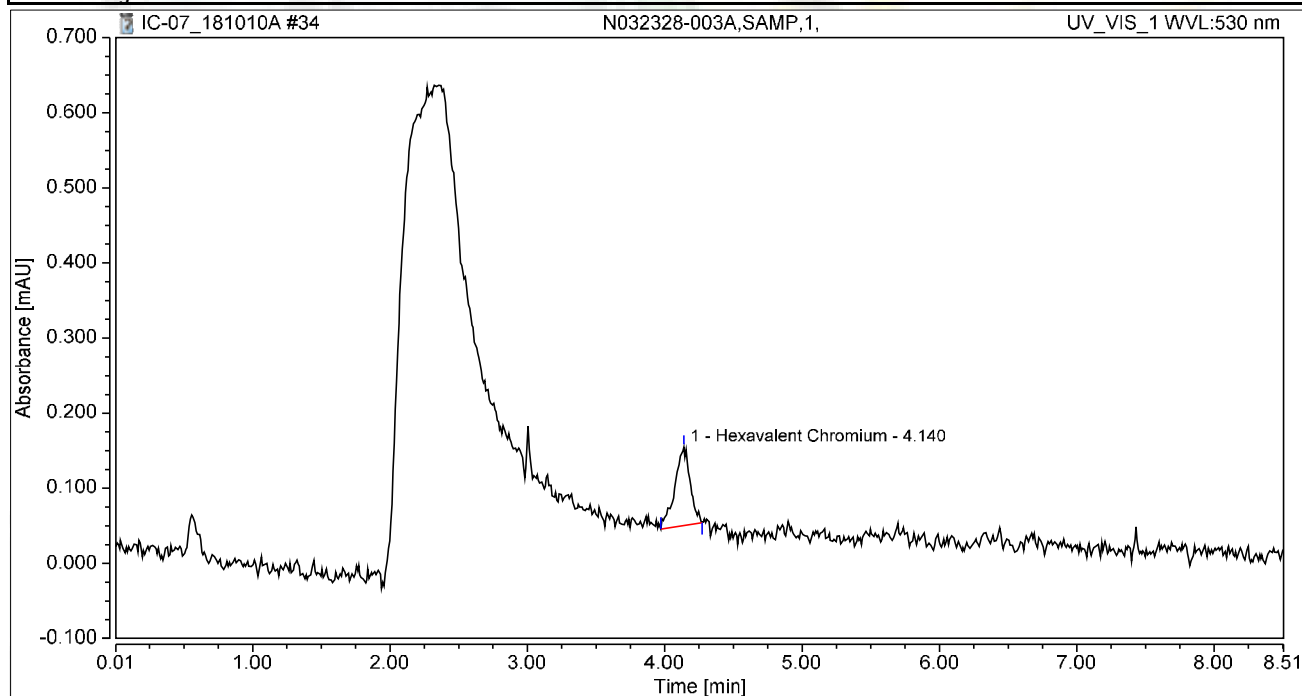
jba 10/16/2018

### Chromatogram and Results

#### Injection Details

Injection Name:	N032328-003A,SAMP,1,	Run Time (min):	8.50
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 12:51	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

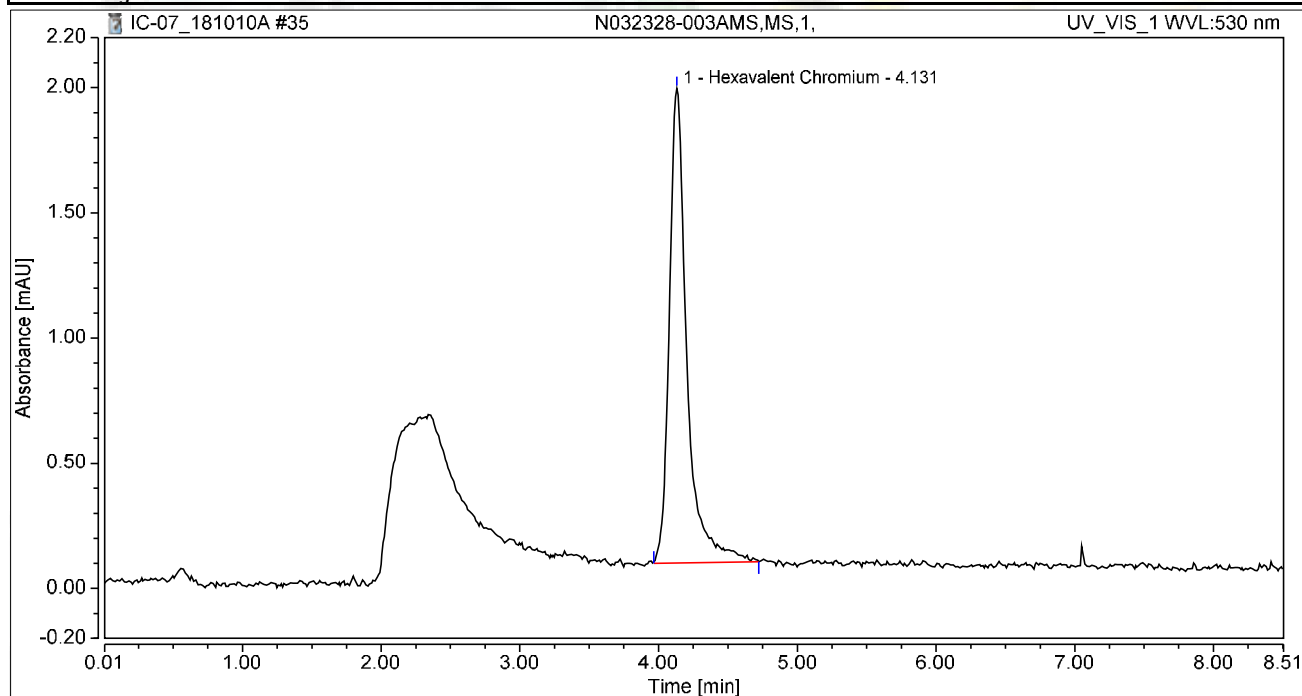
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	0.013	0.104	100.00	100.00	0.0528
<b>Total:</b>			<b>0.013</b>	<b>0.104</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032328-003AMS,MS,1,	Run Time (min):	8.50
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 13:01	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

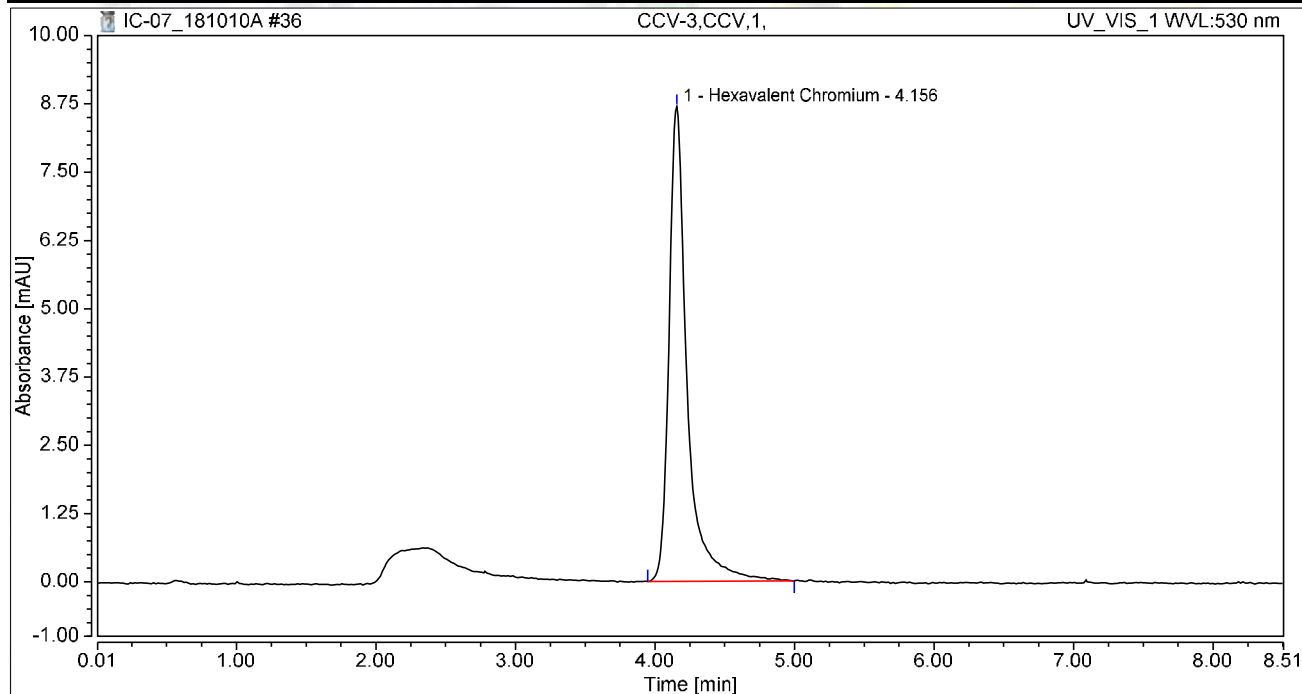
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.278	1.895	100.00	100.00	1.1016
<b>Total:</b>			<b>0.278</b>	<b>1.895</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-3,CCV,1,	Run Time (min):	8.50
Vial Number:	21	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 13:10	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.156	1.307	8.696	100.00	100.00	5.1720
<b>Total:</b>			<b>1.307</b>	<b>8.696</b>	<b>100.00</b>	<b>100.00</b>	

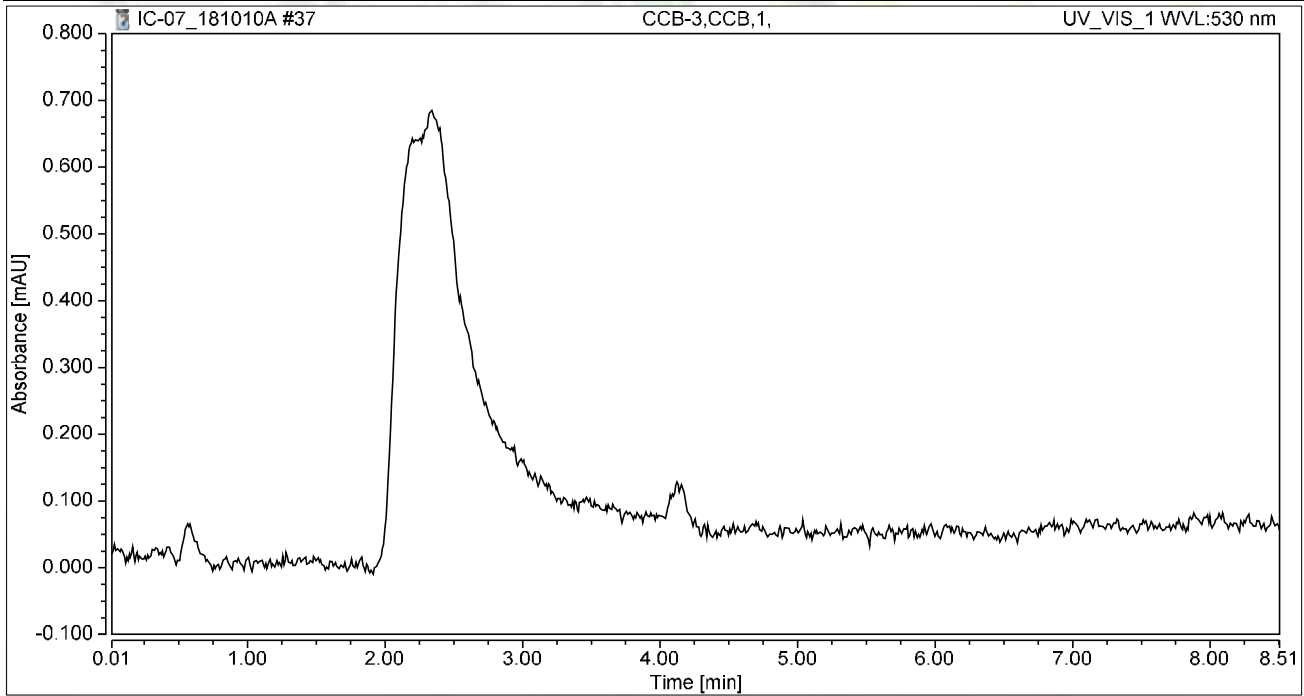


### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-3,CCB,1,	Run Time (min):	8.49
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 13:20	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

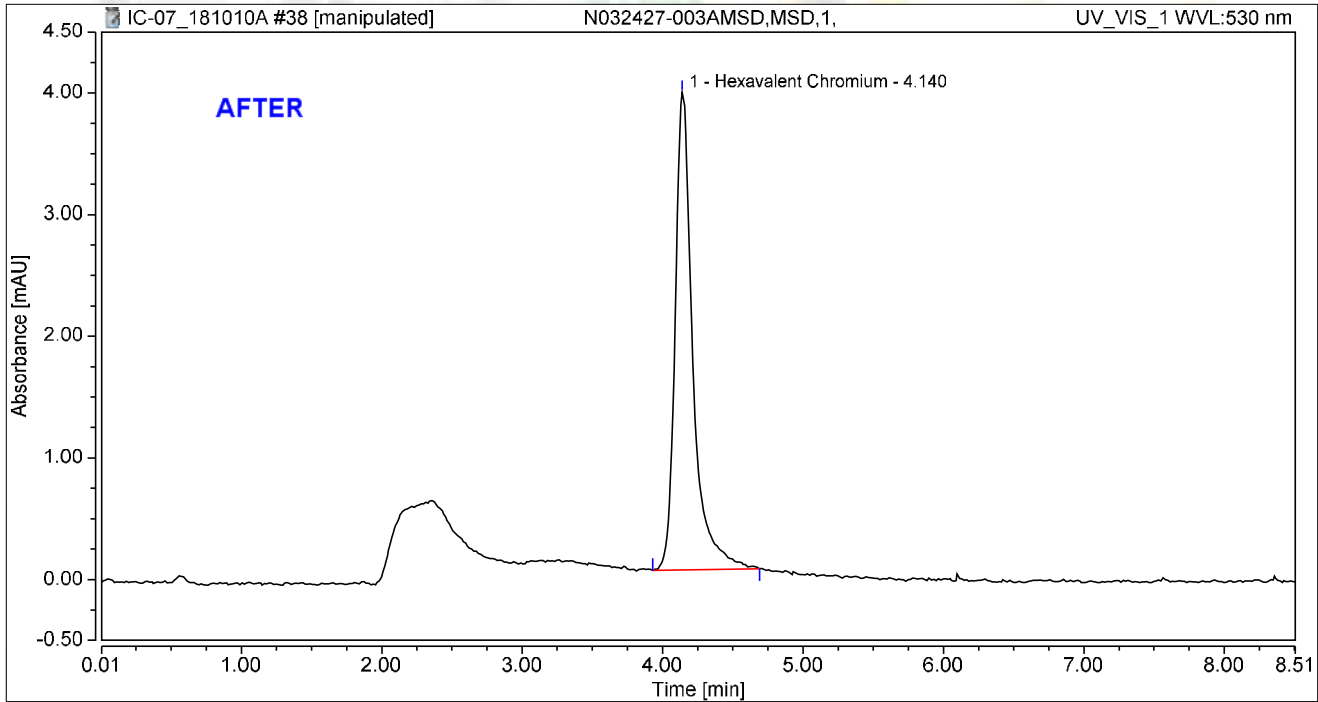
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032427-003AMSD,MSD,1,	Run Time (min):	8.50
Vial Number:	23	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 13:29	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	0.574	3.924	100.00	100.00	2.2694
<b>Total:</b>			<b>0.574</b>	<b>3.924</b>	<b>100.00</b>	<b>100.00</b>	

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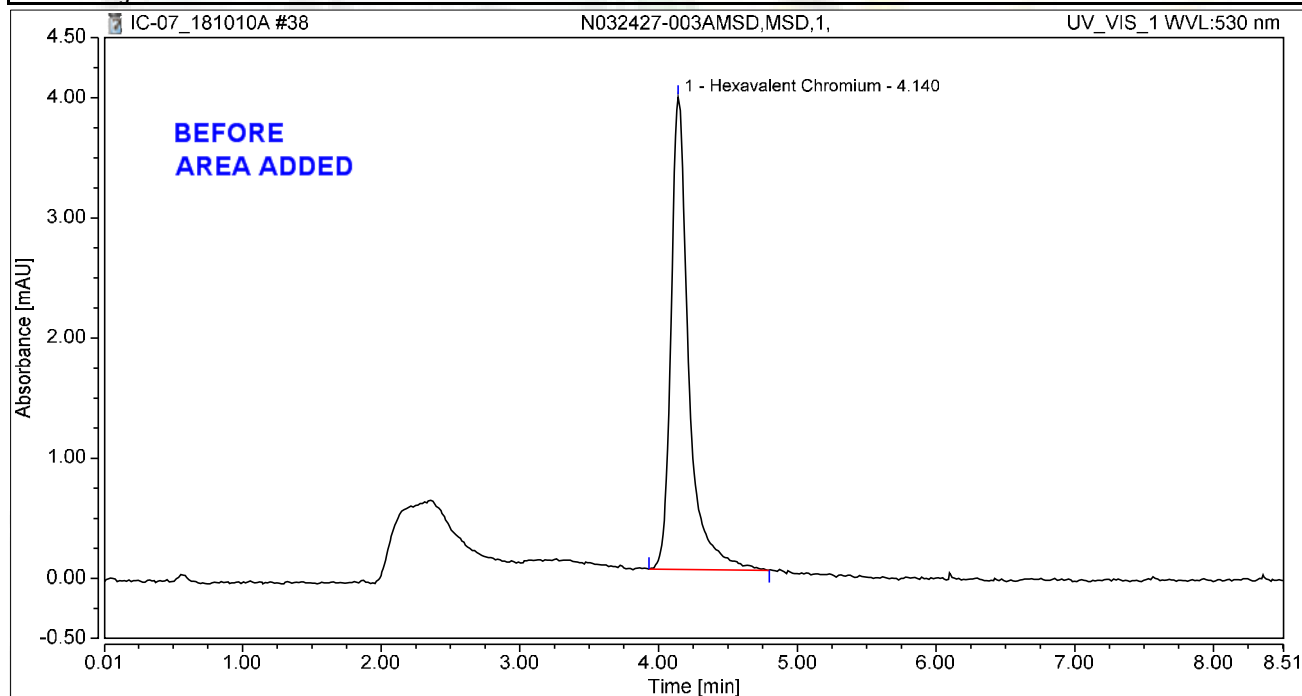
My first report is not  
Reviewed by: Nancy 10/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032427-003AMSD,MSD,1,	Run Time (min):	8.50
Vial Number:	23	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 13:29	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	0.583	3.930	100.00	100.00	2.3076
<b>Total:</b>			<b>0.583</b>	<b>3.930</b>	<b>100.00</b>	<b>100.00</b>	

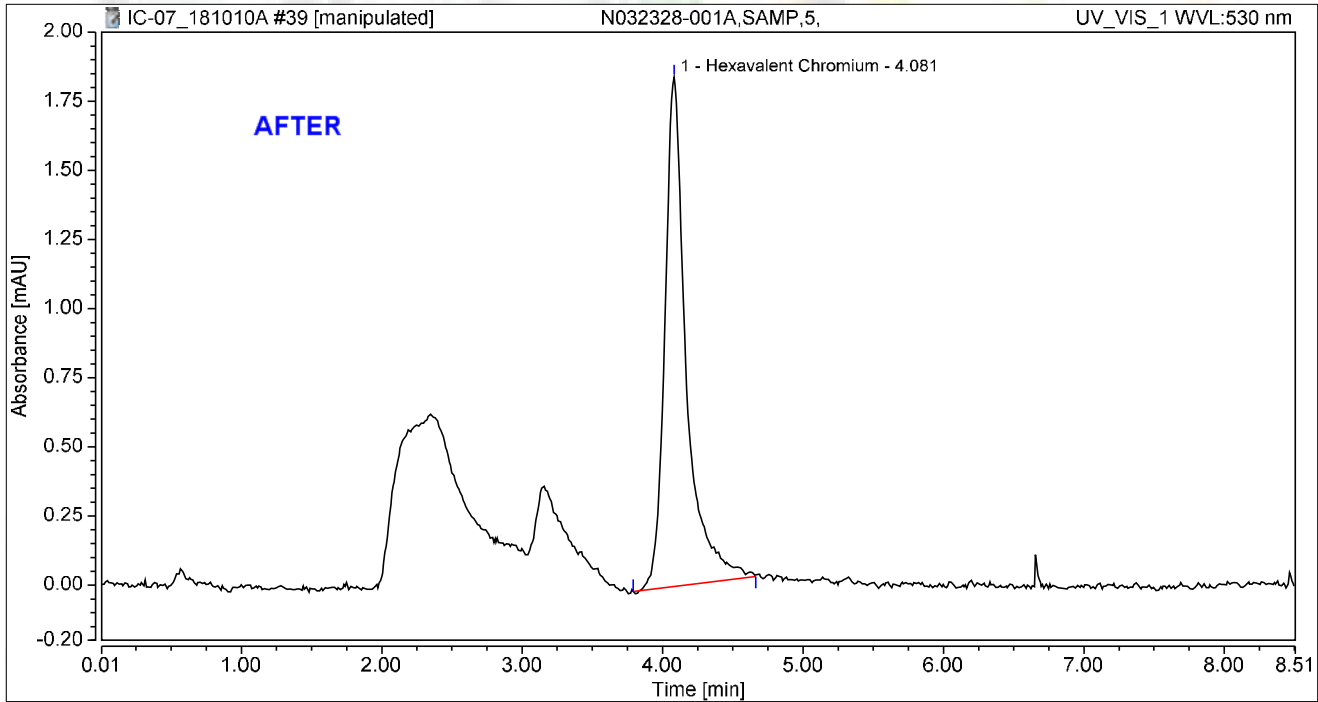
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### Chromatogram and Results

**Injection Details**

Injection Name:	N032328-001A,SAMP,5,	Run Time (min):	8.50
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 13:39	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.327	1.842	100.00	100.00	1.2942
<b>Total:</b>			<b>0.327</b>	<b>1.842</b>	<b>100.00</b>	<b>100.00</b>	

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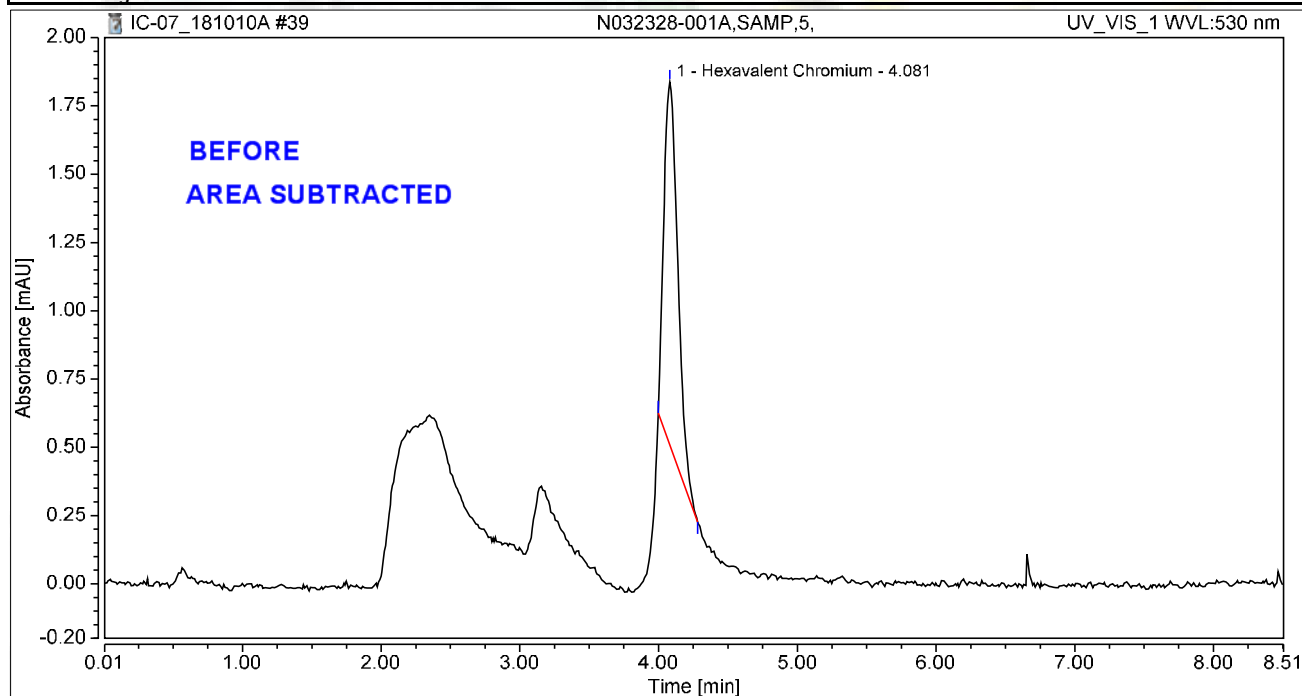
My first report/Integration  
 Reviewed by: *Donny* 10/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032328-001A,SAMP,5,	Run Time (min):	8.50
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 13:39	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.155	1.329	100.00	100.00	0.6132
<b>Total:</b>			<b>0.155</b>	<b>1.329</b>	<b>100.00</b>	<b>100.00</b>	

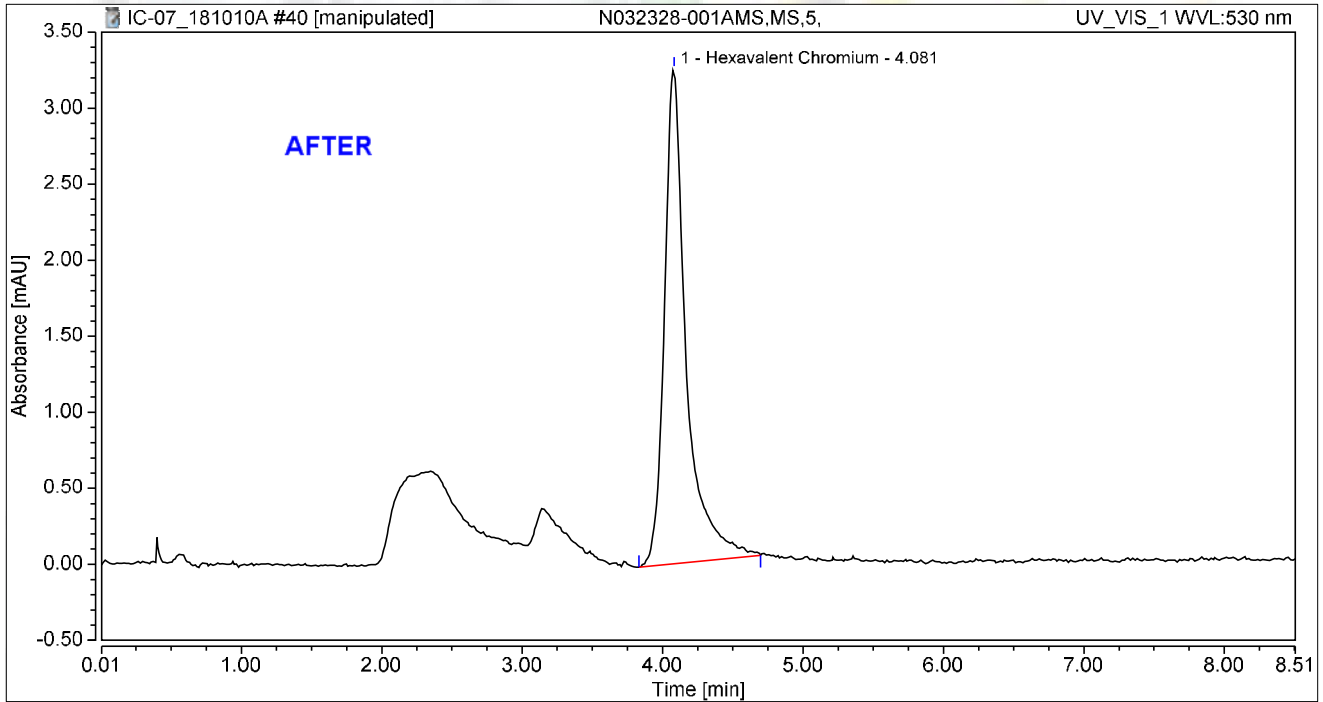
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### Chromatogram and Results

**Injection Details**

Injection Name:	N032328-001AMS,MS,5,	Run Time (min):	8.50
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 13:48	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.587	3.254	100.00	100.00	2.3233
<b>Total:</b>			<b>0.587</b>	<b>3.254</b>	<b>100.00</b>	<b>100.00</b>	

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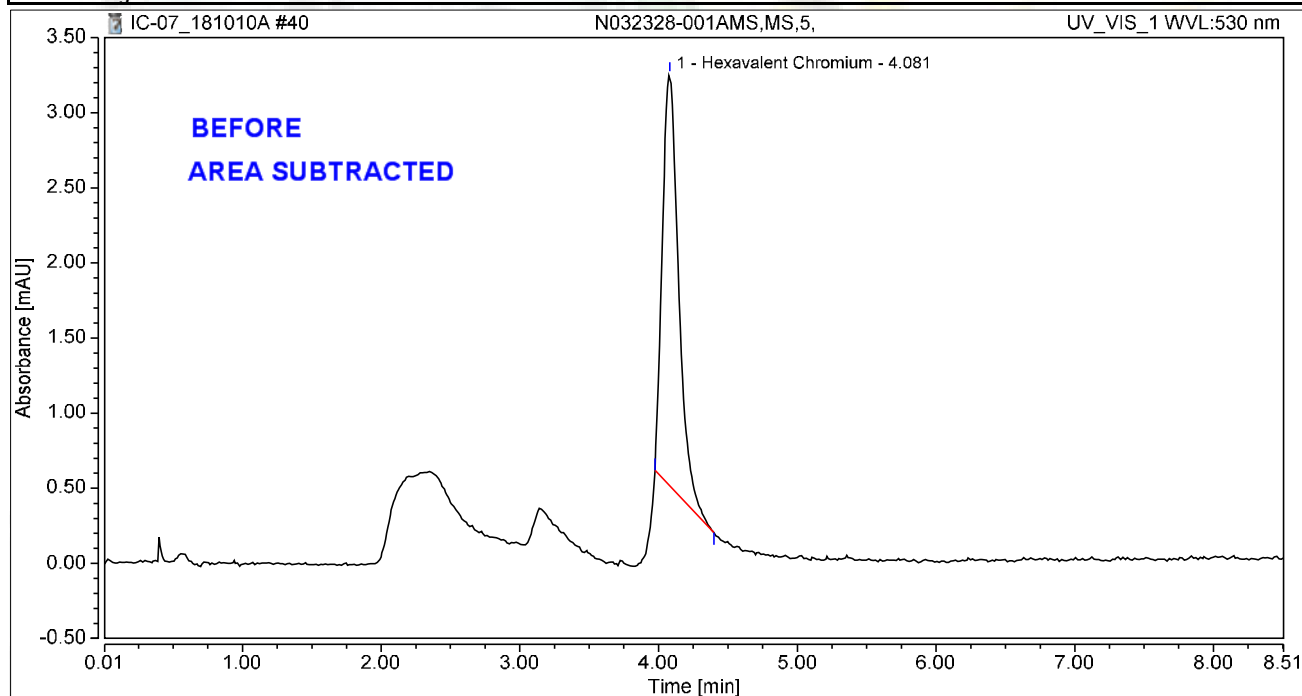
Reviewed by:  
*Shoney* 10/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032328-001AMS,MS,5,	Run Time (min):	8.50
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 13:48	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.374	2.742	100.00	100.00	1.4798
<b>Total:</b>			<b>0.374</b>	<b>2.742</b>	<b>100.00</b>	<b>100.00</b>	

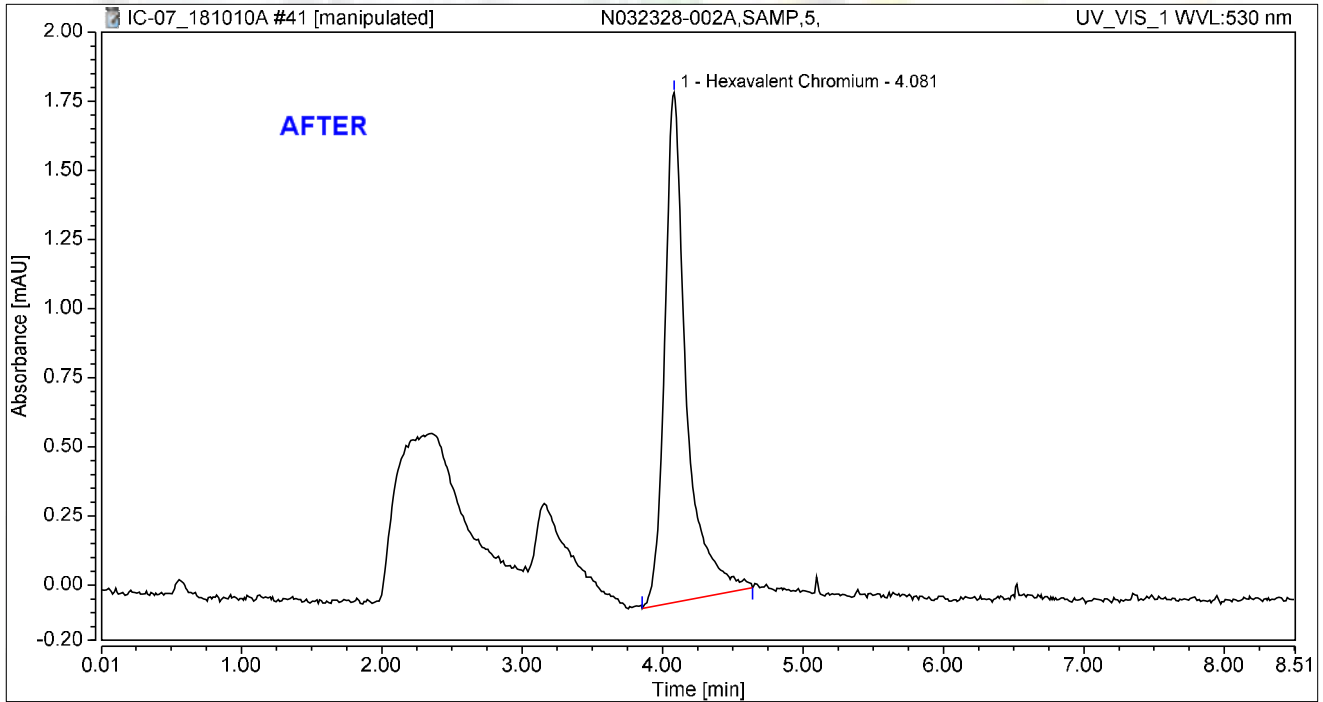
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### Chromatogram and Results

#### Injection Details

Injection Name:	N032328-002A,SAMP,5,	Run Time (min):	8.50
Vial Number:	26	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 13:58	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.331	1.844	100.00	100.00	1.3087
<b>Total:</b>			<b>0.331</b>	<b>1.844</b>	<b>100.00</b>	<b>100.00</b>	

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Reviewed by:  
*Nancy* 10/16/2018

My first report/Integration

Chromeleon (c) Dionex  
Version 7.1.1.1127

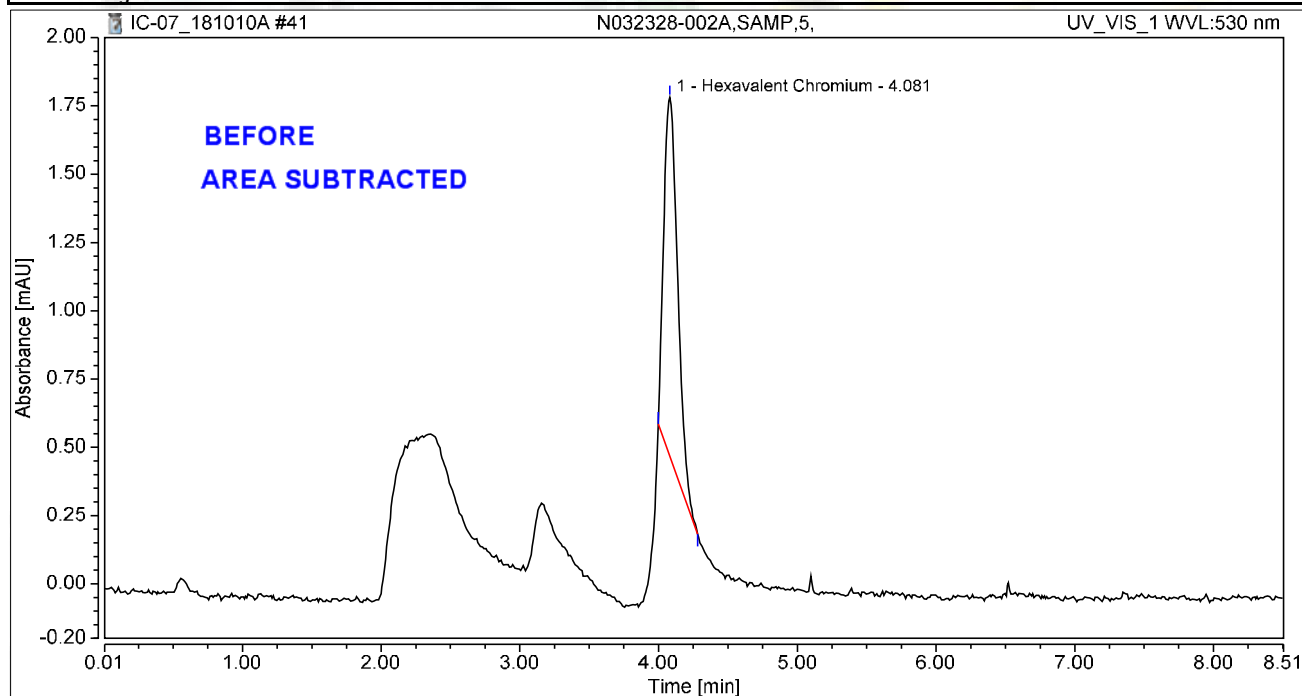


### Chromatogram and Results

**Injection Details**

Injection Name:	N032328-002A,SAMP,5,	Run Time (min):	8.50
Vial Number:	26	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 13:58	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.153	1.314	100.00	100.00	0.6043
<b>Total:</b>			<b>0.153</b>	<b>1.314</b>	<b>100.00</b>	<b>100.00</b>	

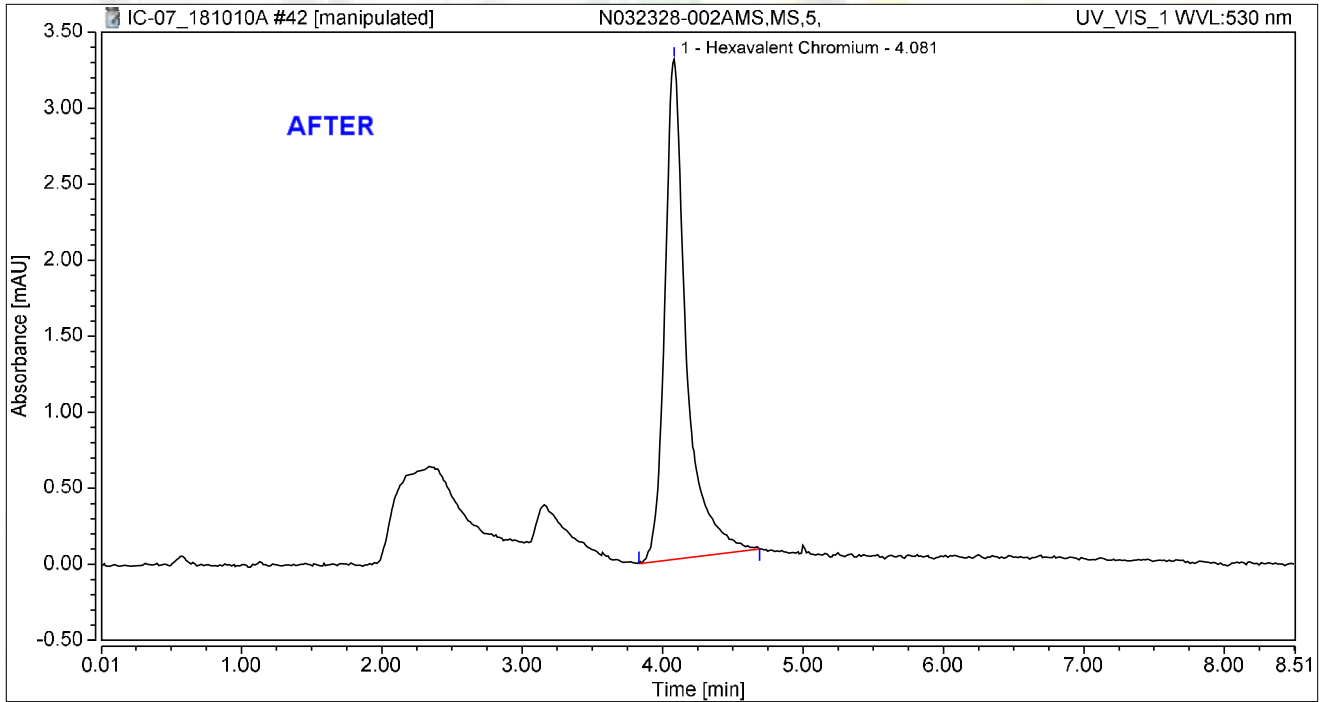
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### Chromatogram and Results

**Injection Details**

Injection Name:	N032328-002AMS,MS,5,	Run Time (min):	8.50
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 14:07	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.587	3.288	100.00	100.00	2.3239
<b>Total:</b>			<b>0.587</b>	<b>3.288</b>	<b>100.00</b>	<b>100.00</b>	

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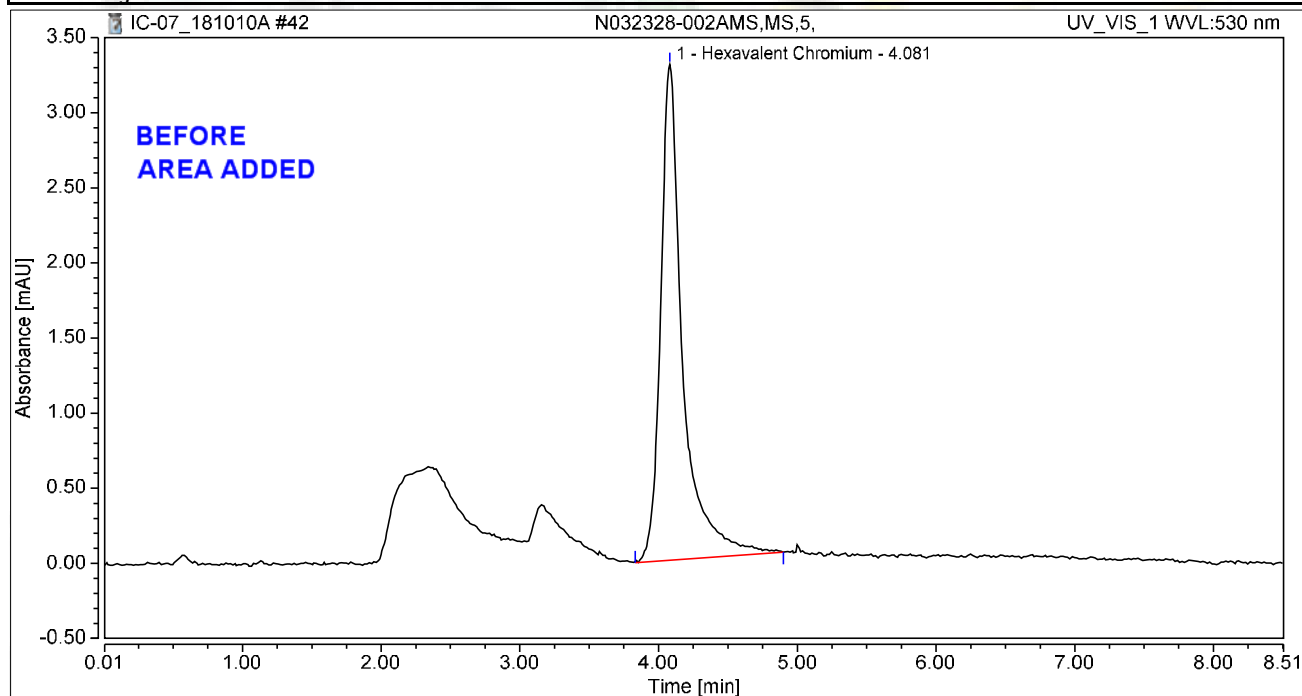
Reviewed by:  
My first report/Integration  
*Donkey* 10/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032328-002AMS,MS,5,	Run Time (min):	8.50
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 14:07	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.610	3.300	100.00	100.00	2.4132
<b>Total:</b>			<b>0.610</b>	<b>3.300</b>	<b>100.00</b>	<b>100.00</b>	

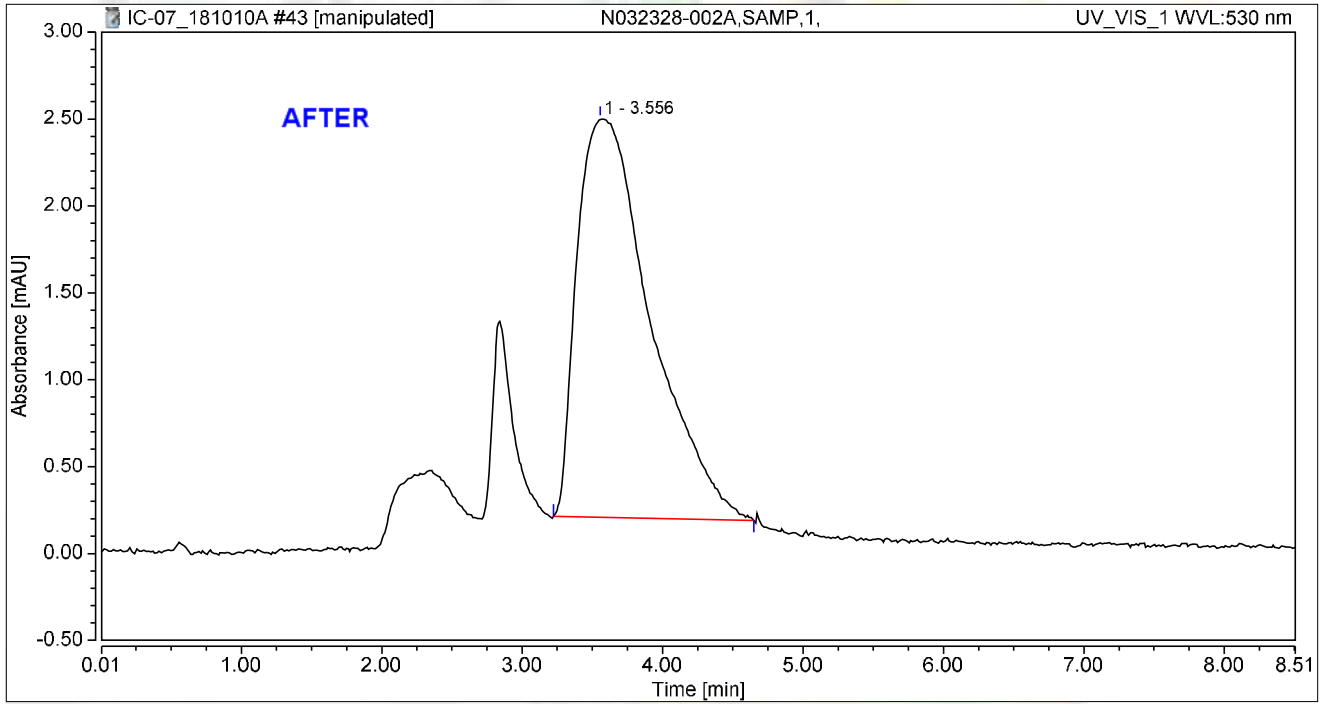
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### Chromatogram and Results

#### Injection Details

Injection Name:	N032328-002A,SAMP,1,	Run Time (min):	8.50
Vial Number:	28	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 14:17	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1		3.556	1.389	2.294	100.00	100.00	n.a.
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>1.389</b>	<b>2.294</b>	<b>100.00</b>	<b>100.00</b>	

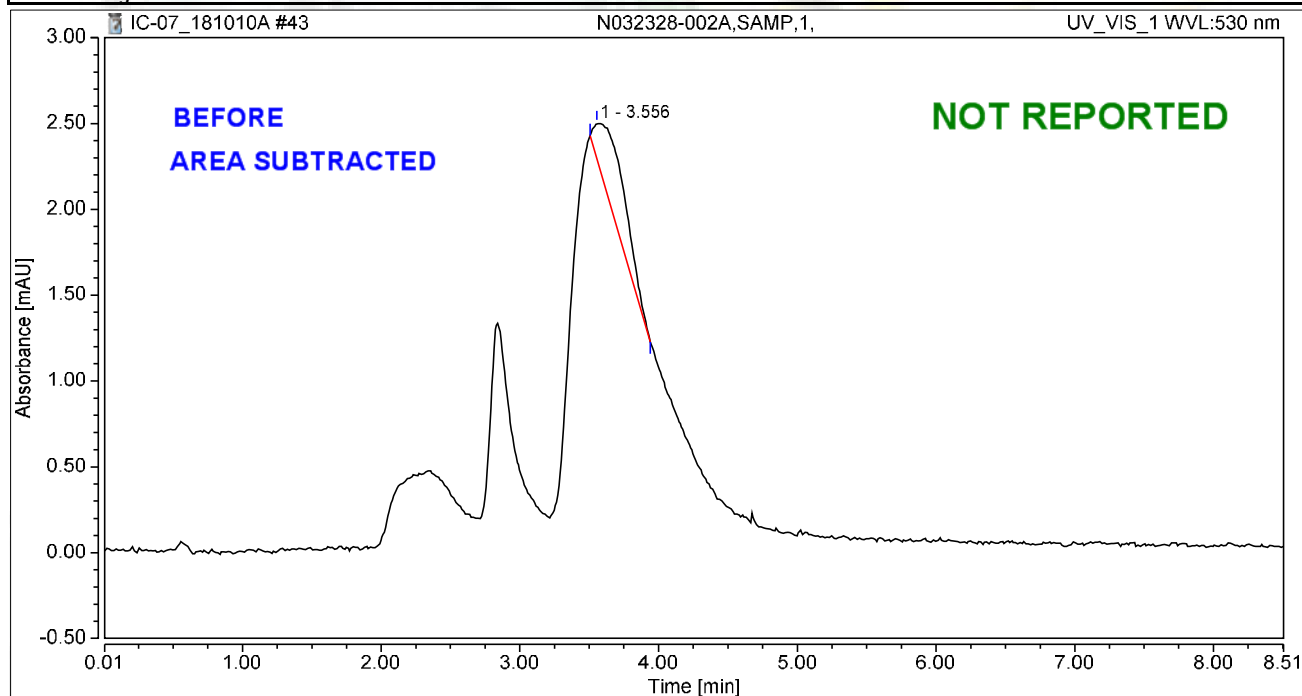
*rba* 10/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032328-002A,SAMP,1,	Run Time (min):	8.50
Vial Number:	28	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 14:17	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1		3.556	0.101	0.212	100.00	100.00	n.a.
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.101</b>	<b>0.212</b>	<b>100.00</b>	<b>100.00</b>	

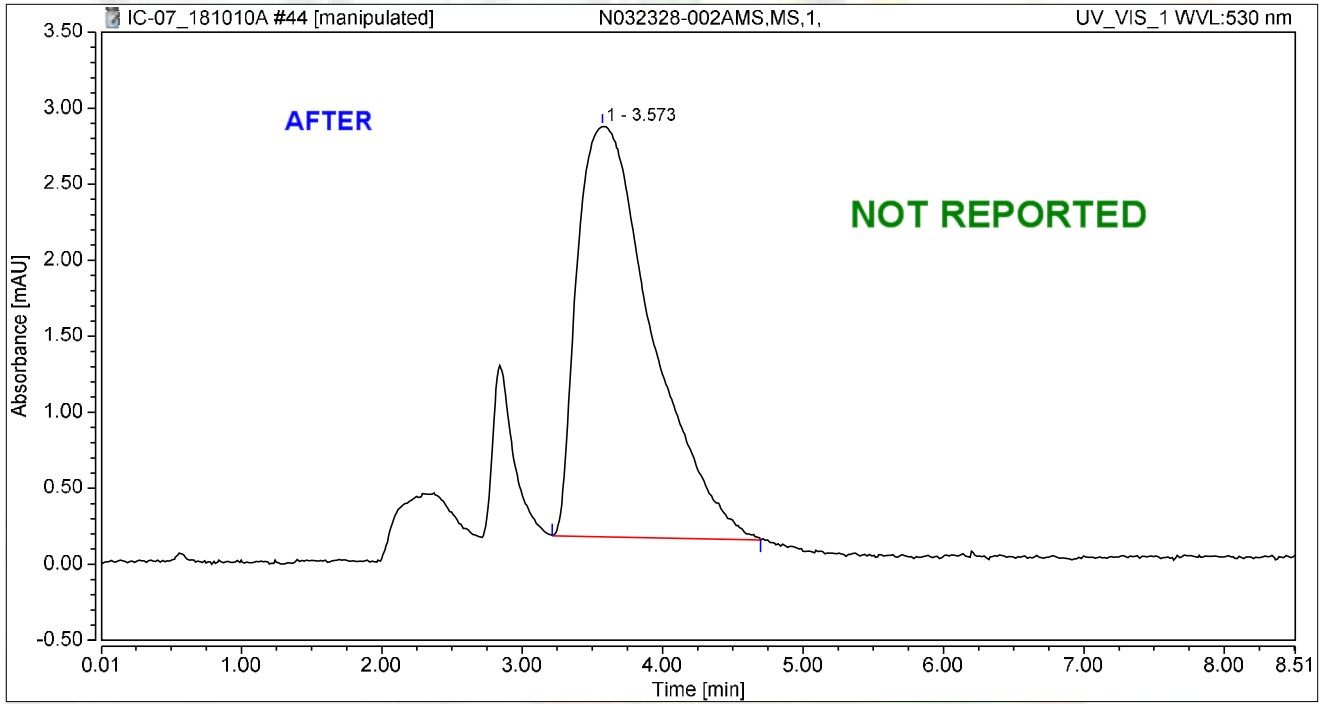
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### Chromatogram and Results

#### Injection Details

Injection Name:	N032328-002AMS,MS,1,	Run Time (min):	8.50
Vial Number:	29	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 14:26	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1		3.573	1.668	2.702	100.00	100.00	n.a.
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>1.668</b>	<b>2.702</b>	<b>100.00</b>	<b>100.00</b>	

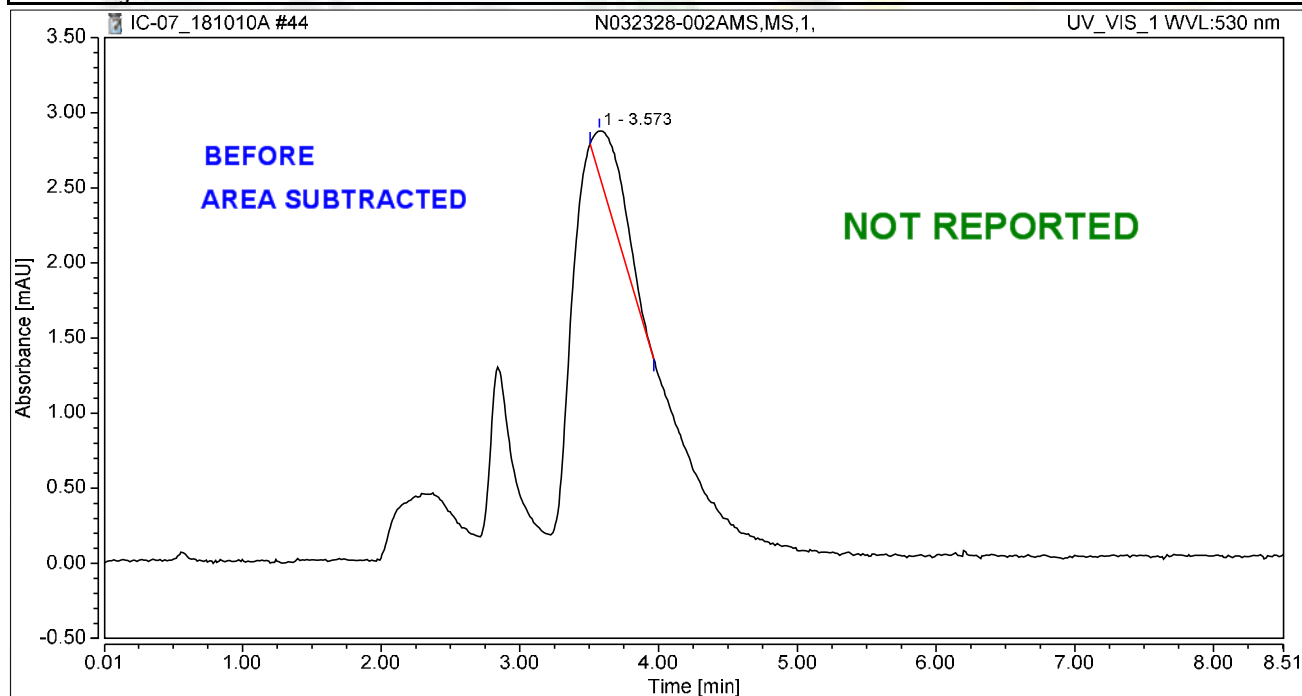
*rba* 10/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032328-002AMS,MS,1,	Run Time (min):	8.50
Vial Number:	29	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 14:26	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1		3.573	0.117	0.299	100.00	100.00	n.a.
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.117</b>	<b>0.299</b>	<b>100.00</b>	<b>100.00</b>	

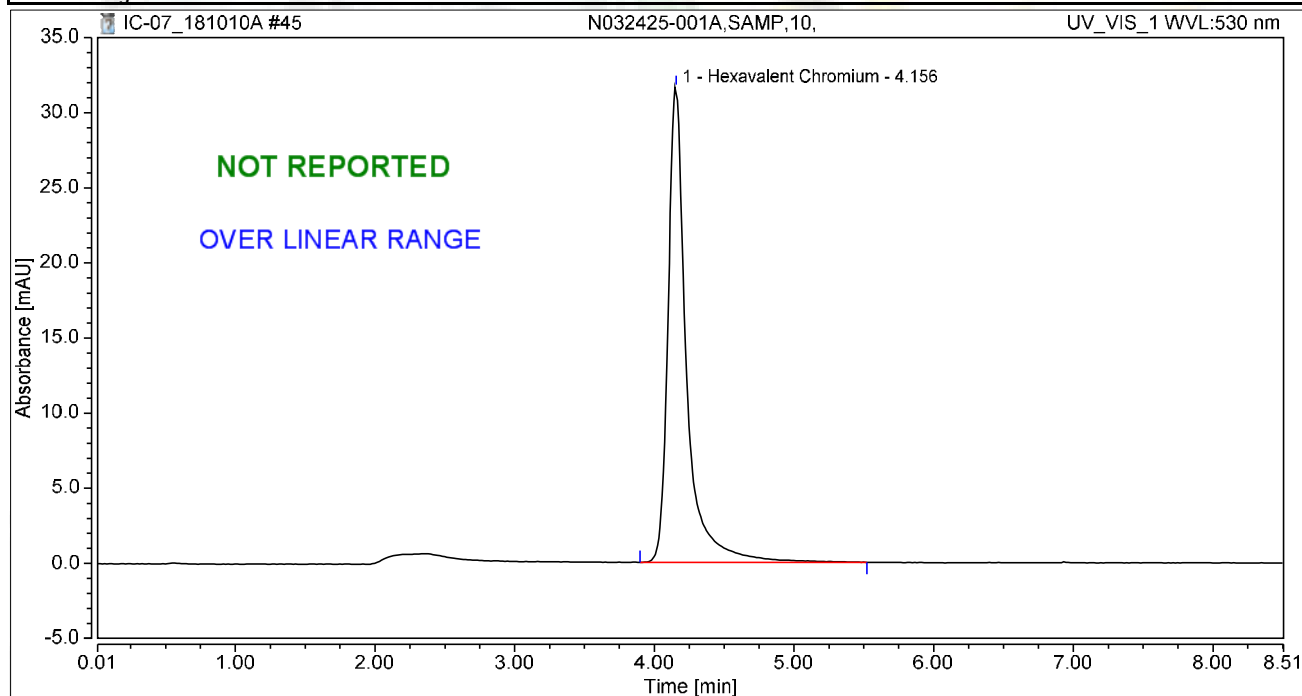
rba 10/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032425-001A,SAMP,10,	Run Time (min):	8.49
Vial Number:	30	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 14:35	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.156	4.867	31.611	100.00	100.00	19.2560
<b>Total:</b>			<b>4.867</b>	<b>31.611</b>	<b>100.00</b>	<b>100.00</b>	

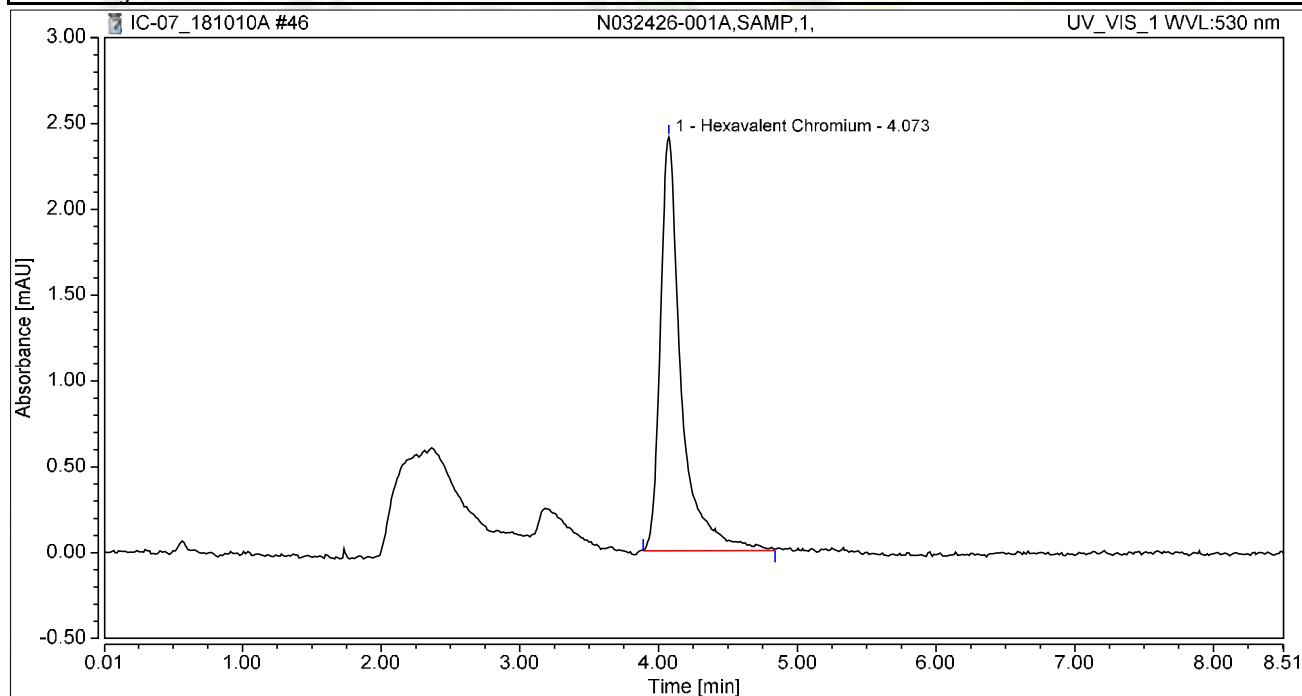


### Chromatogram and Results

#### Injection Details

Injection Name:	N032426-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	31	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 14:45	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

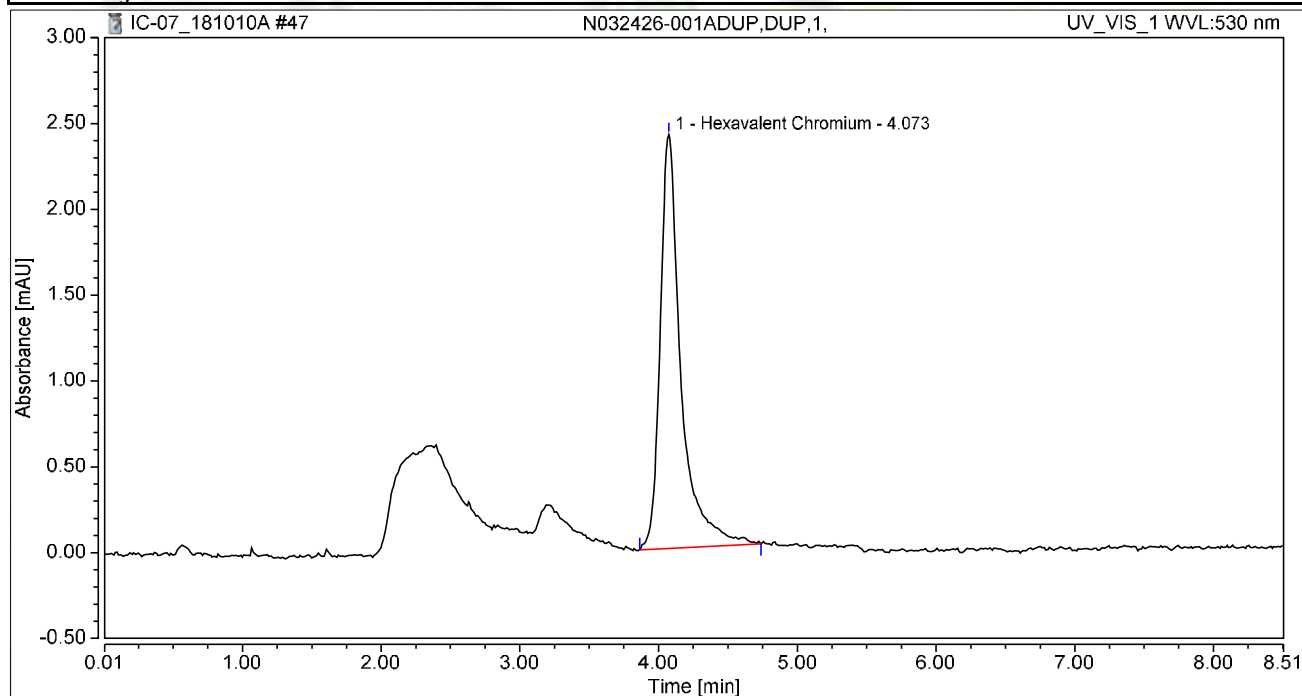
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.419	2.411	100.00	100.00	1.6569
<b>Total:</b>			<b>0.419</b>	<b>2.411</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032426-001ADUP,DUP,1,	Run Time (min):	8.50
Vial Number:	32	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 14:54	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

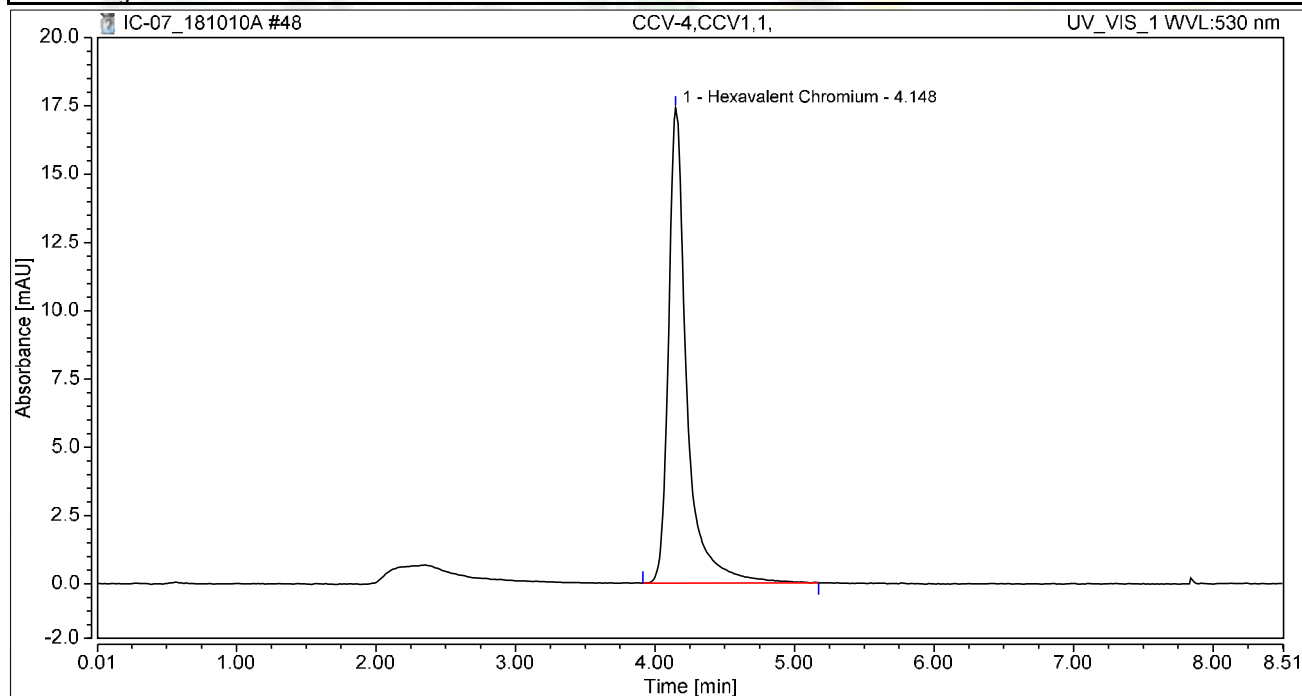
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.073	0.419	2.411	100.00	100.00	1.6584
<b>Total:</b>			<b>0.419</b>	<b>2.411</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-4,CCV1,1,	Run Time (min):	8.50
Vial Number:	33	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 15:04	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

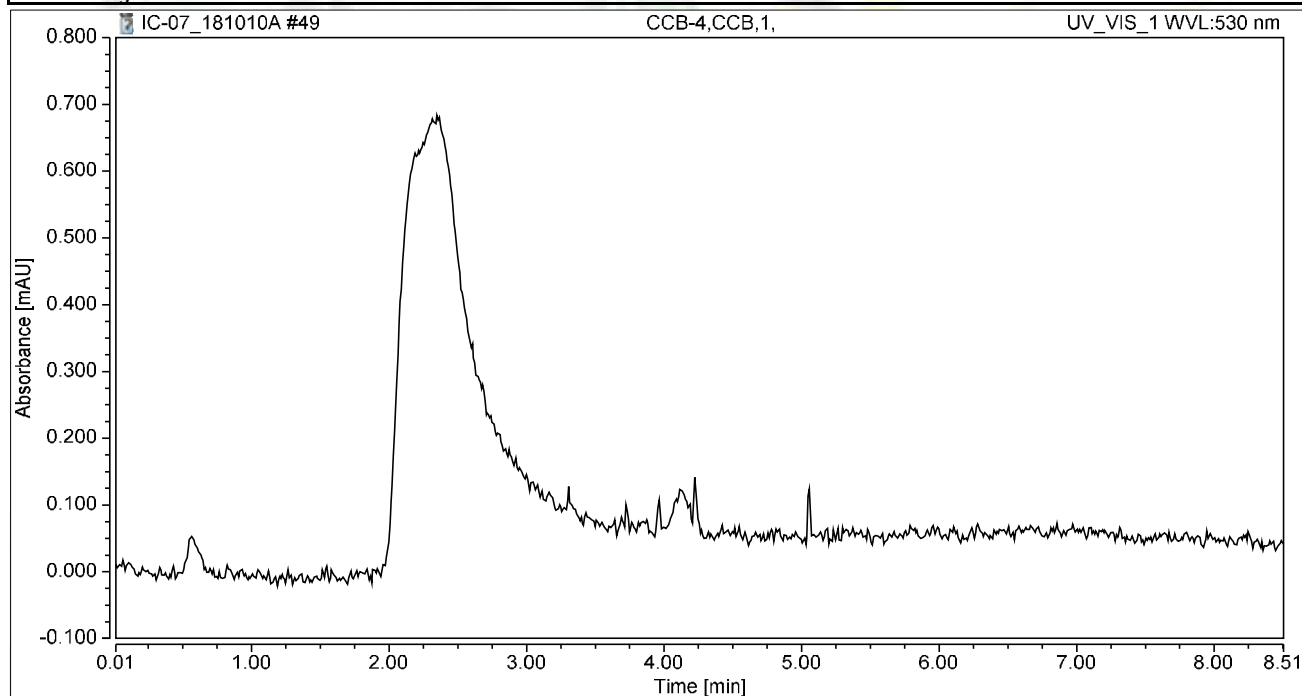
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	2.639	17.395	100.00	100.00	10.4411
<b>Total:</b>			<b>2.639</b>	<b>17.395</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	CCB-4,CCB,1,	Run Time (min):	8.49
Vial Number:	34	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 15:13	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

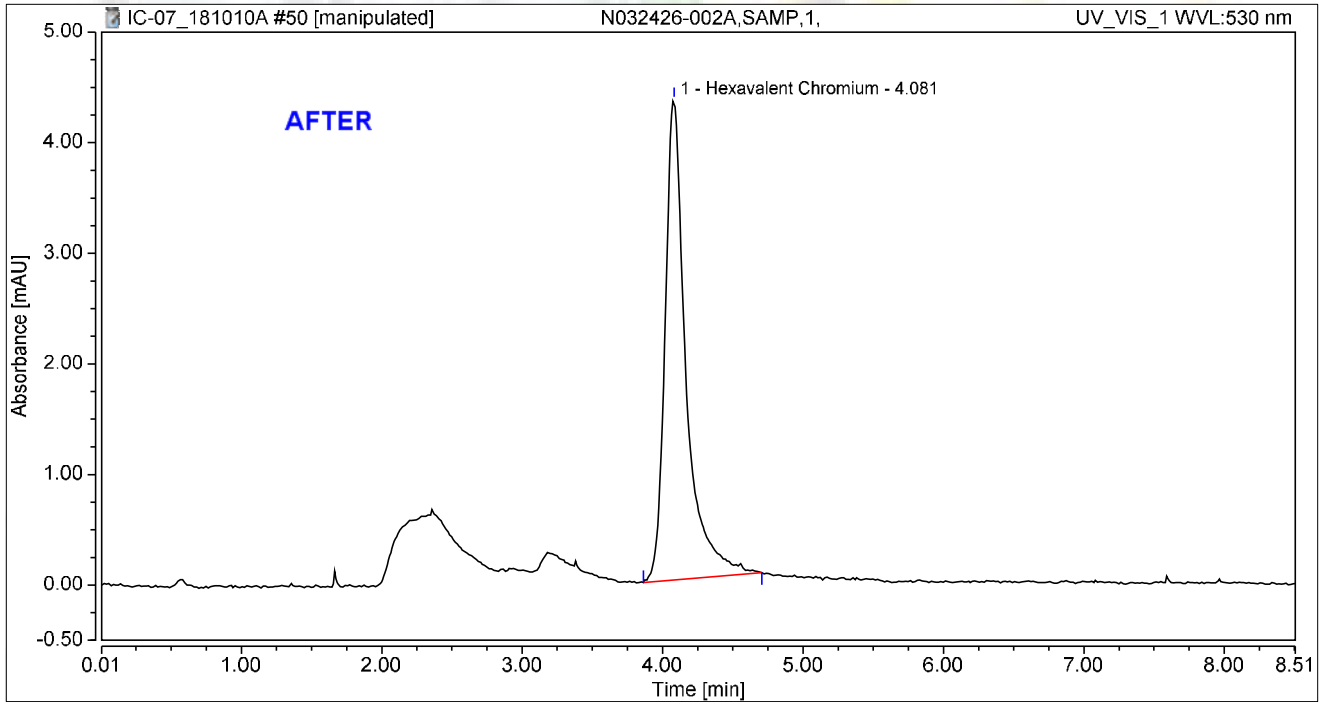
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032426-002A,SAMP,1,	Run Time (min):	8.50
Vial Number:	35	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 15:23	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.753	4.342	100.00	100.00	2.9795
<b>Total:</b>			<b>0.753</b>	<b>4.342</b>	<b>100.00</b>	<b>100.00</b>	

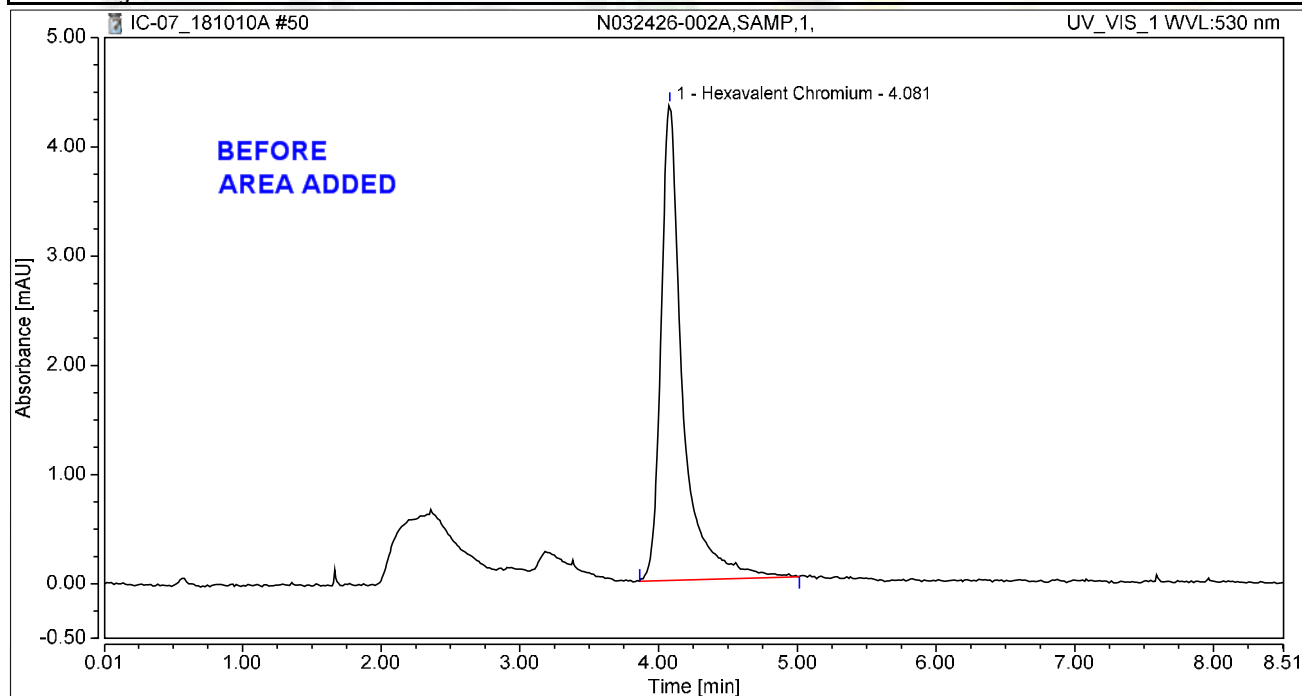
*rba* 10/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032426-002A,SAMP,1,	Run Time (min):	8.50
Vial Number:	35	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 15:23	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	0.785	4.357	100.00	100.00	3.1054
<b>Total:</b>			<b>0.785</b>	<b>4.357</b>	<b>100.00</b>	<b>100.00</b>	

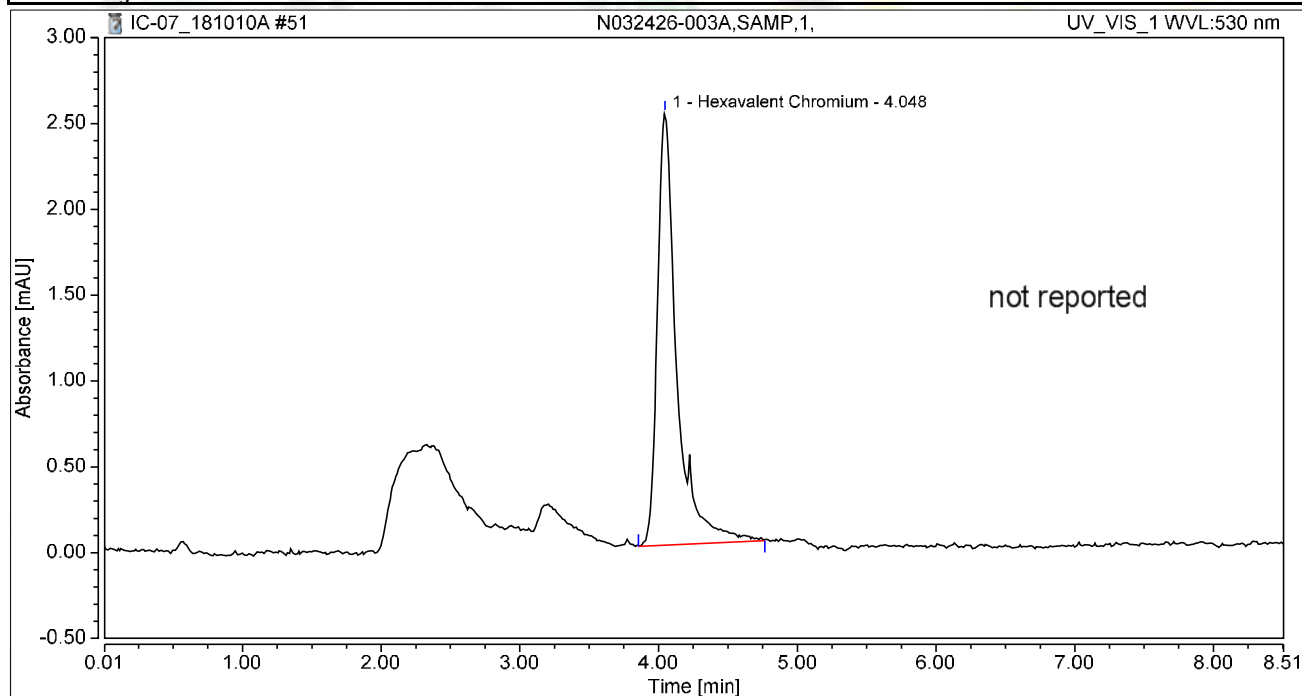
rba 10/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032426-003A,SAMP,1,	Run Time (min):	8.50
Vial Number:	36	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 15:32	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

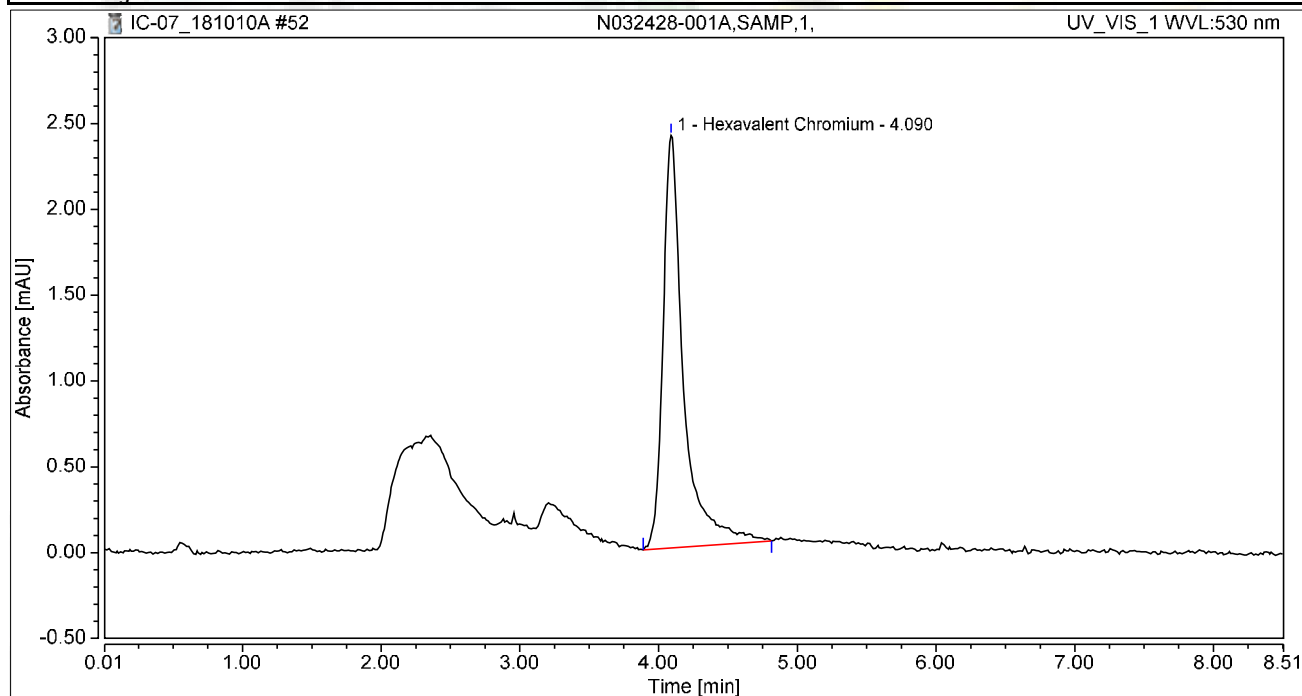
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.048	0.410	2.517	100.00	100.00	1.6205
<b>Total:</b>			<b>0.410</b>	<b>2.517</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032428-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	37	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 15:42	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	0.412	2.401	100.00	100.00	1.6310
<b>Total:</b>			<b>0.412</b>	<b>2.401</b>	<b>100.00</b>	<b>100.00</b>	

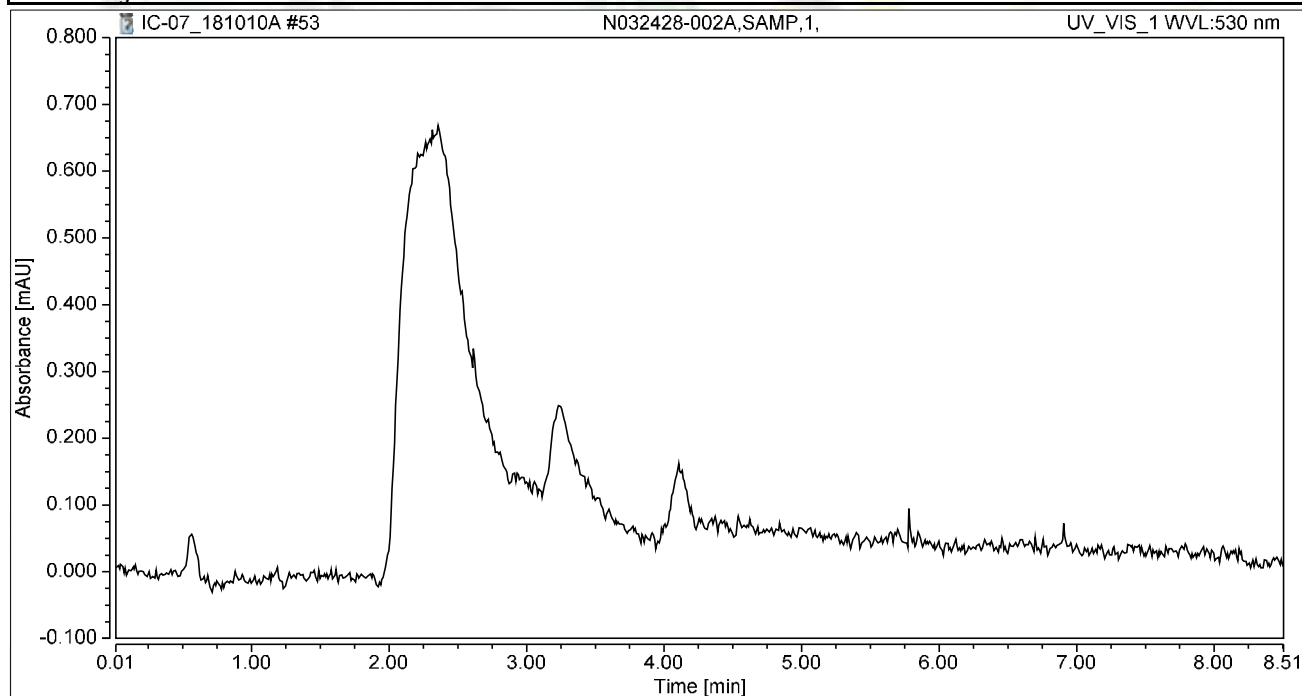


### Chromatogram and Results

**Injection Details**

Injection Name:	N032428-002A,SAMP,1,	Run Time (min):	8.49
Vial Number:	38	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 15:51	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

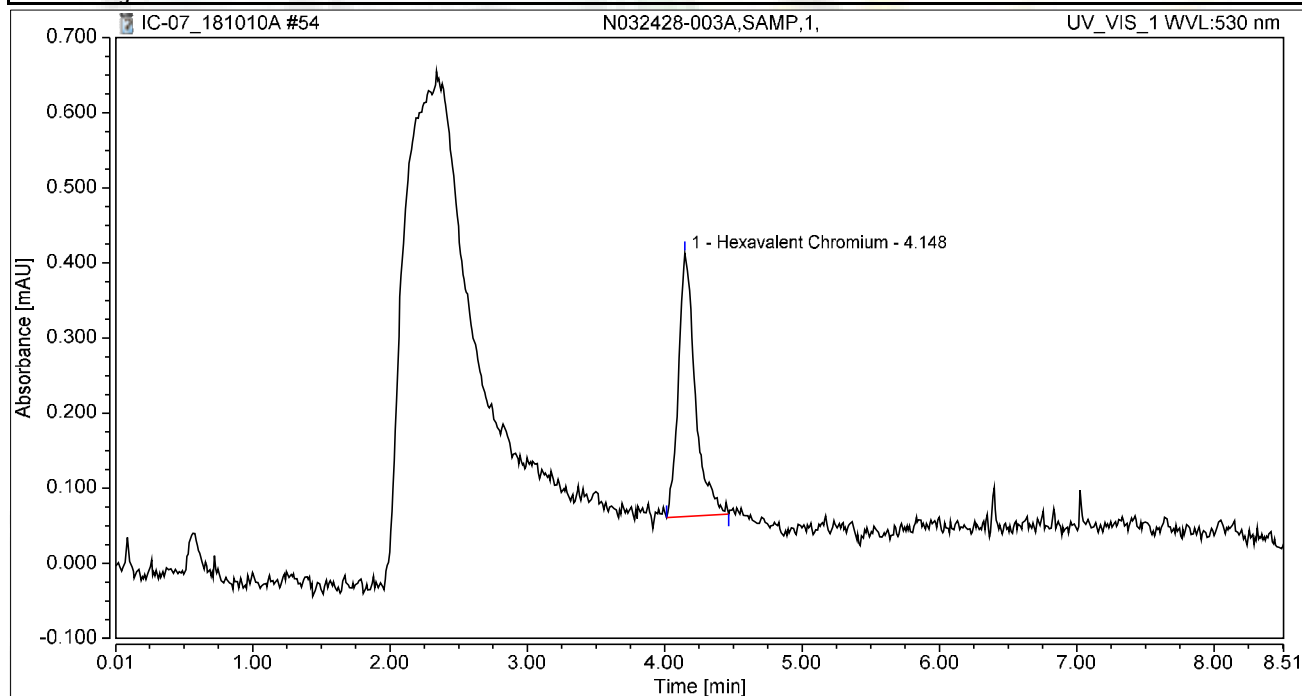
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032428-003A,SAMP,1,	Run Time (min):	8.50
Vial Number:	39	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 16:01	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

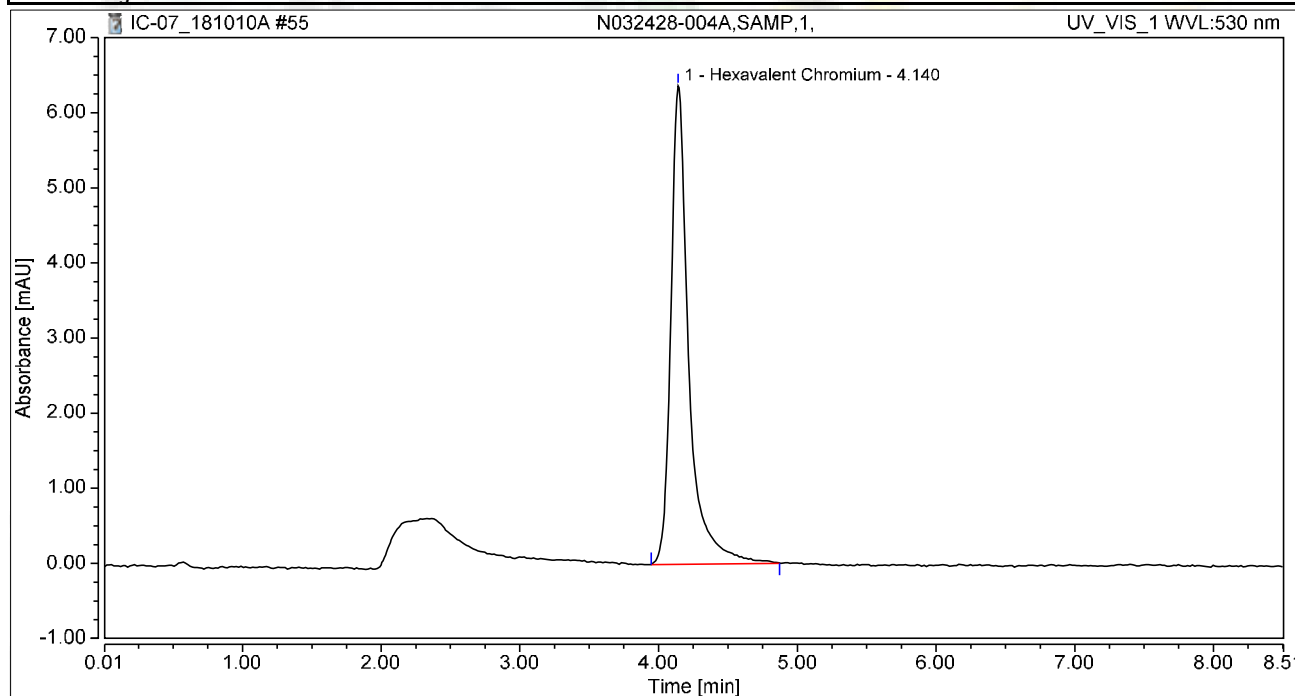
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	0.050	0.350	100.00	100.00	0.1973
<b>Total:</b>			<b>0.050</b>	<b>0.350</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032428-004A,SAMP,1,	Run Time (min):	8.50
Vial Number:	40	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 16:10	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

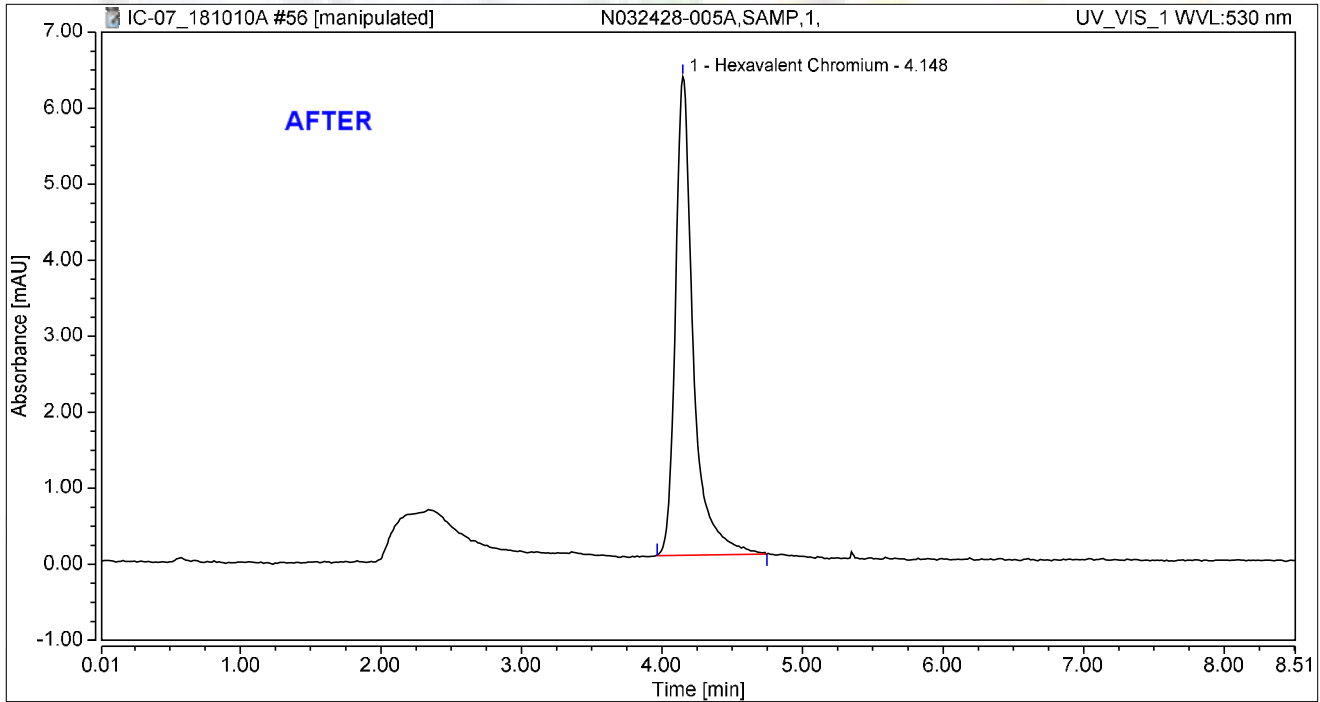
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	0.955	6.366	100.00	100.00	3.7790
<b>Total:</b>			<b>0.955</b>	<b>6.366</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032428-005A,SAMP,1,	Run Time (min):	8.49
Vial Number:	41	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 16:19	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	0.924	6.296	100.00	100.00	3.6563
<b>Total:</b>			<b>0.924</b>	<b>6.296</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/16/2018

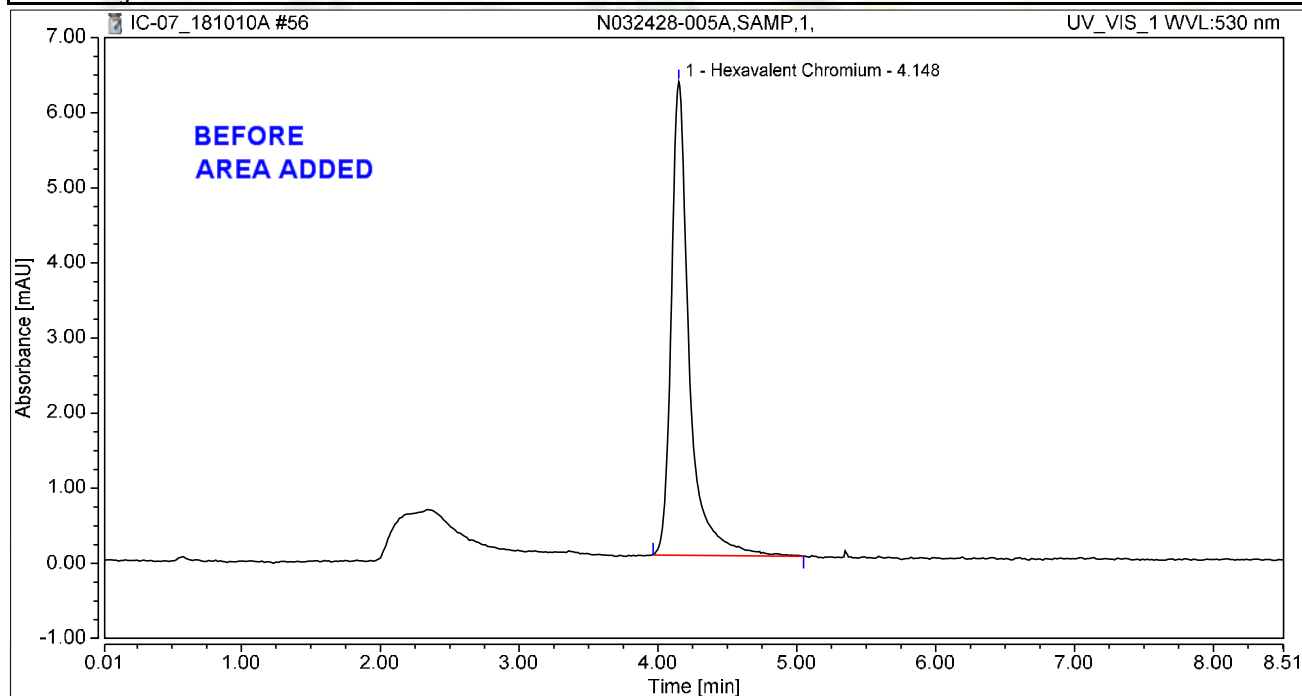
Reviewed by:  
*Shaney* 10/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032428-005A,SAMP,1,	Run Time (min):	8.49
Vial Number:	41	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 16:19	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	0.945	6.304	100.00	100.00	3.7404
<b>Total:</b>			<b>0.945</b>	<b>6.304</b>	<b>100.00</b>	<b>100.00</b>	

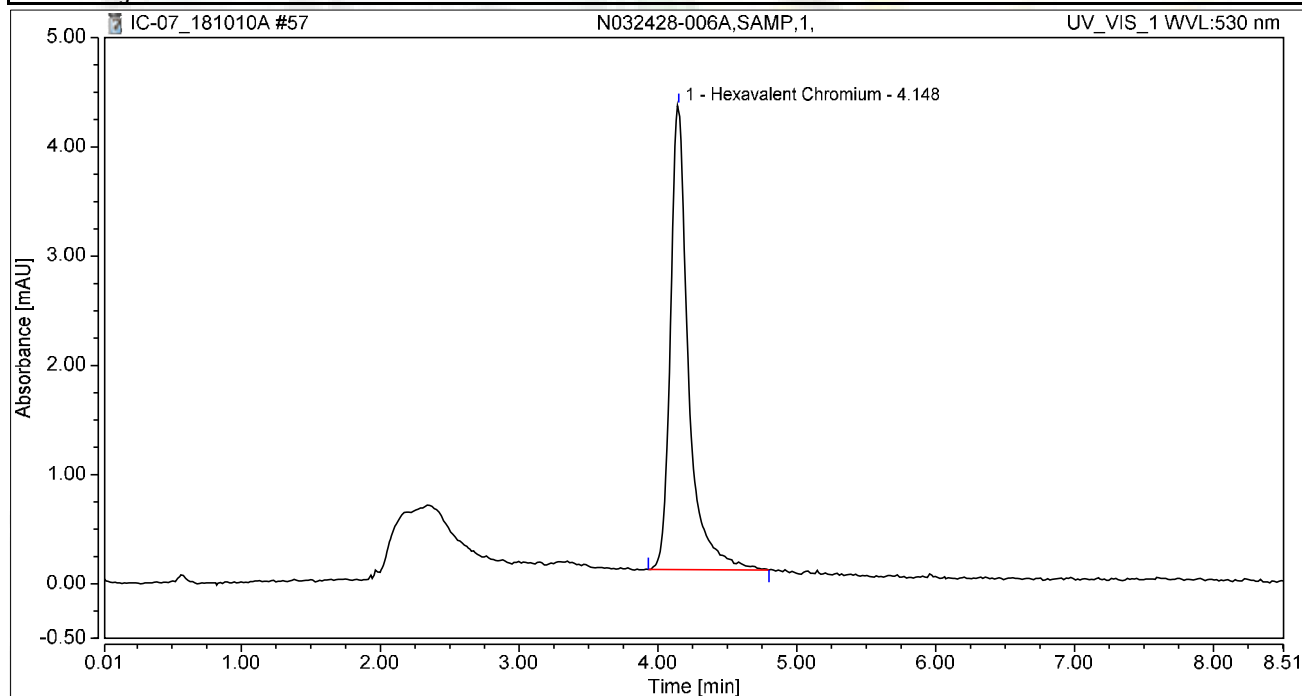
*rba* 10/16/2018

### Chromatogram and Results

#### Injection Details

Injection Name:	N032428-006A,SAMP,1,	Run Time (min):	8.49
Vial Number:	42	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 16:29	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

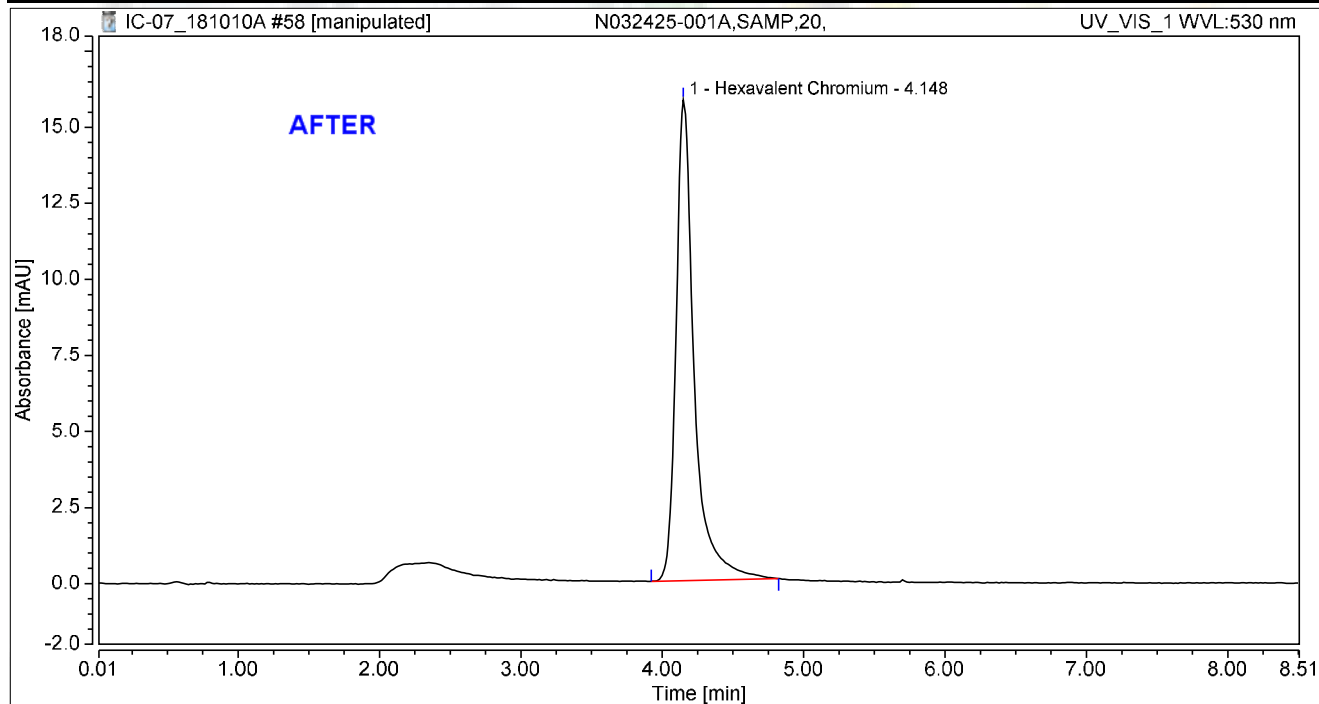
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	0.640	4.250	100.00	100.00	2.5317
<b>Total:</b>			<b>0.640</b>	<b>4.250</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032425-001A,SAMP,20,	Run Time (min):	8.49
Vial Number:	43	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 16:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	2.356	15.816	100.00	100.00	9.3230
<b>Total:</b>			<b>2.356</b>	<b>15.816</b>	<b>100.00</b>	<b>100.00</b>	

rba 10/16/2018

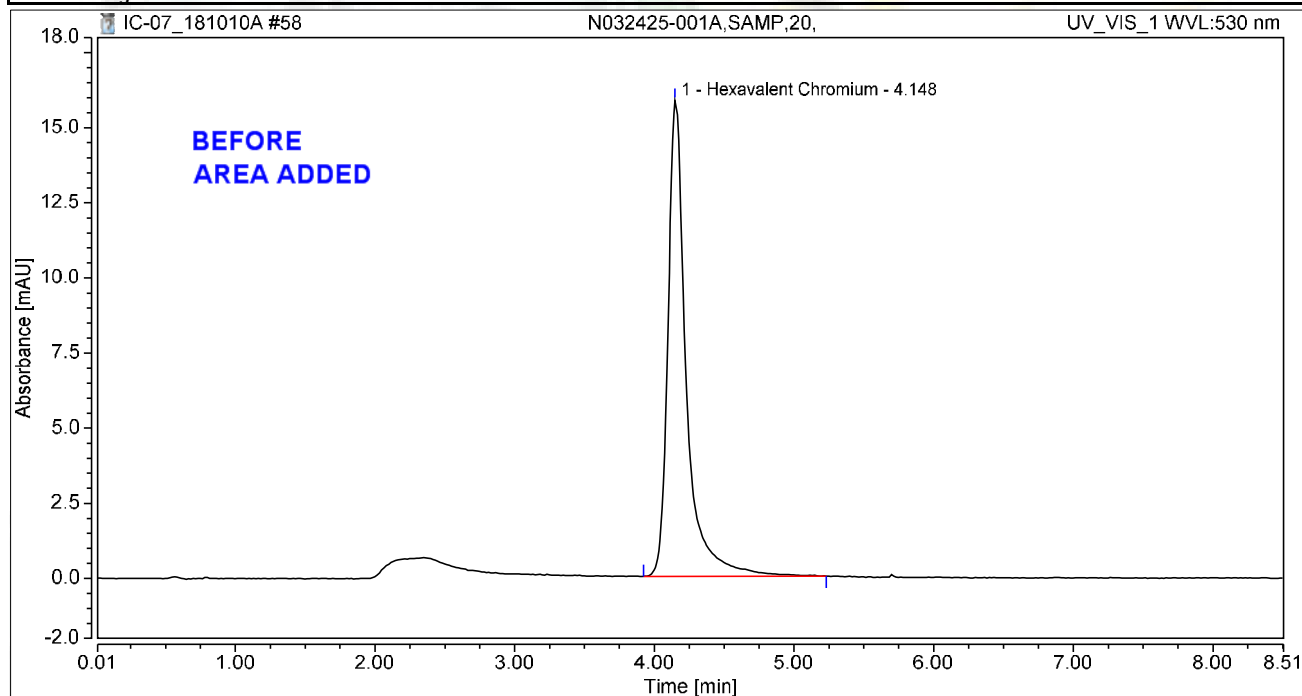
Reviewed by: *Henry* 10/16/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032425-001A,SAMP,20,	Run Time (min):	8.49
Vial Number:	43	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 16:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.148	2.415	15.840	100.00	100.00	9.5553
<b>Total:</b>			<b>2.415</b>	<b>15.840</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/16/2018

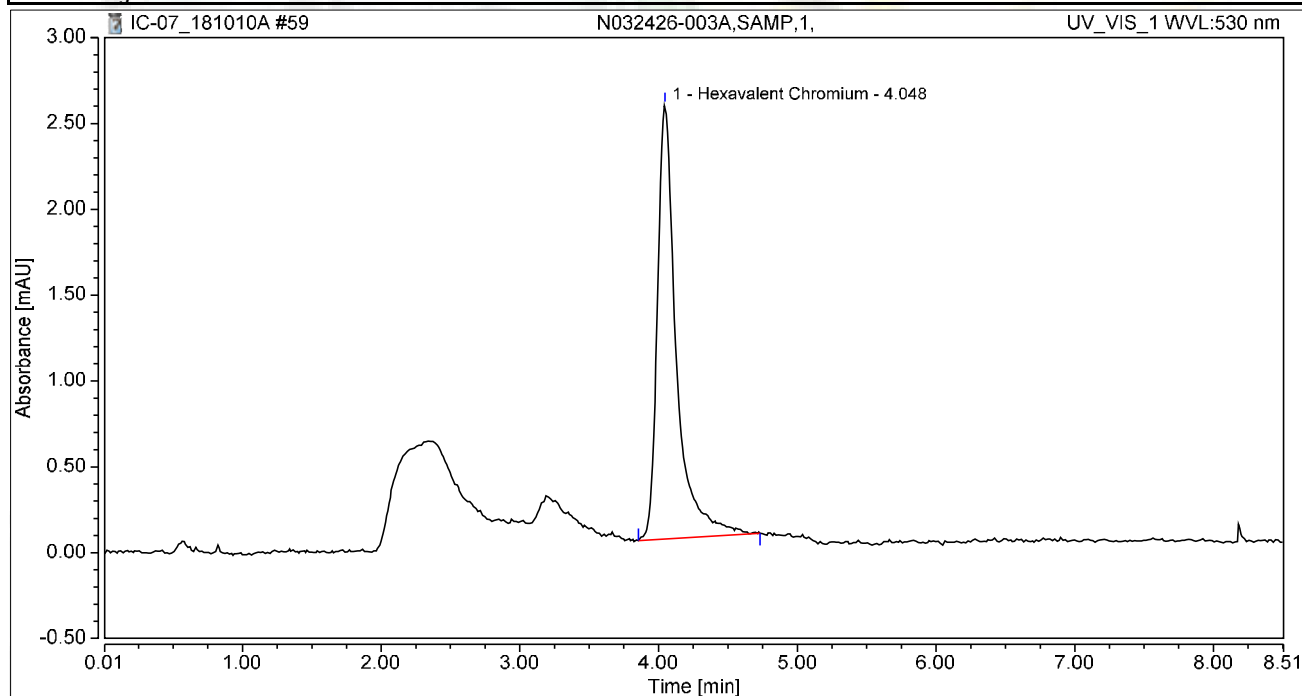


### Chromatogram and Results

#### Injection Details

Injection Name:	N032426-003A,SAMP,1,	Run Time (min):	8.50
Vial Number:	44	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 16:48	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

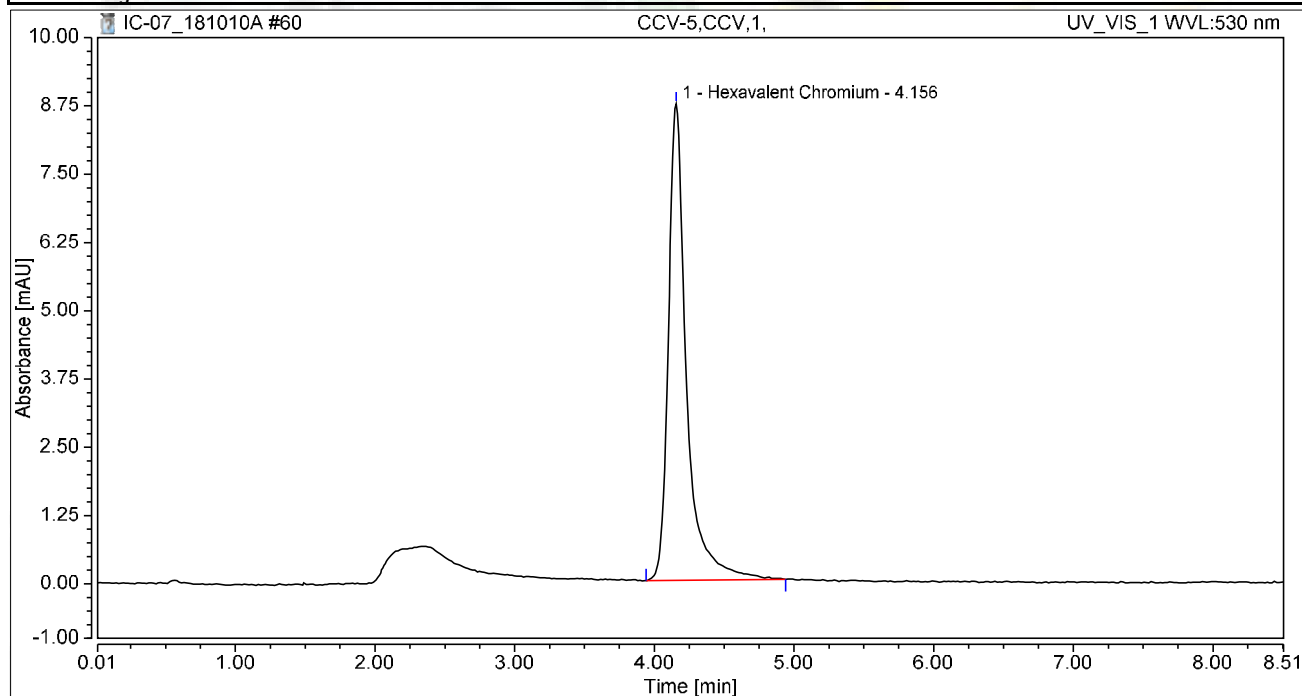
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.048	0.401	2.529	100.00	100.00	1.5864
<b>Total:</b>			<b>0.401</b>	<b>2.529</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-5,CCV,1,	Run Time (min):	8.49
Vial Number:	45	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 16:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

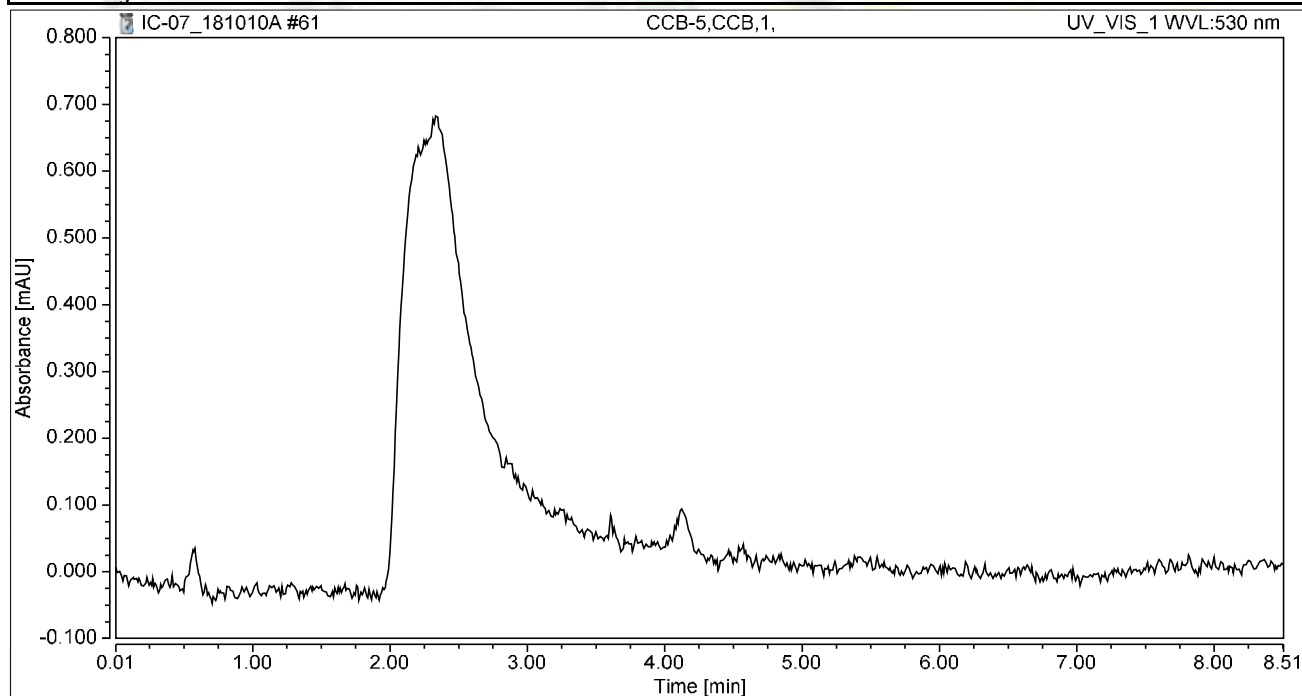
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.156	1.312	8.727	100.00	100.00	5.1905
<b>Total:</b>			<b>1.312</b>	<b>8.727</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	CCB-5,CCB,1,	Run Time (min):	8.50
Vial Number:	46	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	10/Oct/18 17:07	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# SM 4500-NO3F



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Wet Chemistry Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

**FIRST LEVEL REVIEW:**

QC Batch Number:                     R129235                     Analyst:                     QBM                    

ASSET #:                     N032328                     Date Analyzed:                     10/12/2018                    

Method:           4500\_N03          

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.	X					
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)	X					
3. ICV within ± 15% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.	X					
5. CCV within ± 15% of expected value.	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< PQL)	X					
<b>Sample Information</b>						
8. All samples are within linear range.	X					
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer                     QBM                    

Date:                     10/19/18                    

2nd Level Reviewer                     *Nancy* 10/20/2018                    

Date:                     \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 4500N03F  
**TEST NAME:** Nitrate/Nitrite-N by Automated Cadmium Reduction  
**MATRIX:** Groundwater

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

$$\text{Nitrate/Nitrite-N, mg/L} = A * DF$$

where:

A = mg/L, instrument calculated concentration

DF = dilution factor

For: **N032328-001C**

The concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{Nitrate/Nitrite-N} &= 1.0325 * 1 \\ &= 1.0325 \text{ mg/L} \end{aligned}$$

Reporting result in two significant figures,

$$\text{Nitrate/Nitrite-N} = 1.0 \text{ mg/L}$$

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## EPA 353.2 NO3 as N (NO3CD) - Endpoint

## General setup

Measuring unit	ppm
Number of decimals	4
Stabilization time (sec)	26
Measurement time (sec)	3
Sample volume (µl)	450
Filter	546
Reagent prime	No
CD Reduction	Yes

## Limits and dilution

Low level	-0.2
High level	4
Max linearity	4
Blank min	0
Blank max	0.049
Postdilution factor %	10
Factor Calculations	No

## Washes

Number of final washes	6
Wash every	R1, R2

## O.D. Corrections

Carry Over	No
Carry Over value	0.0000
Blank	No
Gain	No

## Reagents

N.	Volume (µl)	Incubation time (sec)
1	200	102
2	300	663
3	0	0

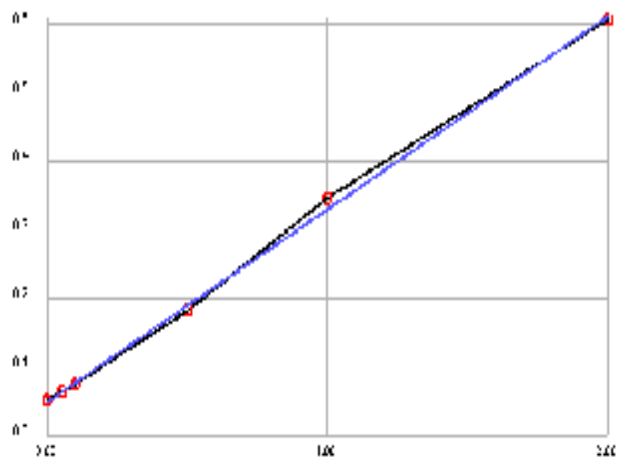
## QC

N.	Value	Tolerance
1	1	0.1

## Calibration

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	$y = 0.2805x + 0.0498$
Correlation	.999305



Calibrant	Energy	Set	Conc
1	0.0511	0.0000	0.0045
2	0.0638	0.0500	0.0497
3	0.0751	0.1000	0.0900
4	0.1820	0.5000	0.4711
5	0.3455	1.0000	1.0539
6	0.6055	2.0000	1.9808

Notes:

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171930</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.478	0.050	0.5000	0	95.6	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171941</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.467	0.050	0.5000	0	93.4	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171946</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.486	0.050	0.5000	0	97.2	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# INITIAL CALIBRATION AND CONTINUING CALIBRATION BLANK SUMMARY



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

**“Serving Clients with Passion and Professionalism”**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171931</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171942</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171947</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Advanced Technology Laboratories, Inc.

3151 W. Post Rd.  
Las Vegas, NV. 89118  
702-307-2659  
702-307-2691  
[www.atl-labs.com](http://www.atl-labs.com)

Time start: 10-12-2018 15:53

Time end: 10-12-2018 17:52

		EPA 353.2 NO3 as N		
		ppm	Flags	OD
1	<BLANK>	17:26:19	-0.0205	0.0441
2	<BLANK>	17:27:14	0.0037	0.0509
3	<CAL1>	17:28:14	0.0045 [0]	0.0511
4	<CAL2>	17:29:09	0.0497 [0.05]	0.0638
5	<CAL3>	17:30:10	0.0900 [0.1]	0.0751
6	<CAL4>	17:31:06	0.4711 [0.5]	0.1820
7	<CAL5>	17:32:05	1.0539 [1]	0.3455
8	<CAL6>	17:33:01	1.9808 [2]	0.6055
9	,BLANK,BLANK,1, <b>NOT REPORTED</b>	17:33:56	0.0572	0.0659
10	,ICV,ICV,1,	17:34:56	0.4779	0.1839
11	,ICB,ICB,1,	17:35:52	0.0205	0.0556
12	,MB-H2O,MBLK,1,	17:36:35	-0.0002	0.0498
13	,LCS-H2O,LCS,1,	17:37:23	0.5050	0.1915
14	,N032305-002C,SAMP,1,	17:38:13	0.0476	0.0632
15	,N032329-001C,SAMP,1,	17:38:55	0.3303	0.1425
16	,N032329-002C,SAMP,5,	17:39:38	0.5271	0.1977
17	,N032329-002CMS,MS,5,	17:40:27	1.0400	0.3416
18	,N032329-002CMSD,MSD,5,	17:41:09	0.9106	0.3053
19	,N032305-001C,SAMP,5,	17:41:53	0.7139	0.2501
20	,N032305-001CDUP,DUP,5,	17:42:41	0.7260	0.2535
21	,BLANK, <b>NOT REPORTED</b>	17:43:24	0.0251	0.0569
22	,CCV-1,CCV,1,	17:44:06	0.4672	0.1809
23	,CCB-1,CCB,1,	17:44:55	0.0148	0.0540
24	,N032328-001C,SAMP,1,	17:45:39	1.0325	0.3395
25	,N032328-002C,SAMP,1,	17:46:21	0.9951	0.3290
26	,N032254-001C,SAMP,200,	17:47:10	0.6137	0.2220

			EPA 353.2 NO3 as N		
			ppm	Flags	OD
27	,BLANK,	<b>NOT REPORTED</b>	17:47:52	0.0180	0.0549
28	,BLANK,	<b>NOT REPORTED</b>	17:48:35	-0.0016	0.0494
29	,CCV-2,CCV,1,		17:49:23	0.4861	0.1862
30	,CCB-2,CCB,1,		17:50:07	0.0144	0.0539

ICAL/CCV: ISST180914E  
ICV/LCS/MS/MSD: ISST180523E





# MDL STUDY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Nitrate/Nitrite by Cadmium Reduction**  
 Method Number: SM4500NO3F  
 Analysis Date(s): 10/25,2017, 10/26/2017, 10/27/2017  
 Analyst/Technician: Quennie B. Manimtim

Matrix: **Water**  
 Unit: mg/L  
 Spike Conc: 0.05 mg/L

Analyte	#1	#2	#3	#4	#5	#6	#7	Ave	SD	t <sub>(n-1)</sub> value	MDL	PQL
Nitrate/Nitrite as N	0.0573	0.0562	0.0500	0.0730	0.0698	0.0637	0.0564	0.0609	0.0082	3.143	0.0259	0.05
<b>Method Blank</b>												
Nitrate/Nitrite as N	0.0160	0.0067	0.0064	0.0204	0.0173	0.0036	0.0083	0.0112	0.0065	3.143	0.0317	0.05
<b>MDL:</b>	<b>0.0317</b>	<b>mg/L</b>										



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CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 ELAP Cert 2921

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
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# EPA 6020 Dissolved



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P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
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**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70882  
 ASSET #: N032328

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 10/8/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)		X			X	
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?	X			X		
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).		X			X	
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits	X			X		
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented			X			X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

IS of Se in N032328-001D / 002 D failed. For rerun  
 IS of Mo in N032328-001D failed. For rerun  
 %RSD of Se in N032328-001D / 002D failed. For rerun.

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer [Signature] 10/20/2018

Date: 10/19/18  
 Date: \_\_\_\_\_



**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70882  
 ASSET #: N032328

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 10/9/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			<del>X</del>		X
24. LCS compounds within control limits.	X			<del>X</del>		X
25. MS/MSD, RPD's are within control limits	X			X		
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented			X			X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

For Mo and Se rerun  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer Manny 10/20/2018

Date: 10/19/18  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## SAMPLE CALCULATION

**METHOD:** EPA 6020  
**TEST NAME:** Heavy Metals by ICP-MS  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Chromium concentration, in ug/L in the original sample as follows:

$$\text{Chromium, ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration  
DF = Dilution Factor  
PF = Final Volume of Digestate, mL / Amount of Sample, mL

For Sample **N032328-001D**, the concentration in ug/L is calculated as follows:

$$\text{Chromium, ug/L} = 6.9674 * 1 * (25/25)$$

$$\text{Chromium, ug/L} = 6.9674$$

Reporting results in two significant figures,

$$\text{Chromium, ug/L} = 7.0$$



# % RSD SUMMARY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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PERCENT RSD SUMMARY: 181008C

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.11	5.71	15	PASS	0.15	10.59	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.52	1.87	15	PASS	0.53	3.0039	15	PASS
Std3-5/50 ppb	ICAL	1	5.16	2.7	15	PASS	5.21	0.83	15	PASS
Std4-10/100 ppb	ICAL	1	10.18	1.071	15	PASS	10.29	2.85	15	PASS
Std5-20/200 ppb	ICAL	1	20.37	1.34	15	PASS	20.46	0.37	15	PASS
Std6-40/400 ppb	ICAL	1	40.51	0.78	15	PASS	40.39	0.95	15	PASS
Std7-100/1000 ppb	ICAL	1	101.28	0.69	15	PASS	100.89	0.44	15	PASS
Std8-200/2000 ppb	ICAL	1	199.21	0.39	15	PASS	199.41	0.72	15	PASS
ICV	ICV	1	10.35	0.96	15	PASS	106.64	0.47	15	PASS
ICB	ICB	1	<0.000	N/A	15	<PQL	0.0029	304.55	15	<PQL
LLICV	CCV1	1	1.05	1.18	20	PASS	0.57	10.88	20	PASS
ICSA1	ICSA	1	0.02	56.88	15	<PQL	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	20.6	1.29	15	PASS	20.49	2.83	15	PASS
LLICV	CCV1	1	1.069	3.4	20	PASS	0.53	10.25	20	PASS
MB-70865	MBLK	1	0.0023	190.47	15	<PQL	0.029	29.59	15	<PQL
CCV1	CCV	1	20.58	1.19	15	PASS	20.8	0.77	15	PASS
CCB1	CCB	1	0.0034	194.29	15	<PQL	0.024	36.86	15	<PQL
LCS-70865	LCS	1	11.058	1.97	15	PASS	111.19	1.55	15	PASS
N032317-001B	SAMP	1	19.77	0.71	15	PASS	311.69	1.045	15	PASS
N032317-001B	SAMP	5	4.041	1.27	15	PASS	63.0049	0.51	15	PASS
N032317-001B-PS	PS	1	28.64	0.9	15	PASS	385.32	0.25	15	PASS
N032317-001B-MS	MS	1	28.87	0.58	15	PASS	387.1	1.0061	15	PASS
N032317-001B-MSD	MSD	1	28.8	0.8	15	PASS	391.33	0.74	15	PASS
N032317-002B	SAMP	1	178.04	0.52	15	PASS	1979.62	0.63	15	PASS
N032317-003B	SAMP	1	2.52	1.73	15	PASS	144.94	0.31	15	PASS
N032317-004B	SAMP	1	41.047	1.61	15	PASS	401.9	1.41	15	PASS
N032317-005B	SAMP	1	677.61	1.17	15	PASS	45.8	0.97	15	PASS
CCV2	CCV	1	20.75	0.56	15	PASS	20.89	0.65	15	PASS
CCB2	CCB	1	0.11	35.42	15	<PQL	0.085	37.46	15	<PQL
N032317-006B	SAMP	1	698.72	1.28	15	PASS	47.49	0.93	15	PASS
N032317-007B	SAMP	1	290.09	0.74	15	PASS	21.029	1.56	15	PASS
N032317-008B	SAMP	1	174.021	0.96	15	PASS	0.87	2.24	15	PASS
N032317-009B	SAMP	1	563.61	1.71	15	PASS	1.45	5.34	15	PASS
N032317-010B	SAMP	1	351.86	0.99	15	PASS	2.0018	4.053	15	PASS
N032317-011B	SAMP	1	405.31	0.17	15	PASS	658.23	1.38	15	PASS
N032317-012B	SAMP	1	640.83	0.96	15	PASS	<0.000	N/A	15	<PQL
N032318-001B	SAMP	1	189.06	1.16	15	PASS	<0.000	N/A	15	<PQL
N032318-002B	SAMP	1	18.066	0.88	15	PASS	<0.000	N/A	15	<PQL
N032318-003B	SAMP	1	18.69	0.83	15	PASS	<0.000	N/A	15	<PQL
CCV3	CCV	1	20.81	1.73	15	PASS	21.087	1.4	15	PASS

PERCENT RSD SUMMARY: 181008C

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
CCB3	CCB	1	0.028	12.68	15	PASS	0.018	12.91	15	PASS
ICSA2	ICSA	1	0.04	4.82	15	PASS	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	21.16	0.59	15	PASS	20.89	1.75	15	PASS
N032318-004B	SAMP	1	1.23	4.35	15	PASS	4.75	2.61	15	PASS
N032318-007B	SAMP	1	74.54	0.81	15	PASS	4.72	4.11	15	PASS
N032318-008B	SAMP	1	837.79	1.5	15	PASS	11.37	2.099	15	PASS
N032318-009B	SAMP	1	859.78	0.79	15	PASS	5.69	4.082	15	PASS
N032318-011B	SAMP	1	229.87	1.093	15	PASS	155.37	1.0042	15	PASS
MB-70882	MBLK	1	0.21	6.031	15	PASS	0.044	14.64	15	PASS
LCS-70882	LCS	1	10.91	1.54	15	PASS	109.83	0.19	15	PASS
N032318-013B	SAMP	1	5.71	2.22	15	PASS	32.3	1.63	15	PASS
N032318-013B	SAMP	5	1.18	4.22	15	PASS	6.76	0.97	15	PASS
N032318-013B-PS	PS	1	16.99	0.32	15	PASS	147.31	0.54	15	PASS
CCV4	CCV	1	20.83	1.056	15	PASS	20.9	0.11	15	PASS
CCB4	CCB	1	0.04	20.73	15	<PQL	0.03	17.2	15	<PQL
N032318-013B-MS	MS	1	16.14	1.25	15	PASS	138.81	0.79	15	PASS
N032318-013B-MSD	MSD	1	17	1.36	15	PASS	145.88	1.17	15	PASS
N032318-014B	SAMP	1	4.51	3.42	15	PASS	0.68	9.57	15	PASS
N032328-001D	SAMP	1	6.97	1.85	15	PASS	12.4	1.49	15	PASS
N032328-002D	SAMP	1	7.047	2.18	15	PASS	12.13	0.82	15	PASS
N032348-001B	SAMP	1	2.84	1.9	15	PASS	70.65	1.6	15	PASS
N032348-002B	SAMP	1	6.3	1.74	15	PASS	17.004	1.61	15	PASS
N032348-006B	SAMP	1	2.32	1.5	15	PASS	<0.000	N/A	15	<PQL
N032348-007B	SAMP	1	2.22	0.85	15	PASS	<0.000	N/A	15	<PQL
N032348-008B	SAMP	1	2.29	1.32	15	PASS	<0.000	N/A	15	<PQL
CCV5	CCV	1	20.89	0.46	15	PASS	20.72	0.76	15	PASS
CCB5	CCB	1	0.016	79.34	15	<PQL	0.011	35.16	15	<PQL
N032348-009B	SAMP	1	1.28	1.79	15	PASS	4.37	3.032	15	PASS
N032348-010B	SAMP	1	3.17	1.39	15	PASS	<0.000	N/A	15	<PQL
N032348-011B	SAMP	1	3.22	2.019	15	PASS	<0.000	N/A	15	<PQL
N032348-012B	SAMP	1	2.15	2.5	15	PASS	<0.000	N/A	15	<PQL
N032348-013B	SAMP	1	2.51	1.8	15	PASS	<0.000	N/A	15	<PQL
N032348-014B	SAMP	1	1.83	3.63	15	PASS	<0.000	N/A	15	<PQL
N032348-015B	SAMP	1	1.81	3.31	15	PASS	<0.000	N/A	15	<PQL
N032348-016B	SAMP	1	0.23	4.88	15	PASS	14.15	0.39	15	PASS
CCV6	CCV	1	20.92	1.34	15	PASS	20.93	1.58	15	PASS
CCB6	CCB	1	0.025	64.63	15	<PQL	0.012	48.25	15	<PQL
ICSA3	ICSA	1	0.022	47.91	15	<PQL	<0.000	N/A	15	<PQL
ICSAB3	ICSAB	1	21.39	1.02	15	PASS	20.6	0.96	15	PASS

PERCENT RSD SUMMARY: 181008C

Instrument ID: ICPMS-02

Sample Name	Type	DF	75 As [2]				78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.12	27.47	15	NR!	0.081	36	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.52	3.075	15	PASS	0.49	2.05	15	PASS
Std3-5/50 ppb	ICAL	1	5.036	2.12	15	PASS	4.99	7.35	15	PASS
Std4-10/100 ppb	ICAL	1	9.82	1.0096	15	PASS	10.25	3.73	15	PASS
Std5-20/200 ppb	ICAL	1	20.14	2.029	15	PASS	20.2	2.84	15	PASS
Std6-40/400 ppb	ICAL	1	40.075	1.053	15	PASS	39.99	4.45	15	PASS
Std7-100/1000 ppb	ICAL	1	100.067	0.72	15	PASS	101.65	0.95	15	PASS
Std8-200/2000 ppb	ICAL	1	199.95	0.75	15	PASS	199.15	2.64	15	PASS
ICV	ICV	1	10.34	0.61	15	PASS	10.12	8.91	15	PASS
ICB	ICB	1	<0.000	N/A	15	<PQL	0.017	143.93	15	<PQL
LLICV	CCV1	1	0.094	11.3	20	PASS	0.55	22.75	20	NR!
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	21.19	2.066	15	PASS	19.36	6.73	15	PASS
LLICV	CCV1	1	0.13	22.085	20	NR!	0.45	9.17	20	PASS
MB-70865	MBLK	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
CCV1	CCV	1	20.31	1.96	15	PASS	21.14	2.57	15	PASS
CCB1	CCB	1	0.018	78.046	15	<PQL	0.021	248.07	15	<PQL
LCS-70865	LCS	1	10.17	1.36	15	PASS	10.78	10.36	15	PASS
N032317-001B	SAMP	1	1.8	6.7	15	PASS	0.0052	788.27	15	<PQL
N032317-001B	SAMP	5	0.36	9.51	15	PASS	0.014	111.47	15	<PQL
N032317-001B-PS	PS	1	12.68	0.88	15	PASS	10.73	4.16	15	PASS
N032317-001B-MS	MS	1	12.88	2.15	15	PASS	11.59	16.57	15	NR!
N032317-001B-MSD	MSD	1	12.87	1.28	15	PASS	11.079	7.63	15	PASS
N032317-002B	SAMP	1	6.72	2.98	15	PASS	0.06	24.39	15	<PQL
N032317-003B	SAMP	1	1.94	1.45	15	PASS	0.12	46.32	15	<PQL
N032317-004B	SAMP	1	0.98	6.22	15	PASS	0.0043	933.87	15	<PQL
N032317-005B	SAMP	1	0.67	7.13	15	PASS	0.023	116.88	15	<PQL
CCV2	CCV	1	20.16	1.75	15	PASS	19.45	1.75	15	PASS
CCB2	CCB	1	<0.000	N/A	15	<PQL	0.032	126.29	15	<PQL
N032317-006B	SAMP	1	0.66	6.82	15	PASS	0.044	97.96	15	<PQL
N032317-007B	SAMP	1	16.17	1.2	15	PASS	0.031	98.74	15	<PQL
N032317-008B	SAMP	1	0.42	5.68	15	PASS	0.0039	1019.38	15	<PQL
N032317-009B	SAMP	1	1.79	10.78	15	PASS	0.19	7.58	15	PASS
N032317-010B	SAMP	1	1.99	2.82	15	PASS	0.16	92.81	15	<PQL
N032317-011B	SAMP	1	3.36	2.51	15	PASS	0.095	44.026	15	<PQL
N032317-012B	SAMP	1	1.77	2.64	15	PASS	1.44	4.92	15	PASS
N032318-001B	SAMP	1	1.86	6.055	15	PASS	0.16	34.073	15	<PQL
N032318-002B	SAMP	1	0.6	3.83	15	PASS	0.38	26.27	15	<PQL
N032318-003B	SAMP	1	0.61	1.84	15	PASS	0.44	41.2	15	<PQL
CCV3	CCV	1	20.052	1.63	15	PASS	20.15	1.35	15	PASS

PERCENT RSD SUMMARY: 181008C

Instrument ID: ICPMS-02

Sample Name	Type	DF	75 As [2]				78 Se [1]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
CCB3	CCB	1	0.0065	72.3	15	<PQL	<0.000	N/A	15	<PQL
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	21.22	1.033	15	PASS	20.46	4.21	15	PASS
N032318-004B	SAMP	1	1.0065	7.52	15	PASS	0.18	39.079	15	<PQL
N032318-007B	SAMP	1	3.67	4.032	15	PASS	0.39	30.28	15	<PQL
N032318-008B	SAMP	1	1.18	4.66	15	PASS	0.07	59.39	15	<PQL
N032318-009B	SAMP	1	1.13	4.14	15	PASS	0.099	42.9	15	<PQL
N032318-011B	SAMP	1	1.13	3.75	15	PASS	<0.000	N/A	15	<PQL
MB-70882	MBLK	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LCS-70882	LCS	1	10.56	1.84	15	PASS	10.68	5.85	15	PASS
N032318-013B	SAMP	1	0.61	13.18	15	PASS	0.043	37.14	15	<PQL
N032318-013B	SAMP	5	0.11	12.57	15	PASS	<0.000	N/A	15	<PQL
N032318-013B-PS	PS	1	12.2	1.8	15	PASS	12.16	2.8	15	PASS
CCV4	CCV	1	20.13	1.75	15	PASS	19.75	5.33	15	PASS
CCB4	CCB	1	<0.000	N/A	15	<PQL	0.032	48.14	15	<PQL
N032318-013B-MS	MS	1	11.13	1.22	15	PASS	10.81	3.24	15	PASS
N032318-013B-MSD	MSD	1	12.33	2.036	15	PASS	11.98	3.16	15	PASS
N032318-014B	SAMP	1	0.39	8.62	15	PASS	0.044	133.76	15	<PQL
N032328-001D	SAMP	1	2.043	6.76	15	PASS	0.76	31.27	15	NR!
N032328-002D	SAMP	1	1.92	5.0099	15	PASS	0.67	30.74	15	NR!
N032348-001B	SAMP	1	1.49	0.94	15	PASS	0.56	40.55	15	NR!
N032348-002B	SAMP	1	0.59	6.81	15	PASS	0.76	36.19	15	NR!
N032348-006B	SAMP	1	1.11	5.41	15	PASS	0.68	30.12	15	NR!
N032348-007B	SAMP	1	1.077	1.6	15	PASS	0.7	17.42	15	NR!
N032348-008B	SAMP	1	0.8	9.5	15	PASS	0.58	49.83	15	NR!
CCV5	CCV	1	20.087	1.82	15	PASS	21.17	2.27	15	PASS
CCB5	CCB	1	0.0057	228.13	15	<PQL	<0.000	N/A	15	<PQL
N032348-009B	SAMP	1	8.71	3.058	15	PASS	0.38	13.19	15	PASS
N032348-010B	SAMP	1	1.79	3.76	15	PASS	0.29	24.89	15	<PQL
N032348-011B	SAMP	1	1.9	8.26	15	PASS	0.22	42.49	15	<PQL
N032348-012B	SAMP	1	1.27	0.79	15	PASS	0.26	58.25	15	<PQL
N032348-013B	SAMP	1	0.78	7.49	15	PASS	0.46	44.41	15	<PQL
N032348-014B	SAMP	1	0.96	4.65	15	PASS	0.45	39.14	15	<PQL
N032348-015B	SAMP	1	0.95	8.71	15	PASS	0.58	30.61	15	NR!
N032348-016B	SAMP	1	11.85	0.35	15	PASS	<0.000	N/A	15	<PQL
CCV6	CCV	1	20.23	2.012	15	PASS	21.29	6.0032	15	PASS
CCB6	CCB	1	<0.000	N/A	15	<PQL	0.024	229.77	15	<PQL
ICSA3	ICSA	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
ICSAB3	ICSAB	1	21.4	1.29	15	PASS	21.56	1.98	15	PASS

PERCENT RSD SUMMARY: 181008C

Instrument ID: ICPMS-02

Sample Name	Type	DF	95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.065	35.57	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.44	5.33	15	PASS
Std3-5/50 ppb	ICAL	1	4.67	1.85	15	PASS
Std4-10/100 ppb	ICAL	1	9.59	0.82	15	PASS
Std5-20/200 ppb	ICAL	1	19.34	0.68	15	PASS
Std6-40/400 ppb	ICAL	1	39.41	0.73	15	PASS
Std7-100/1000 ppb	ICAL	1	99.64	0.5	15	PASS
Std8-200/2000 ppb	ICAL	1	200.39	0.52	15	PASS
ICV	ICV	1	10.89	0.5	15	PASS
ICB	ICB	1	0.074	15.84	15	<PQL
LLICV	CCV1	1	0.49	2.83	20	PASS
ICSA1	ICSA	1	0.067	39.88	15	<PQL
ICSAB1	ICSAB	1	21.68	1.11	15	PASS
LLICV	CCV1	1	0.69	0.76	20	PASS
MB-70865	MBLK	1	0.032	63.37	15	<PQL
CCV1	CCV	1	19.085	1.93	15	PASS
CCB1	CCB	1	0.19	14.52	15	PASS
LCS-70865	LCS	1	10.11	0.5	15	PASS
N032317-001B	SAMP	1	4.45	2.57	15	PASS
N032317-001B	SAMP	5	0.8	1.25	15	PASS
N032317-001B-PS	PS	1	15.9	1.74	15	PASS
N032317-001B-MS	MS	1	16.3	1.52	15	PASS
N032317-001B-MSD	MSD	1	16.15	1.61	15	PASS
N032317-002B	SAMP	1	16.69	1.42	15	PASS
N032317-003B	SAMP	1	3.57	1.28	15	PASS
N032317-004B	SAMP	1	2.41	3.44	15	PASS
N032317-005B	SAMP	1	1.97	7.79	15	PASS
CCV2	CCV	1	19.19	0.81	15	PASS
CCB2	CCB	1	0.17	2.036	15	PASS
N032317-006B	SAMP	1	2.015	4.41	15	PASS
N032317-007B	SAMP	1	10.084	0.15	15	PASS
N032317-008B	SAMP	1	1.74	9.47	15	PASS
N032317-009B	SAMP	1	2.47	0.98	15	PASS
N032317-010B	SAMP	1	16.5	1.24	15	PASS
N032317-011B	SAMP	1	4.12	1.7	15	PASS
N032317-012B	SAMP	1	1.56	4.074	15	PASS
N032318-001B	SAMP	1	3.079	4.59	15	PASS
N032318-002B	SAMP	1	1.28	2.079	15	PASS
N032318-003B	SAMP	1	1.43	2.96	15	PASS
CCV3	CCV	1	18.97	0.091	15	PASS

PERCENT RSD SUMMARY: 181008C

Instrument ID: ICPMS-02

Sample Name	Type	DF	95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment
CCB3	CCB	1	0.15	14.74	15	PASS
ICSA2	ICSA	1	0.22	119.86	15	<PQL
ICSAB2	ICSAB	1	21.94	1.056	15	PASS
N032318-004B	SAMP	1	3.74	1.92	15	PASS
N032318-007B	SAMP	1	1.16	1.71	15	PASS
N032318-008B	SAMP	1	2.82	2.092	15	PASS
N032318-009B	SAMP	1	2.68	1.89	15	PASS
N032318-011B	SAMP	1	1.32	2.82	15	PASS
MB-70882	MBLK	1	0.011	156.5	15	<PQL
LCS-70882	LCS	1	9.67	1.058	15	PASS
N032318-013B	SAMP	1	2.33	1.58	15	PASS
N032318-013B	SAMP	5	0.46	8.99	15	PASS
N032318-013B-PS	PS	1	14.62	1.38	15	PASS
CCV4	CCV	1	19.16	1.53	15	PASS
CCB4	CCB	1	0.18	8.62	15	PASS
N032318-013B-MS	MS	1	13.62	1.0037	15	PASS
N032318-013B-MSD	MSD	1	14.84	0.92	15	PASS
N032318-014B	SAMP	1	1.21	0.25	15	PASS
N032328-001D	SAMP	1	188.066	0.53	15	PASS
N032328-002D	SAMP	1	184.25	0.73	15	PASS
N032348-001B	SAMP	1	2.94	1.79	15	PASS
N032348-002B	SAMP	1	2.78	1.41	15	PASS
N032348-006B	SAMP	1	2.35	1.92	15	PASS
N032348-007B	SAMP	1	2.21	2.82	15	PASS
N032348-008B	SAMP	1	1.52	1.44	15	PASS
CCV5	CCV	1	18.97	0.57	15	PASS
CCB5	CCB	1	0.18	8.85	15	PASS
N032348-009B	SAMP	1	8.49	1.58	15	PASS
N032348-010B	SAMP	1	3.23	1.54	15	PASS
N032348-011B	SAMP	1	3.14	2.49	15	PASS
N032348-012B	SAMP	1	2.53	2.53	15	PASS
N032348-013B	SAMP	1	1.63	1.52	15	PASS
N032348-014B	SAMP	1	1.44	1.6	15	PASS
N032348-015B	SAMP	1	1.41	3.82	15	PASS
N032348-016B	SAMP	1	9.4	1.17	15	PASS
CCV6	CCV	1	19.093	0.48	15	PASS
CCB6	CCB	1	0.16	7.51	15	PASS
ICSA3	ICSA	1	0.093	14.48	15	PASS
ICSAB3	ICSAB	1	21.91	1.36	15	PASS

PERCENT RSD SUMMARY: 181009A

Instrument ID: ICPMS-02

Sample Name	Type	DF	78 Se [1]				95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.089	75.68	15	<PQL	0.082	13.11	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.5	36.7	15	<PQL	0.44	8.3	15	PASS
Std3-5/50 ppb	ICAL	1	5.35	4.93	15	PASS	4.57	2.037	15	PASS
Std4-10/100 ppb	ICAL	1	10.051	5.23	15	PASS	9.32	0.86	15	PASS
Std5-20/200 ppb	ICAL	1	19.16	3.53	15	PASS	19.16	0.88	15	PASS
Std6-40/400 ppb	ICAL	1	38.16	2.4	15	PASS	39.46	1.68	15	PASS
Std7-100/1000 ppb	ICAL	1	99.44	2.037	15	PASS	99.097	0.73	15	PASS
Std8-200/2000 ppb	ICAL	1	200.72	1.99	15	PASS	200.69	0.37	15	PASS
ICV	ICV	1	9.91	8.055	15	PASS	9.74	1.26	15	PASS
ICB	ICB	1	0.058	57.85	15	<PQL	0.15	31.11	15	<PQL
LLICV	CCV1	1	0.57	16.95	20	PASS	0.54	8.87	20	PASS
ICSA1	ICSA	1	0.0085	177.69	15	<PQL	0.11	8.28	15	PASS
ICSAB1	ICSAB	1	18.25	5.98	15	PASS	22.24	0.17	15	PASS
LLICV	CCV1	1	0.54	45.089	20	NR!	0.65	8.46	20	PASS
CCV1	CCV	1	19.25	7.61	15	PASS	19.29	0.3	15	PASS
CCB1	CCB	1	0.05	117.39	15	<PQL	0.21	14.48	15	PASS
CCV2	CCV	1	19.02	5.12	15	PASS	19.099	0.69	15	PASS
CCB2	CCB	1	0.039	40.64	15	<PQL	0.2	2.62	15	PASS
ICSA2	ICSA	1	0.017	152.43	15	<PQL	0.13	17.59	15	<PQL
ICSAB2	ICSAB	1	18.91	4.4	15	PASS	22.037	1.28	15	PASS
CCV3	CCV	1	19.63	4.47	15	PASS	19.3	0.75	15	PASS
CCB3	CCB	1	0.037	113.71	15	<PQL	0.2	7.9	15	PASS
CCV4	CCV	1	18.72	4.36	15	PASS	19.22	0.54	15	PASS
CCB4	CCB	1	0.042	85.22	15	<PQL	0.2	9.25	15	PASS
MB-70882	MBLK	1	0.01	324.5	15	<PQL	0.19	15.49	15	<PQL
LCS-70882	LCS	1	9.82	5.84	15	PASS	9.88	0.29	15	PASS
N032318-013B	SAMP	5	0.011	155.84	15	<PQL	0.63	7.29	15	PASS
N032318-013B	SAMP	25	0.01	322.081	15	<PQL	0.15	20.63	15	<PQL
CCV5	CCV	1	20.23	3.03	15	PASS	19.26	2.51	15	PASS
CCB5	CCB	1	0.00077	2204.08	15	<PQL	0.21	15.13	15	<PQL
N032318-013B-PS	PS	5	2.83	7.55	15	PASS	3.26	1.79	15	PASS
N032318-013B-MS	MS	5	3.0037	18.028	15	NR!	3.24	1.19	15	PASS
N032318-013B-MSD	MSD	5	2.47	9.42	15	PASS	3.24	5.54	15	PASS
N032328-001D	SAMP	5	0.075	25.77	15	<PQL	36.31	1.55	15	PASS
N032328-002D	SAMP	5	0.12	25.44	15	<PQL	35.93	1.68	15	PASS
N032328-001D	SAMP	1	0.59	22.82	15	NR!	190.87	0.15	15	PASS
N032328-001D	SAMP	25	0.039	114.31	15	<PQL	7.49	0.84	15	PASS
N032328-002D	SAMP	1	0.6	33.34	15	NR!	186.4	0.45	15	PASS
CCV6	CCV	1	19.045	1.42	15	PASS	20.0011	0.85	15	PASS
CCB6	CCB	1	0.045	59.47	15	<PQL	0.37	16.65	15	<PQL

NR  
NR



PERCENT RSD SUMMARY: 181009A

Instrument ID: ICPMS-02

Sample Name	Type	DF	78 Se [1]				95 Mo [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
ICSA3	ICSA	1	0.026	116	15	<PQL	0.22	2.76	15	PASS
ICSAB3	ICSAB	1	18.7	3.56	15	PASS	22.48	1.2	15	PASS

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**INJECTION LOG: 181008C**

**Instrument ID: ICPMS-02**

Data File	Sample Name	Type	DF	Acq. Date-Time
C1008001.D	RINSE	RINSE	1	10/08/18 6:32 PM
C1008002.D	Cal Blank	IBLK	1	10/08/18 6:37 PM
C1008003.D	Std1-0.1/1 ppb	ICAL	1	10/08/18 6:43 PM
C1008004.D	Std2-0.5/5 ppb	ICAL	1	10/08/18 6:48 PM
C1008005.D	Std3-5/50 ppb	ICAL	1	10/08/18 6:54 PM
C1008006.D	Std4-10/100 ppb	ICAL	1	10/08/18 6:59 PM
C1008007.D	Std5-20/200 ppb	ICAL	1	10/08/18 7:05 PM
C1008008.D	Std6-40/400 ppb	ICAL	1	10/08/18 7:11 PM
C1008009.D	Std7-100/1000 ppb	ICAL	1	10/08/18 7:16 PM
C1008010.D	Std8-200/2000 ppb	ICAL	1	10/08/18 7:22 PM
C1008011.D	ICV	ICV	1	10/08/18 7:29 PM
C1008012.D	ICB	ICB	1	10/08/18 7:34 PM
C1008013.D	LLICV	CCV1	1	10/08/18 7:40 PM
C1008014.D	ICSA1	ICSA	1	10/08/18 7:46 PM
C1008015.D	ICSAB1	ICSAB	1	10/08/18 7:51 PM
C1008016.D	LLICV	CCV1	1	10/08/18 7:57 PM
C1008017.D	N032246-005C	SAMP	1	10/08/18 8:02 PM
C1008018.D	N032246-005C	SAMP	5	10/08/18 8:08 PM
C1008019.D	N032268-004D	SAMP	1	10/08/18 8:13 PM
C1008020.D	N032268-004D	SAMP	5	10/08/18 8:20 PM
C1008021.D	N032304-001B	SAMP	5	10/08/18 8:25 PM
C1008022.D	N032304-001B	SAMP	25	10/08/18 8:30 PM
C1008023.D	N032304-001B-PS	PS	5	10/08/18 8:36 PM
C1008024.D	N032304-001B-MS	MS	5	10/08/18 8:41 PM
C1008025.D	N032304-001B-MSD	MSD	5	10/08/18 8:47 PM
C1008026.D	MB-70865	MBLK	1	10/08/18 8:53 PM
C1008027.D	CCV1	CCV	1	10/08/18 8:58 PM
C1008028.D	CCB1	CCB	1	10/08/18 9:04 PM
C1008029.D	LCS-70865	LCS	1	10/08/18 9:09 PM
C1008030.D	N032317-001B	SAMP	1	10/08/18 9:15 PM
C1008031.D	N032317-001B	SAMP	5	10/08/18 9:21 PM
C1008032.D	N032317-001B-PS	PS	1	10/08/18 9:26 PM
C1008033.D	N032317-001B-MS	MS	1	10/08/18 9:32 PM
C1008034.D	N032317-001B-MSD	MSD	1	10/08/18 9:37 PM
C1008035.D	N032317-002B	SAMP	1	10/08/18 9:43 PM
C1008036.D	N032317-003B	SAMP	1	10/08/18 9:48 PM
C1008037.D	N032317-004B	SAMP	1	10/08/18 9:54 PM
C1008038.D	N032317-005B	SAMP	1	10/08/18 10:00 PM
C1008039.D	CCV2	CCV	1	10/08/18 10:05 PM
C1008040.D	CCB2	CCB	1	10/08/18 10:11 PM
C1008041.D	N032317-006B	SAMP	1	10/08/18 10:16 PM
C1008042.D	N032317-007B	SAMP	1	10/08/18 10:22 PM

**INJECTION LOG: 181008C**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
C1008043.D	N032317-008B	SAMP	1	10/08/18 10:27 PM
C1008044.D	N032317-009B	SAMP	1	10/08/18 10:33 PM
C1008045.D	N032317-010B	SAMP	1	10/08/18 10:39 PM
C1008046.D	N032317-011B	SAMP	1	10/08/18 10:44 PM
C1008047.D	N032317-012B	SAMP	1	10/08/18 10:50 PM
C1008048.D	N032318-001B	SAMP	1	10/08/18 10:55 PM
C1008049.D	N032318-002B	SAMP	1	10/08/18 11:01 PM
C1008050.D	N032318-003B	SAMP	1	10/08/18 11:06 PM
C1008051.D	CCV3	CCV	1	10/08/18 11:12 PM
C1008052.D	CCB3	CCB	1	10/08/18 11:18 PM
C1008053.D	ICSA2	ICSA	1	10/08/18 11:23 PM
C1008054.D	ICSAB2	ICSAB	1	10/08/18 11:29 PM
C1008055.D	N032318-004B	SAMP	1	10/08/18 11:34 PM
C1008056.D	N032318-007B	SAMP	1	10/08/18 11:40 PM
C1008057.D	N032318-008B	SAMP	1	10/08/18 11:45 PM
C1008058.D	N032318-009B	SAMP	1	10/08/18 11:51 PM
C1008059.D	N032318-011B	SAMP	1	10/08/18 11:57 PM
C1008060.D	MB-70882	MBLK	1	10/09/18 12:02 AM
C1008061.D	LCS-70882	LCS	1	10/09/18 12:08 AM
C1008062.D	N032318-013B	SAMP	1	10/09/18 12:13 AM
C1008063.D	N032318-013B	SAMP	5	10/09/18 12:19 AM
C1008064.D	N032318-013B-PS	PS	1	10/09/18 12:24 AM
C1008065.D	CCV4	CCV	1	10/09/18 12:30 AM
C1008066.D	CCB4	CCB	1	10/09/18 12:36 AM
C1008067.D	N032318-013B-MS	MS	1	10/09/18 12:41 AM
C1008068.D	N032318-013B-MSD	MSD	1	10/09/18 12:47 AM
C1008069.D	N032318-014B	SAMP	1	10/09/18 12:52 AM
C1008070.D	N032328-001D	SAMP	1	10/09/18 12:58 AM
C1008071.D	N032328-002D	SAMP	1	10/09/18 1:04 AM
C1008072.D	N032348-001B	SAMP	1	10/09/18 1:09 AM
C1008073.D	N032348-002B	SAMP	1	10/09/18 1:15 AM
C1008074.D	N032348-006B	SAMP	1	10/09/18 1:20 AM
C1008075.D	N032348-007B	SAMP	1	10/09/18 1:26 AM
C1008076.D	N032348-008B	SAMP	1	10/09/18 1:31 AM
C1008077.D	CCV5	CCV	1	10/09/18 1:37 AM
C1008078.D	CCB5	CCB	1	10/09/18 1:43 AM
C1008079.D	N032348-009B	SAMP	1	10/09/18 1:48 AM
C1008080.D	N032348-010B	SAMP	1	10/09/18 1:54 AM
C1008081.D	N032348-011B	SAMP	1	10/09/18 1:59 AM
C1008082.D	N032348-012B	SAMP	1	10/09/18 2:05 AM
C1008083.D	N032348-013B	SAMP	1	10/09/18 2:10 AM
C1008084.D	N032348-014B	SAMP	1	10/09/18 2:16 AM

**INJECTION LOG: 181008C**

**Instrument ID: ICPMS-02**

<b>Data File</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq. Date-Time</b>
C1008085.D	N032348-015B	SAMP	1	10/09/18 2:22 AM
C1008086.D	N032348-016B	SAMP	1	10/09/18 2:27 AM
C1008087.D	CCV6	CCV	1	10/09/18 2:33 AM
C1008088.D	CCB6	CCB	1	10/09/18 2:38 AM
C1008089.D	ICSA3	ICSA	1	10/09/18 2:44 AM
C1008090.D	ICSAB3	ICSAB	1	10/09/18 2:50 AM

**INJECTION LOG: 181009A**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A1009001.D	RINSE	RINSE	1	10/09/18 9:20 AM
A1009002.D	Cal Blank	IBLK	1	10/09/18 9:26 AM
A1009003.D	Std1-0.1/1 ppb	ICAL	1	10/09/18 9:31 AM
A1009004.D	Std2-0.5/5 ppb	ICAL	1	10/09/18 9:37 AM
A1009005.D	Std3-5/50 ppb	ICAL	1	10/09/18 9:42 AM
A1009006.D	Std4-10/100 ppb	ICAL	1	10/09/18 9:48 AM
A1009007.D	Std5-20/200 ppb	ICAL	1	10/09/18 9:53 AM
A1009008.D	Std6-40/400 ppb	ICAL	1	10/09/18 9:59 AM
A1009009.D	Std7-100/1000 ppb	ICAL	1	10/09/18 10:04 AM
A1009010.D	Std8-200/2000 ppb	ICAL	1	10/09/18 10:10 AM
A1009011.D	ICV	ICV	1	10/09/18 10:16 AM
A1009012.D	ICB	ICB	1	10/09/18 10:22 AM
A1009013.D	LLICV	CCV1	1	10/09/18 10:27 AM
A1009014.D	ICSA1	ICSA	1	10/09/18 10:33 AM
A1009015.D	ICSAB1	ICSAB	1	10/09/18 10:38 AM
A1009016.D	LLICV	CCV1	1	10/09/18 10:44 AM
A1009017.D	N032317-001B	SAMP	5	10/09/18 10:50 AM
A1009018.D	N032317-001B	SAMP	25	10/09/18 10:55 AM
A1009019.D	N032317-001B-PS	PS	5	10/09/18 11:02 AM
A1009020.D	N032317-001B-MS	MS	5	10/09/18 11:07 AM
A1009021.D	N032317-001B-MSD	MSD	5	10/09/18 11:13 AM
A1009022.D	N032317-002B	SAMP	25	10/09/18 11:19 AM
A1009023.D	N032317-004B	SAMP	5	10/09/18 11:24 AM
A1009024.D	N032317-005B	SAMP	5	10/09/18 11:30 AM
A1009025.D	N032317-006B	SAMP	5	10/09/18 11:35 AM
A1009026.D	N032317-007B	SAMP	5	10/09/18 11:41 AM
A1009027.D	CCV1	CCV	1	10/09/18 11:47 AM
A1009028.D	CCB1	CCB	1	10/09/18 11:52 AM
A1009029.D	N032317-009B	SAMP	5	10/09/18 11:58 AM
A1009030.D	N032317-010B	SAMP	5	10/09/18 12:04 PM
A1009031.D	N032317-011B	SAMP	5	10/09/18 12:09 PM
A1009032.D	N032317-012B	SAMP	5	10/09/18 12:15 PM
A1009033.D	N032318-001B	SAMP	5	10/09/18 12:20 PM
A1009034.D	N032318-008B	SAMP	10	10/09/18 12:26 PM
A1009035.D	N032318-009B	SAMP	10	10/09/18 12:32 PM
A1009036.D	N032318-011B	SAMP	5	10/09/18 12:38 PM
A1009037.D	N032305-001D	SAMP	5	10/09/18 12:43 PM
A1009038.D	MB-70935	MBLK	1	10/09/18 12:49 PM
A1009039.D	CCV2	CCV	1	10/09/18 12:54 PM
A1009040.D	CCB2	CCB	1	10/09/18 1:00 PM
A1009041.D	ICSA2	ICSA	1	10/09/18 1:05 PM
A1009042.D	ICSAB2	ICSAB	1	10/09/18 1:11 PM

**INJECTION LOG: 181009A**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
A1009043.D	LCS-70935	LCS	1	10/09/18 1:17 PM
A1009044.D	N032348-006B	SAMP	1	10/09/18 1:22 PM
A1009045.D	N032348-006B	SAMP	5	10/09/18 1:28 PM
A1009046.D	N032348-006B-PS	PS	1	10/09/18 1:34 PM
A1009047.D	N032348-006B-MS	MS	1	10/09/18 1:39 PM
A1009048.D	N032348-006B-MSD	MSD	1	10/09/18 1:45 PM
A1009049.D	N032348-007B	SAMP	1	10/09/18 1:50 PM
A1009050.D	N032348-008B	SAMP	1	10/09/18 1:56 PM
A1009051.D	N032348-009B	SAMP	1	10/09/18 2:01 PM
A1009052.D	N032348-010B	SAMP	1	10/09/18 2:07 PM
A1009053.D	CCV3	CCV	1	10/09/18 2:12 PM
A1009054.D	CCB3	CCB	1	10/09/18 2:18 PM
A1009055.D	N032348-011B	SAMP	1	10/09/18 2:24 PM
A1009056.D	N032348-012B	SAMP	1	10/09/18 2:29 PM
A1009057.D	N032348-013B	SAMP	1	10/09/18 2:35 PM
A1009058.D	N032348-014B	SAMP	1	10/09/18 2:40 PM
A1009059.D	N032348-015B	SAMP	1	10/09/18 2:46 PM
A1009060.D	N032349-005B	SAMP	1	10/09/18 2:52 PM
A1009061.D	N032349-005B-MS	MS	1	10/09/18 2:57 PM
A1009062.D	N032349-006B	SAMP	1	10/09/18 3:03 PM
A1009063.D	N032350-006B	SAMP	1	10/09/18 3:08 PM
A1009064.D	N032350-007B	SAMP	1	10/09/18 3:14 PM
A1009065.D	CCV4	CCV	1	10/09/18 3:20 PM
A1009066.D	CCB4	CCB	1	10/09/18 3:25 PM
A1009067.D	N032367-002B	SAMP	1	10/09/18 3:31 PM
A1009068.D	N032367-003B	SAMP	1	10/09/18 3:37 PM
A1009069.D	N032367-008B	SAMP	1	10/09/18 3:42 PM
A1009070.D	N032367-018B	SAMP	1	10/09/18 3:48 PM
A1009071.D	N032367-019B	SAMP	1	10/09/18 3:53 PM
A1009072.D	N032359-001C	SAMP	25	10/09/18 4:01 PM
A1009073.D	MB-70882	MBLK	1	10/09/18 4:07 PM
A1009074.D	LCS-70882	LCS	1	10/09/18 4:12 PM
A1009075.D	N032318-013B	SAMP	5	10/09/18 4:18 PM
A1009076.D	N032318-013B	SAMP	25	10/09/18 4:23 PM
A1009077.D	CCV5	CCV	1	10/09/18 4:29 PM
A1009078.D	CCB5	CCB	1	10/09/18 4:35 PM
A1009079.D	N032318-013B-PS	PS	5	10/09/18 4:40 PM
A1009080.D	N032318-013B-MS	MS	5	10/09/18 4:46 PM
A1009081.D	N032318-013B-MSD	MSD	5	10/09/18 4:51 PM
A1009082.D	N032328-001D	SAMP	5	10/09/18 4:57 PM
A1009083.D	N032328-002D	SAMP	5	10/09/18 5:03 PM
A1009084.D	N032328-001D	SAMP	1	10/09/18 5:08 PM

**INJECTION LOG: 181009A**

**Instrument ID: ICPMS-02**

<b>Data File</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq. Date-Time</b>
A1009085.D	N032328-001D	SAMP	25	10/09/18 5:14 PM
A1009086.D	N032328-002D	SAMP	1	10/09/18 5:19 PM
A1009087.D	CCV6	CCV	1	10/09/18 5:25 PM
A1009088.D	CCB6	CCB	1	10/09/18 5:31 PM
A1009089.D	ICSA3	ICSA	1	10/09/18 5:36 PM
A1009090.D	ICSAB3	ICSAB	1	10/09/18 5:42 PM



# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 10/4/2018 4:15:00

Reviewed/ Date: *Nancy* 10/20/2018

Page: 1 of 2

Prep End Date: 10/4/2018 8:45:00

Initials/ Date: *CS* 10/19/2018

Prep Factor Units  
mL / mL

Temp. (°C):  
94.8

Location:  
02-10

Prep Batch 70882 Prep Code: 3010\_W\_MSDI

Technician Claire Ignacio

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70882	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70882	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N032318-013B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032318-013B-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032318-013B-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032318-014B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032328-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032328-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032348-001B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032348-002B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032348-006B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032348-007B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032348-008B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032348-009B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 10/4/2018 4:15:00

Reviewed/ Date: *Nancy* 10/20/2018

Page: 2 of 2

Prep End Date: 10/4/2018 8:45:00

Initials/ Date: *CI* 10/19/2018

Prep Factor Units  
mL / mL

Temp. (°C):  
94.8

Location:  
02-10

Prep Batch 70882 Prep Code: 3010\_W\_MSDI Technician Claire Ignacio

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
N032348-010B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032348-011B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032348-012B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032348-013B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032348-014B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032348-015B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032348-016B	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

# INSTRUMENT TUNING CHECK



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 8 Oct 2018 06:08:27 am  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	186995.00	0.00	
24 Mg	558467.00	0.00	
25 Mg	73145.60	0.00	
26 Mg	83642.80	0.00	
59 Co	500963.00	0.00	
115 In	754543.00	0.00	
206 Pb	228866.00	0.00	
207 Pb	200182.00	0.00	
208 Pb	489275.00	0.00	

## RSD (%)

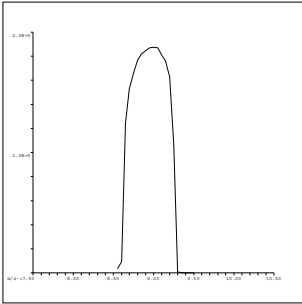
Element	Actual	Required	Flag
9 Be	1.75	5.00	
24 Mg	0.84	5.00	
25 Mg	1.31	5.00	
26 Mg	1.05	5.00	
59 Co	0.34	5.00	
115 In	0.91	5.00	
206 Pb	0.85	5.00	
207 Pb	0.77	5.00	
208 Pb	1.02	5.00	

## Ion Ratio

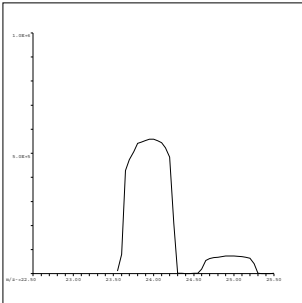
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

## Maximum Bkg. Count (CPS)

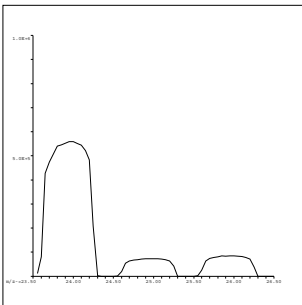
Element	Actual	Required	Flag
---------	--------	----------	------



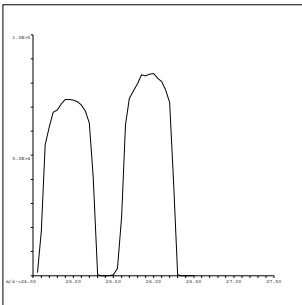
9 Be  
Mass Calib.  
Actual: 8.95  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



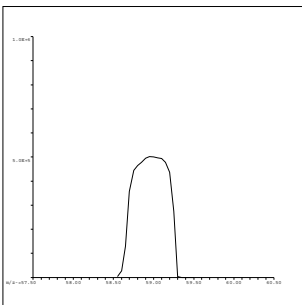
24 Mg  
Mass Calib.  
Actual: 23.95  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



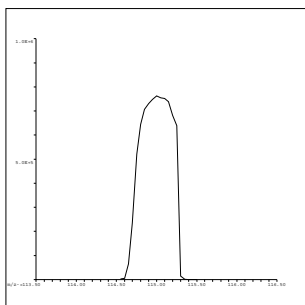
25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



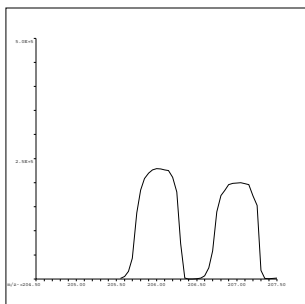
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



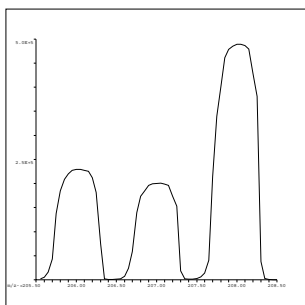
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



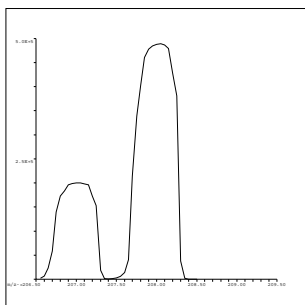
115 In  
Mass Calib.  
Actual: 115.05  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.05  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.05  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 208.05  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

QC Tune Result:Pass

## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 9 Oct 2018 08:47:51 am  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	115038.00	0.00	
24 Mg	545739.00	0.00	
25 Mg	69630.90	0.00	
26 Mg	78529.40	0.00	
59 Co	328857.00	0.00	
115 In	523469.00	0.00	
206 Pb	159305.00	0.00	
207 Pb	138822.00	0.00	
208 Pb	341276.00	0.00	

## RSD (%)

Element	Actual	Required	Flag
9 Be	0.87	5.00	
24 Mg	0.94	5.00	
25 Mg	0.56	5.00	
26 Mg	0.73	5.00	
59 Co	1.02	5.00	
115 In	0.74	5.00	
206 Pb	0.70	5.00	
207 Pb	0.97	5.00	
208 Pb	1.10	5.00	

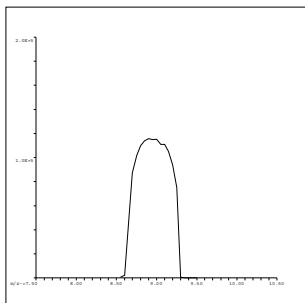
## Ion Ratio

Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

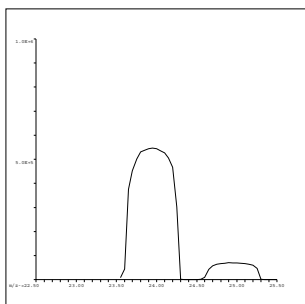
## Maximum Bkg. Count (CPS)

Element	Actual	Required	Flag
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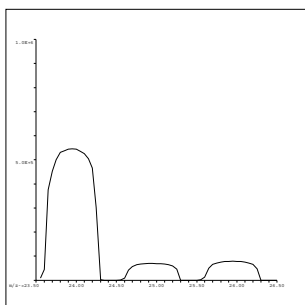




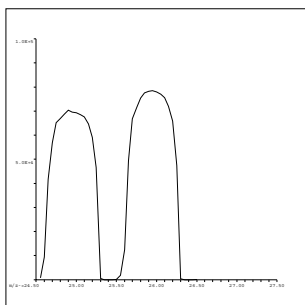
9 Be  
Mass Calib.  
Actual: 8.95  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



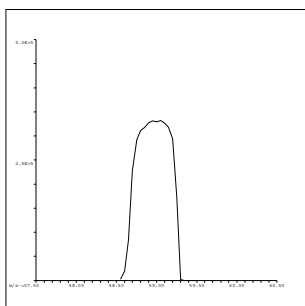
24 Mg  
Mass Calib.  
Actual: 23.95  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



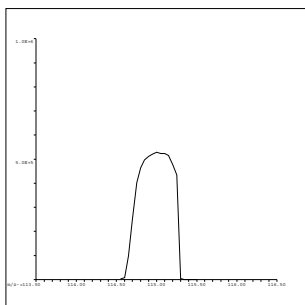
25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



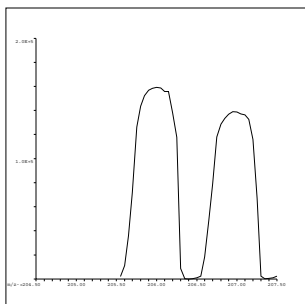
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



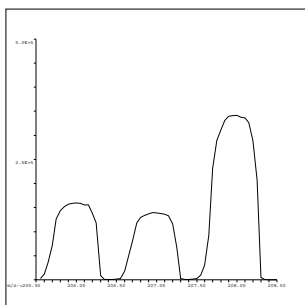
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



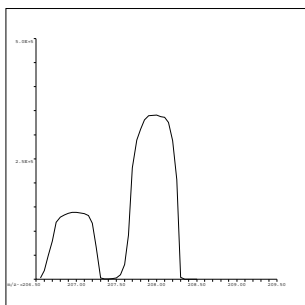
115 In  
Mass Calib.  
Actual: 115.05  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.00  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.00  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 208.00  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:

QC Tune Result:Pass

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR CONSTRUCTION AND INFRASTRUCTURE

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

INITIAL CALIBRATION SUMMARY: 181008C

Instrument ID: ICPMS-02

Analyte	Data File	C1008002.D	C1008003.D	C1008004.D	C1008005.D	C1008006.D	C1008007.D	C1008008.D	C1008009.D	C1008010.D	R
	Acq. Date-Time	10/08/2018 06:37 PM	10/08/2018 06:43 PM	10/08/2018 06:48 PM	10/08/2018 06:54 PM	10/08/2018 06:59 PM	10/08/2018 07:05 PM	10/08/2018 07:11 PM	10/08/2018 07:16 PM	10/08/2018 07:22 PM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	2	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std1-0.1/1 ppb	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.1/1 ug/L	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L		
45 Sc (ISTD) [ 2 ]	CPS	63717.9		69159.2	68999.7	69711.5	67523.8	69495	66150.8	66273.2	
55 Mn [ 2 ]	CPS	34.4		1276.6	12248.2	24414	46966.2	95396.6	226767.3	449021.6	1.0000
52 Cr [ 2 ]	CPS	153.2		2549	23914	47522.2	91940.9	188046.2	447278.5	881241	1.0000
72 Ge (ISTD) [ 1 ]	CPS	45692.2		49378.7	49289.6	49551.3	47425.2	49668.5	46863.4	46670.7	
78 Se [ 1 ]	CPS	4.4		82.2	783.4	1613.5	3038.2	6294.8	15093.1	29439.5	1.0000
72 Ge (ISTD) [ 2 ]	CPS	39286.7	44442.4	42909.2	42534.9	43028.5	41211.6	42655.2	40593.4	40600.2	
75 As [ 2 ]	CPS	35.6	103.1	308	2636.7	5163.1	10100.1	20776.4	49310.3	98505	1.0000
103 Rh (ISTD) [ 2 ]	CPS	1021304.2		1123720.6	1122145	1130261.4	1093680.9	1123400	1069197.7	1063647.9	
95 Mo [ 2 ]	CPS	121.1		1280.1	12216.2	25134.7	48923	102258.4	245866.3	491772.2	1.0000

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MWST-180618C

Calibration Acceptance Criteria: > 0.995 Correlation

INITIAL CALIBRATION SUMMARY: 181009A

Instrument ID: ICPMS-02

Analyte	Data File	A1009002.D	A1009004.D	A1009005.D	A1009006.D	A1009007.D	A1009008.D	A1009009.D	A1009010.D	R
	Acq. Date-Time	10/09/2018 09:26 AM	10/09/2018 09:37 AM	10/09/2018 09:42 AM	10/09/2018 09:48 AM	10/09/2018 09:53 AM	10/09/2018 09:59 AM	10/09/2018 10:04 AM	10/09/2018 10:10 AM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L		
45 Sc (ISTD) [2]	CPS	55858.6	54307	53585.7	53193.6	52579.2	52835.5	52166.6	50248.6	
55 Mn [2]	CPS	47.3	1038.3	9358.4	18355.7	36346.8	72272.5	178481.3	345789.9	1.0000
52 Cr [2]	CPS	180.8	1963.3	18992	37401	73786	145434.3	361870.8	697490.9	1.0000
72 Ge (ISTD) [1]	CPS	34532.7	33883.6	33615.3	33870.2	33247.8	33086.5	32859.4	31915.3	
78 Se [1]	CPS	1.1	61.1	643.4	1216.8	2275.8	4509.7	11665.6	22873.4	0.9999
103 Rh (ISTD) [2]	CPS	922694.3	913985.5	906041.2	900730.1	892632.1	888526.7	882087.5	854976.6	
95 Mo [2]	CPS	26.7	936.7	9490.9	19199.7	39103.8	80163.2	199792.5	392135.1	1.0000

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MWST-180618C

reported Se Mo only

Calibration Acceptance Criteria: > 0.995 Correlation

*Nancy* 10/20/2018

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168781</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	10.886	0.50	10.00	0	109	90	110				
Selenium	10.115	0.50	10.00	0	101	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168783</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	0.487	0.50	0.5000	0	97.3	80	120				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168786</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.445	0.50	0.5000	0	89.1	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168797</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	19.085	0.50	20.00	0	95.4	90	110				
Selenium	21.143	0.50	20.00	0	106	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168809</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	19.187	0.50	20.00	0	95.9	90	110				
Selenium	19.446	0.50	20.00	0	97.2	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168821</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	18.970	0.50	20.00	0	94.8	90	110				
Selenium	20.149	0.50	20.00	0	101	90	110				

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168835</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	19.160	0.50	20.00	0	95.8	90	110				
Selenium	19.751	0.50	20.00	0	98.8	90	110				

Sample ID <b>CCV5</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168847</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	18.975	0.50	20.00	0	94.9	90	110				
Selenium	21.171	0.50	20.00	0	106	90	110				

Sample ID <b>CCV6</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168857</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	19.093	0.50	20.00	0	95.5	90	110				
Selenium	21.288	0.50	20.00	0	106	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167750</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	9.742	0.50	10.00	0	97.4	90	110				
Selenium	9.906	0.50	10.00	0	99.1	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167752</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	0.539	0.50	0.5000	0	108	80	120				
Selenium	0.573	0.50	0.5000	0	115	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167766</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	19.291	0.50	20.00	0	96.5	90	110				
Selenium	19.248	0.50	20.00	0	96.2	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167778</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	19.099	0.50	20.00	0	95.5	90	110				
Selenium	19.020	0.50	20.00	0	95.1	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167792</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	19.302	0.50	20.00	0	96.5	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167792</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	19.631	0.50	20.00	0	98.2	90	110				

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167804</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	19.216	0.50	20.00	0	96.1	90	110				
Selenium	18.719	0.50	20.00	0	93.6	90	110				

Sample ID <b>CCV5</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167816</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	19.260	0.50	20.00	0	96.3	90	110				
Selenium	20.227	0.50	20.00	0	101	90	110				

Sample ID <b>CCV6</b>	SampType: <b>CCV</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167826</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	20.001	0.50	20.00	0	100	90	110				
Selenium	19.045	0.50	20.00	0	95.2	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>ICV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3166928</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	10.354	1.0	10.00	0	104 90 110

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3166930</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	1.050	1.0	1.000	0	105 80 120

not reported

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3166933</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	1.069	1.0	1.000	0	107 80 120

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3166944</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	20.575	1.0	20.00	0	103 90 110

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>	Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3166956</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Chromium	20.753	1.0	20.00	0	104 90 110

**Qualifiers:**

B Analyte detected in the associated Method Blank  
 ND Not Detected at the Reporting Limit  
 Calculations are based on raw values

E Value above quantitation range  
 R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference

*Handwritten Signature* 10/20/2018

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3166988</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.806	1.0	20.00	0	104	90	110				

Sample ID <b>CCV4</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3166982</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.831	1.0	20.00	0	104	90	110				

Sample ID <b>CCV5</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3166994</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.890	1.0	20.00	0	104	90	110				

Sample ID <b>CCV6</b>	SampType: <b>CCV</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167004</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.919	1.0	20.00	0	105	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168782</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168798</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168810</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168822</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168836</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168836</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB5</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168848</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>CCB6</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168858</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	ND	0.50									
Selenium	ND	0.50									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>
Client ID: <b>ICB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167751</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167767</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167779</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167793</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167805</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Molybdenum	ND	0.50			

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167805</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Selenium	ND	0.50			
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Sample ID <b>CCB5</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167817</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Molybdenum	ND	0.50			
Selenium	ND	0.50			

Sample ID <b>CCB6</b>	SampType: <b>CCB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167827</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Molybdenum	0.371	0.50			
Selenium	ND	0.50			

Molybdenum has detect > 1/2 RL on CCB6, however, samples are greater than 10x the CCB detection.

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

*Murray* 10/20/2018

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>ICB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3166929</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3166945</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3166957</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3166969</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

Sample ID <b>CCB4</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3166983</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium ND 1.0

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode:** 6020DIS\_CrPGE

Sample ID <b>CCB5</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3166995</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB6</b>	SampType: <b>CCB</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167005</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168784</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168785</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	21.682	0.50	20.00	0	108	80	120				
Selenium	19.364	0.50	20.00	0	96.8	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168823</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	0.218	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3168824</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	21.943	0.50	20.00	0	110	80	120				
Selenium	20.458	0.50	20.00	0	102	80	120				

Sample ID <b>ICSA3</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168859</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICSA3</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168859</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSAB3</b>	SampType: <b>ICSAB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168860</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	21.908	0.50	20.00	0	110	80	120				
Selenium	21.559	0.50	20.00	0	108	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167753</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167754</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	22.241	0.50	20.00	0	111	80	120				
Selenium	18.251	0.50	20.00	0	91.3	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167780</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	ND	0.50									
Selenium	ND	0.50									

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167781</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	22.037	0.50	20.00	0	110	80	120				
Selenium	18.906	0.50	20.00	0	94.5	80	120				

Sample ID <b>ICSA3</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167828</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum	0.221	0.50									

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020\_DIS**

Sample ID <b>ICSA3</b>	SampType: <b>ICSA</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167828</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Selenium	ND	0.50
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Sample ID <b>ICSAB3</b>	SampType: <b>ICSAB</b>	TestCode: <b>6020_DIS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129145</b>						
Client ID: <b>ICSAB</b>	Batch ID: <b>R129145</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167829</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Molybdenum	22.478	0.50	20.00	0	112	80	120
Selenium	18.704	0.50	20.00	0	93.5	80	120

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3166931</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3166931</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	20.597	1.0	20.00	0	103	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3166970</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/8/2018</b>	SeqNo: <b>3166971</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	21.162	1.0	20.00	0	106	80	120				
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Sample ID <b>ICSA3</b>	SampType: <b>ICSA</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129120</b>	TestNo: <b>EPA 6020</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3167006</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID	<b>ICSAB3</b>	SampType:	<b>ICSAB</b>	TestCode:	<b>6020DIS_CrP</b>			Units:	<b>µg/L</b>		Prep Date:		RunNo:	<b>129120</b>
Client ID:	<b>ICSAB</b>	Batch ID:	<b>R129120</b>	TestNo:	<b>EPA 6020</b>			Analysis Date:	<b>10/9/2018</b>		SeqNo:	<b>3167007</b>		
Analyte		Result		PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Chromium		21.394		1.0	20.00	0	107	80	120					

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## INTERNAL STANDARD: 181008C

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	63717.9	63717.9	100	PASS	70-125	39286.7	39286.7	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	71408.6	63717.9	112.07	PASS	70-125	44442.4	39286.7	113.12	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	69159.2	63717.9	108.54	PASS	70-125	42909.2	39286.7	109.22	PASS	70-125
Std3-5/50 ppb	ICAL	1	68999.7	63717.9	108.29	PASS	70-125	42534.9	39286.7	108.27	PASS	70-125
Std4-10/100 ppb	ICAL	1	69711.5	63717.9	109.41	PASS	70-125	43028.5	39286.7	109.52	PASS	70-125
Std5-20/200 ppb	ICAL	1	67523.8	63717.9	105.97	PASS	70-125	41211.6	39286.7	104.9	PASS	70-125
Std6-40/400 ppb	ICAL	1	69495	63717.9	109.07	PASS	70-125	42655.2	39286.7	108.57	PASS	70-125
Std7-100/1000 ppb	ICAL	1	66150.8	63717.9	103.82	PASS	70-125	40593.4	39286.7	103.33	PASS	70-125
Std8-200/2000 ppb	ICAL	1	66273.2	63717.9	104.01	PASS	70-125	40600.2	39286.7	103.34	PASS	70-125
ICV	ICV	1	58221.2	63717.9	91.37	PASS	70-125	36039.4	39286.7	91.73	PASS	70-125
ICB	ICB	1	65342.9	63717.9	102.55	PASS	70-125	40020.9	39286.7	101.87	PASS	70-125
LLICV	CCV1	1	64170.4	63717.9	100.71	PASS	70-125	39324.7	39286.7	100.1	PASS	70-125
ICSA1	ICSA	1	73137.2	63717.9	114.78	PASS	70-125	44147	39286.7	112.37	PASS	70-125
ICSAB1	ICSAB	1	76613.7	63717.9	120.24	PASS	70-125	45423.8	39286.7	115.62	PASS	70-125
LLICV	CCV1	1	68549	63717.9	107.58	PASS	70-125	42155.1	39286.7	107.3	PASS	70-125
MB-70865	MBLK	1	62370.7	63717.9	97.89	PASS	70-125	37933.7	39286.7	96.56	PASS	70-125
CCV1	CCV	1	71280.3	63717.9	111.87	PASS	70-125	43041.8	39286.7	109.56	PASS	70-125
CCB1	CCB	1	61471.6	63717.9	96.47	PASS	70-125	37177.6	39286.7	94.63	PASS	70-125
LCS-70865	LCS	1	47187.6	63717.9	74.057	PASS	70-125	29319.2	39286.7	74.63	PASS	70-125
N032317-001B	SAMP	1	58297.8	63717.9	91.49	PASS	70-125	35201.9	39286.7	89.6	PASS	70-125
N032317-001B	SAMP	5	58671.8	63717.9	92.081	PASS	70-125	36155.2	39286.7	92.029	PASS	70-125
N032317-001B-PS	PS	1	49838.4	63717.9	78.22	PASS	70-125	30060.6	39286.7	76.52	PASS	70-125
N032317-001B-MS	MS	1	50937.4	63717.9	79.94	PASS	70-125	30759.7	39286.7	78.3	PASS	70-125
N032317-001B-MSD	MSD	1	50642.1	63717.9	79.48	PASS	70-125	30735.2	39286.7	78.23	PASS	70-125
N032317-002B	SAMP	1	57664.8	63717.9	90.5	PASS	70-125	34787.7	39286.7	88.55	PASS	70-125
N032317-003B	SAMP	1	57322.4	63717.9	89.96	PASS	70-125	34630.8	39286.7	88.15	PASS	70-125
N032317-004B	SAMP	1	58146.4	63717.9	91.26	PASS	70-125	34959.3	39286.7	88.99	PASS	70-125
N032317-005B	SAMP	1	57453.9	63717.9	90.17	PASS	70-125	34579.5	39286.7	88.018	PASS	70-125
CCV2	CCV	1	68011	63717.9	106.74	PASS	70-125	41215	39286.7	104.91	PASS	70-125
CCB2	CCB	1	58335	63717.9	91.55	PASS	70-125	35341.3	39286.7	89.96	PASS	70-125
N032317-006B	SAMP	1	55826.2	63717.9	87.61	PASS	70-125	33840.2	39286.7	86.14	PASS	70-125
N032317-007B	SAMP	1	57288.1	63717.9	89.91	PASS	70-125	35177.6	39286.7	89.54	PASS	70-125
N032317-008B	SAMP	1	58837.6	63717.9	92.34	PASS	70-125	35990.3	39286.7	91.61	PASS	70-125
N032317-009B	SAMP	1	58331.5	63717.9	91.55	PASS	70-125	35519.4	39286.7	90.41	PASS	70-125
N032317-010B	SAMP	1	58943.6	63717.9	92.51	PASS	70-125	36063.9	39286.7	91.8	PASS	70-125
N032317-011B	SAMP	1	56174.2	63717.9	88.16	PASS	70-125	34309	39286.7	87.33	PASS	70-125
N032317-012B	SAMP	1	55631.1	63717.9	87.31	PASS	70-125	33801.3	39286.7	86.038	PASS	70-125
N032318-001B	SAMP	1	57018	63717.9	89.49	PASS	70-125	34510.5	39286.7	87.84	PASS	70-125
N032318-002B	SAMP	1	56818.5	63717.9	89.17	PASS	70-125	34793.2	39286.7	88.56	PASS	70-125
N032318-003B	SAMP	1	58723.8	63717.9	92.16	PASS	70-125	35557.1	39286.7	90.51	PASS	70-125
CCV3	CCV	1	67378.6	63717.9	105.75	PASS	70-125	41768.6	39286.7	106.32	PASS	70-125

## INTERNAL STANDARD: 181008C

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]					72 Ge ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
CCB3	CCB	1	58246.7	63717.9	91.41	PASS	70-125	36147.4	39286.7	92.009	PASS	70-125
ICSA2	ICSA	1	66177.2	63717.9	103.86	PASS	70-125	39931.8	39286.7	101.64	PASS	70-125
ICSAB2	ICSAB	1	70394.3	63717.9	110.48	PASS	70-125	42039.1	39286.7	107.01	PASS	70-125
N032318-004B	SAMP	1	59111.9	63717.9	92.77	PASS	70-125	35850	39286.7	91.25	PASS	70-125
N032318-007B	SAMP	1	55351.1	63717.9	86.87	PASS	70-125	33422.7	39286.7	85.074	PASS	70-125
N032318-008B	SAMP	1	56110.6	63717.9	88.061	PASS	70-125	34588.5	39286.7	88.041	PASS	70-125
N032318-009B	SAMP	1	54881	63717.9	86.13	PASS	70-125	33888.1	39286.7	86.26	PASS	70-125
N032318-011B	SAMP	1	56939	63717.9	89.36	PASS	70-125	34561.8	39286.7	87.97	PASS	70-125
MB-70882	MBLK	1	58418.6	63717.9	91.68	PASS	70-125	36314.5	39286.7	92.43	PASS	70-125
LCS-70882	LCS	1	54446.3	63717.9	85.45	PASS	70-125	32546.5	39286.7	82.84	PASS	70-125
N032318-013B	SAMP	1	55680.3	63717.9	87.39	PASS	70-125	33952.7	39286.7	86.42	PASS	70-125
N032318-013B	SAMP	5	57830.8	63717.9	90.76	PASS	70-125	35648.5	39286.7	90.74	PASS	70-125
N032318-013B-PS	PS	1	49869.8	63717.9	78.27	PASS	70-125	30071.7	39286.7	76.54	PASS	70-125
CCV4	CCV	1	66170.6	63717.9	103.85	PASS	70-125	40970.9	39286.7	104.29	PASS	70-125
CCB4	CCB	1	56297.8	63717.9	88.35	PASS	70-125	35391.2	39286.7	90.084	PASS	70-125
N032318-013B-MS	MS	1	49455.2	63717.9	77.62	PASS	70-125	29568.6	39286.7	75.26	PASS	70-125
N032318-013B-MSD	MSD	1	50241	63717.9	78.85	PASS	70-125	30148.5	39286.7	76.74	PASS	70-125
N032318-014B	SAMP	1	56230.1	63717.9	88.25	PASS	70-125	33992.7	39286.7	86.52	PASS	70-125
N032328-001D	SAMP	1	51344.2	63717.9	80.58	PASS	70-125	29543	39286.7	75.2	PASS	70-125
N032328-002D	SAMP	1	57749.4	63717.9	90.63	PASS	70-125	32746.9	39286.7	83.35	PASS	70-125
N032348-001B	SAMP	1	73135.2	63717.9	114.78	PASS	70-125	43200	39286.7	109.96	PASS	70-125
N032348-002B	SAMP	1	67759	63717.9	106.34	PASS	70-125	40307.1	39286.7	102.6	PASS	70-125
N032348-006B	SAMP	1	65138.7	63717.9	102.23	PASS	70-125	38865.9	39286.7	98.93	PASS	70-125
N032348-007B	SAMP	1	65188	63717.9	102.31	PASS	70-125	38846.8	39286.7	98.88	PASS	70-125
N032348-008B	SAMP	1	61912.2	63717.9	97.17	PASS	70-125	36949.3	39286.7	94.05	PASS	70-125
CCV5	CCV	1	74350.2	63717.9	116.69	PASS	70-125	45505.2	39286.7	115.83	PASS	70-125
CCB5	CCB	1	63114.4	63717.9	99.053	PASS	70-125	38748.8	39286.7	98.63	PASS	70-125
N032348-009B	SAMP	1	59578.1	63717.9	93.5	PASS	70-125	36467	39286.7	92.82	PASS	70-125
N032348-010B	SAMP	1	60538.1	63717.9	95.01	PASS	70-125	36553.9	39286.7	93.044	PASS	70-125
N032348-011B	SAMP	1	60653	63717.9	95.19	PASS	70-125	36812.1	39286.7	93.7	PASS	70-125
N032348-012B	SAMP	1	58822.2	63717.9	92.32	PASS	70-125	35775.5	39286.7	91.063	PASS	70-125
N032348-013B	SAMP	1	58964.8	63717.9	92.54	PASS	70-125	34755.5	39286.7	88.47	PASS	70-125
N032348-014B	SAMP	1	57694.9	63717.9	90.55	PASS	70-125	34412.4	39286.7	87.59	PASS	70-125
N032348-015B	SAMP	1	58050.5	63717.9	91.11	PASS	70-125	34821.2	39286.7	88.63	PASS	70-125
N032348-016B	SAMP	1	59313.6	63717.9	93.088	PASS	70-125	35652.8	39286.7	90.75	PASS	70-125
CCV6	CCV	1	68502	63717.9	107.51	PASS	70-125	41885.6	39286.7	106.62	PASS	70-125
CCB6	CCB	1	58418.4	63717.9	91.68	PASS	70-125	36051.6	39286.7	91.77	PASS	70-125
ICSA3	ICSA	1	68107	63717.9	106.89	PASS	70-125	40735.9	39286.7	103.69	PASS	70-125
ICSAB3	ICSAB	1	70105.2	63717.9	110.02	PASS	70-125	41868.8	39286.7	106.57	PASS	70-125

## INTERNAL STANDARD: 181008C

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]					103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	45692.2	45692.2	100	PASS	70-125	1021304.2	1021304.2	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	53180.7	45692.2	116.39	PASS	70-125	1162255.8	1021304.2	113.8	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	49378.7	45692.2	108.07	PASS	70-125	1123720.6	1021304.2	110.03	PASS	70-125
Std3-5/50 ppb	ICAL	1	49289.6	45692.2	107.87	PASS	70-125	1122145	1021304.2	109.87	PASS	70-125
Std4-10/100 ppb	ICAL	1	49551.3	45692.2	108.45	PASS	70-125	1130261.4	1021304.2	110.67	PASS	70-125
Std5-20/200 ppb	ICAL	1	47425.2	45692.2	103.79	PASS	70-125	1093680.9	1021304.2	107.09	PASS	70-125
Std6-40/400 ppb	ICAL	1	49668.5	45692.2	108.7	PASS	70-125	1123400	1021304.2	110	PASS	70-125
Std7-100/1000 ppb	ICAL	1	46863.4	45692.2	102.56	PASS	70-125	1069197.7	1021304.2	104.69	PASS	70-125
Std8-200/2000 ppb	ICAL	1	46670.7	45692.2	102.14	PASS	70-125	1063647.9	1021304.2	104.15	PASS	70-125
ICV	ICV	1	41589.2	45692.2	91.02	PASS	70-125	950709.8	1021304.2	93.088	PASS	70-125
ICB	ICB	1	44382.1	45692.2	97.13	PASS	70-125	1060943	1021304.2	103.88	PASS	70-125
LLICV	CCV1	1	45146.3	45692.2	98.81	PASS	70-125	1038700.1	1021304.2	101.7	PASS	70-125
ICSA1	ICSA	1	48581.8	45692.2	106.32	PASS	70-125	1073510.3	1021304.2	105.11	PASS	70-125
ICSAB1	ICSAB	1	51646.7	45692.2	113.03	PASS	70-125	1107708.6	1021304.2	108.46	PASS	70-125
LLICV	CCV1	1	50852	45692.2	111.29	PASS	70-125	1096089	1021304.2	107.32	PASS	70-125
MB-70865	MBLK	1	41572.4	45692.2	90.98	PASS	70-125	1019514.8	1021304.2	99.82	PASS	70-125
CCV1	CCV	1	45916.4	45692.2	100.49	PASS	70-125	1158195.9	1021304.2	113.4	PASS	70-125
CCB1	CCB	1	40454.2	45692.2	88.54	PASS	70-125	1003898.9	1021304.2	98.3	PASS	70-125
LCS-70865	LCS	1	28923	45692.2	63.3	NR!	70-125	804865.3	1021304.2	78.81	PASS	70-125
N032317-001B	SAMP	1	38725.5	45692.2	84.75	PASS	70-125	888930.7	1021304.2	87.039	PASS	70-125
N032317-001B	SAMP	5	39386	45692.2	86.2	PASS	70-125	938156.9	1021304.2	91.86	PASS	70-125
N032317-001B-PS	PS	1	30268.7	45692.2	66.24	NR!	70-125	772316.2	1021304.2	75.62	PASS	70-125
N032317-001B-MS	MS	1	31670.3	45692.2	69.31	NR!	70-125	774864.8	1021304.2	75.87	PASS	70-125
N032317-001B-MSD	MSD	1	31871.8	45692.2	69.75	NR!	70-125	772850.4	1021304.2	75.67	PASS	70-125
N032317-002B	SAMP	1	38584.1	45692.2	84.44	PASS	70-125	879677.6	1021304.2	86.13	PASS	70-125
N032317-003B	SAMP	1	38998.4	45692.2	85.35	PASS	70-125	875719.5	1021304.2	85.75	PASS	70-125
N032317-004B	SAMP	1	39873.8	45692.2	87.27	PASS	70-125	875377.2	1021304.2	85.71	PASS	70-125
N032317-005B	SAMP	1	39369.2	45692.2	86.16	PASS	70-125	861055.3	1021304.2	84.31	PASS	70-125
CCV2	CCV	1	46173.8	45692.2	101.05	PASS	70-125	1106657.7	1021304.2	108.36	PASS	70-125
CCB2	CCB	1	38739.9	45692.2	84.78	PASS	70-125	954965.2	1021304.2	93.5	PASS	70-125
N032317-006B	SAMP	1	37480.4	45692.2	82.028	PASS	70-125	855103.1	1021304.2	83.73	PASS	70-125
N032317-007B	SAMP	1	39536.3	45692.2	86.53	PASS	70-125	878731.3	1021304.2	86.04	PASS	70-125
N032317-008B	SAMP	1	40303.8	45692.2	88.21	PASS	70-125	901300.9	1021304.2	88.25	PASS	70-125
N032317-009B	SAMP	1	39808	45692.2	87.12	PASS	70-125	884921.3	1021304.2	86.65	PASS	70-125
N032317-010B	SAMP	1	41154.8	45692.2	90.07	PASS	70-125	894687.1	1021304.2	87.6	PASS	70-125
N032317-011B	SAMP	1	39219	45692.2	85.83	PASS	70-125	854309.6	1021304.2	83.65	PASS	70-125
N032317-012B	SAMP	1	38274.4	45692.2	83.77	PASS	70-125	839513.5	1021304.2	82.2	PASS	70-125
N032318-001B	SAMP	1	40386.1	45692.2	88.39	PASS	70-125	862167.3	1021304.2	84.42	PASS	70-125
N032318-002B	SAMP	1	39282.3	45692.2	85.97	PASS	70-125	856474	1021304.2	83.86	PASS	70-125
N032318-003B	SAMP	1	39790.4	45692.2	87.084	PASS	70-125	878734.3	1021304.2	86.04	PASS	70-125
CCV3	CCV	1	46992.7	45692.2	102.85	PASS	70-125	1114872.2	1021304.2	109.16	PASS	70-125

## INTERNAL STANDARD: 181008C

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]					103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
CCB3	CCB	1	40287.1	45692.2	88.17	PASS	70-125	962845.7	1021304.2	94.28	PASS	70-125
ICSA2	ICSA	1	42008.1	45692.2	91.94	PASS	70-125	991945.7	1021304.2	97.13	PASS	70-125
ICSAB2	ICSAB	1	44756.3	45692.2	97.95	PASS	70-125	1036577.5	1021304.2	101.5	PASS	70-125
N032318-004B	SAMP	1	40812.9	45692.2	89.32	PASS	70-125	904225.8	1021304.2	88.54	PASS	70-125
N032318-007B	SAMP	1	37146.4	45692.2	81.3	PASS	70-125	835144.5	1021304.2	81.77	PASS	70-125
N032318-008B	SAMP	1	38300	45692.2	83.82	PASS	70-125	859939.8	1021304.2	84.2	PASS	70-125
N032318-009B	SAMP	1	37898	45692.2	82.94	PASS	70-125	845309.3	1021304.2	82.77	PASS	70-125
N032318-011B	SAMP	1	38456.2	45692.2	84.16	PASS	70-125	854801.7	1021304.2	83.7	PASS	70-125
MB-70882	MBLK	1	41072.5	45692.2	89.89	PASS	70-125	964440.2	1021304.2	94.43	PASS	70-125
LCS-70882	LCS	1	33574.1	45692.2	73.48	PASS	70-125	896158.8	1021304.2	87.75	PASS	70-125
N032318-013B	SAMP	1	38081.7	45692.2	83.34	PASS	70-125	841315.5	1021304.2	82.38	PASS	70-125
N032318-013B	SAMP	5	40068.8	45692.2	87.69	PASS	70-125	906163.3	1021304.2	88.73	PASS	70-125
N032318-013B-PS	PS	1	29754.5	45692.2	65.12	NR!	70-125	766683.8	1021304.2	75.069	PASS	70-125
CCV4	CCV	1	45148.8	45692.2	98.81	PASS	70-125	1102572.9	1021304.2	107.96	PASS	70-125
CCB4	CCB	1	38839.1	45692.2	85.002	PASS	70-125	944831.7	1021304.2	92.51	PASS	70-125
N032318-013B-MS	MS	1	29522.9	45692.2	64.61	NR!	70-125	764076.2	1021304.2	74.81	PASS	70-125
N032318-013B-MSD	MSD	1	31409.8	45692.2	68.74	NR!	70-125	764180.7	1021304.2	74.82	PASS	70-125
N032318-014B	SAMP	1	37822.3	45692.2	82.78	PASS	70-125	847096.2	1021304.2	82.94	PASS	70-125
N032328-001D	SAMP	1	26600.1	45692.2	58.22	NR!	70-125	711294.6	1021304.2	69.65	NR!	70-125
N032328-002D	SAMP	1	29924.7	45692.2	65.49	NR!	70-125	790321.5	1021304.2	77.38	PASS	70-125
N032348-001B	SAMP	1	44535.9	45692.2	97.47	PASS	70-125	1086901.1	1021304.2	106.42	PASS	70-125
N032348-002B	SAMP	1	41914.4	45692.2	91.73	PASS	70-125	10111028	1021304.2	98.99	PASS	70-125
N032348-006B	SAMP	1	41160.3	45692.2	90.082	PASS	70-125	987581.8	1021304.2	96.7	PASS	70-125
N032348-007B	SAMP	1	40860.7	45692.2	89.43	PASS	70-125	981430	1021304.2	96.096	PASS	70-125
N032348-008B	SAMP	1	38256.6	45692.2	83.73	PASS	70-125	923264.1	1021304.2	90.4	PASS	70-125
CCV5	CCV	1	48404.6	45692.2	105.94	PASS	70-125	1210679.8	1021304.2	118.54	PASS	70-125
CCB5	CCB	1	42265.3	45692.2	92.5	PASS	70-125	1034005.5	1021304.2	101.24	PASS	70-125
N032348-009B	SAMP	1	38638.6	45692.2	84.56	PASS	70-125	925440.2	1021304.2	90.61	PASS	70-125
N032348-010B	SAMP	1	38476	45692.2	84.21	PASS	70-125	935517.8	1021304.2	91.6	PASS	70-125
N032348-011B	SAMP	1	38836.9	45692.2	85	PASS	70-125	943109	1021304.2	92.34	PASS	70-125
N032348-012B	SAMP	1	38007.2	45692.2	83.18	PASS	70-125	910053.1	1021304.2	89.11	PASS	70-125
N032348-013B	SAMP	1	36669.6	45692.2	80.25	PASS	70-125	873575.8	1021304.2	85.54	PASS	70-125
N032348-014B	SAMP	1	35781.1	45692.2	78.31	PASS	70-125	867726.6	1021304.2	84.96	PASS	70-125
N032348-015B	SAMP	1	35303.2	45692.2	77.26	PASS	70-125	864750.8	1021304.2	84.67	PASS	70-125
N032348-016B	SAMP	1	37978.1	45692.2	83.12	PASS	70-125	908136.8	1021304.2	88.92	PASS	70-125
CCV6	CCV	1	45221.1	45692.2	98.97	PASS	70-125	1132668.5	1021304.2	110.9	PASS	70-125
CCB6	CCB	1	38440.4	45692.2	84.13	PASS	70-125	965022.9	1021304.2	94.49	PASS	70-125
ICSA3	ICSA	1	41158.1	45692.2	90.077	PASS	70-125	1024793.5	1021304.2	100.34	PASS	70-125
ICSAB3	ICSAB	1	43428.4	45692.2	95.046	PASS	70-125	1054042.7	1021304.2	103.21	PASS	70-125

INTERNAL STANDARD: 181009A

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]					103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	34532.7	34532.7	100	PASS	70-125	922694.3	922694.3	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	34830	34532.7	100.86	PASS	70-125	916572.2	922694.3	99.34	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	33883.6	34532.7	98.12	PASS	70-125	913985.5	922694.3	99.056	PASS	70-125
Std3-5/50 ppb	ICAL	1	33615.3	34532.7	97.34	PASS	70-125	906041.2	922694.3	98.2	PASS	70-125
Std4-10/100 ppb	ICAL	1	33870.2	34532.7	98.082	PASS	70-125	900730.1	922694.3	97.62	PASS	70-125
Std5-20/200 ppb	ICAL	1	33247.8	34532.7	96.28	PASS	70-125	892632.1	922694.3	96.74	PASS	70-125
Std6-40/400 ppb	ICAL	1	33086.5	34532.7	95.81	PASS	70-125	888526.7	922694.3	96.3	PASS	70-125
Std7-100/1000 ppb	ICAL	1	32859.4	34532.7	95.15	PASS	70-125	882087.5	922694.3	95.6	PASS	70-125
Std8-200/2000 ppb	ICAL	1	31915.3	34532.7	92.42	PASS	70-125	854976.6	922694.3	92.66	PASS	70-125
ICV	ICV	1	28463.2	34532.7	82.42	PASS	70-125	827998	922694.3	89.74	PASS	70-125
ICB	ICB	1	32406.2	34532.7	93.84	PASS	70-125	856899.9	922694.3	92.87	PASS	70-125
LLICV	CCV1	1	33664.3	34532.7	97.49	PASS	70-125	897395.6	922694.3	97.26	PASS	70-125
ICSA1	ICSA	1	35207.4	34532.7	101.95	PASS	70-125	902582.1	922694.3	97.82	PASS	70-125
ICSAB1	ICSAB	1	36729.7	34532.7	106.36	PASS	70-125	919082.8	922694.3	99.61	PASS	70-125
LLICV	CCV1	1	37768.8	34532.7	109.37	PASS	70-125	953419.6	922694.3	103.33	PASS	70-125
CCV1	CCV	1	31202.7	34532.7	90.36	PASS	70-125	830273.5	922694.3	89.98	PASS	70-125
CCB1	CCB	1	31692.5	34532.7	91.78	PASS	70-125	824832.2	922694.3	89.39	PASS	70-125
CCV2	CCV	1	32820.3	34532.7	95.041	PASS	70-125	855720.8	922694.3	92.74	PASS	70-125
CCB2	CCB	1	32152.3	34532.7	93.11	PASS	70-125	836957	922694.3	90.71	PASS	70-125
ICSA2	ICSA	1	35236.4	34532.7	102.04	PASS	70-125	883940.4	922694.3	95.8	PASS	70-125
ICSAB2	ICSAB	1	37932.6	34532.7	109.85	PASS	70-125	935880	922694.3	101.43	PASS	70-125
CCV3	CCV	1	34373.6	34532.7	99.54	PASS	70-125	856158.5	922694.3	92.79	PASS	70-125
CCB3	CCB	1	33949.4	34532.7	98.31	PASS	70-125	836858.3	922694.3	90.7	PASS	70-125
CCV4	CCV	1	32473	34532.7	94.036	PASS	70-125	800195.5	922694.3	86.72	PASS	70-125
CCB4	CCB	1	30897.7	34532.7	89.47	PASS	70-125	783348.1	922694.3	84.9	PASS	70-125
MB-70882	MBLK	1	32654.4	34532.7	94.56	PASS	70-125	831991.4	922694.3	90.17	PASS	70-125
LCS-70882	LCS	1	31892.9	34532.7	92.36	PASS	70-125	817207.8	922694.3	88.57	PASS	70-125
N032318-013B	SAMP	5	30469.1	34532.7	88.23	PASS	70-125	749498.3	922694.3	81.23	PASS	70-125
N032318-013B	SAMP	25	31469.8	34532.7	91.13	PASS	70-125	775543.4	922694.3	84.052	PASS	70-125
CCV5	CCV	1	31787	34532.7	92.049	PASS	70-125	806246.8	922694.3	87.38	PASS	70-125
CCB5	CCB	1	31548.9	34532.7	91.36	PASS	70-125	775996.3	922694.3	84.1	PASS	70-125
N032318-013B-PS	PS	5	29925.8	34532.7	86.66	PASS	70-125	717753.2	922694.3	77.79	PASS	70-125
N032318-013B-MS	MS	5	29314.8	34532.7	84.89	PASS	70-125	706358.1	922694.3	76.55	PASS	70-125
N032318-013B-MSD	MSD	5	29115.5	34532.7	84.31	PASS	70-125	699249.9	922694.3	75.78	PASS	70-125
N032328-001D	SAMP	5	25845.6	34532.7	74.84	PASS	70-125	630135.2	922694.3	68.29	NR!	70-125
N032328-002D	SAMP	5	27841.1	34532.7	80.62	PASS	70-125	652855.4	922694.3	70.76	PASS	70-125
N032328-001D	SAMP	1	20390	34532.7	59.045	NR!	70-125	508992	922694.3	55.16	NR!	70-125
N032328-001D	SAMP	25	32872.7	34532.7	95.19	PASS	70-125	793543	922694.3	86.003	PASS	70-125
N032328-002D	SAMP	1	21613.9	34532.7	62.59	NR!	70-125	568700	922694.3	61.63	NR!	70-125
CCV6	CCV	1	35491.5	34532.7	102.78	PASS	70-125	894143.3	922694.3	96.91	PASS	70-125
CCB6	CCB	1	34830	34532.7	100.86	PASS	70-125	868463.4	922694.3	94.12	PASS	70-125

NR  
NR



INTERNAL STANDARD: 181009A

Instrument ID: ICPMS-02

Sample Name	Type	DF	72 Ge ( ISTD ) [ 1 ]					103 Rh ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria	CPS	REF	%REC	Comment	Criteria
ICSA3	ICSA	1	35002.6	34532.7	101.36	PASS	70-125	863804	922694.3	93.62	PASS	70-125
ICSAB3	ICSAB	1	35311.2	34532.7	102.25	PASS	70-125	859685.7	922694.3	93.17	PASS	70-125

# SERIAL DILUTION/ POST DIGESTION SPIKE



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ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N032328  
Test Method: EPA 6020  
Analysis Date: 10/8/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70882

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to r. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032318-013B DT 5X	Chromium	ug/L	5.898997	NA	5.708014	3.35%	10

Note: NA - Not applicable

**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N032328  
Test Method: EPA 6020  
Analysis Date: 10/9/2018  
10/8/2018

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70882

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Mo. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032318-013B DT 5X	Molybdenum	ug/L	2.284527	NA	2.325981	1.78%	10
N032318-013B DT 5X	Selenium	ug/L	0		0		10

25x

Note: NA - Not applicable

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 6020\_DIS**

Sample ID	<b>N032318-013B-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>129145</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70882</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3167818</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium		14.143		2.5	10.00	0		141	80	120				S

Sample ID	<b>N032318-013B-PS</b>	SampType:	<b>PS</b>	TestCode:	<b>6020_DIS</b>	Units:	<b>µg/L</b>	Prep Date:		RunNo:	<b>129120</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>70882</b>	TestNo:	<b>EPA 6020</b>		<b>EPA 3010A</b>	Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168834</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Molybdenum		14.620		0.50	10.00	2.326		123	80	120				S

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032328  
**Project:** PG&E Topock - GMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 6020DIS\_CrPGE**

Sample ID <b>N032318-013B-PS</b>	SampType: <b>PS</b>	TestCode: <b>6020DIS_CrP</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129120</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70882</b>	TestNo: <b>EPA 6020</b>	<b>EPA 3010A</b>	Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3166981</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	16.992	1.0	10.00	5.708	113	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# MDL STUDY



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Amount of Sample:** 25 mL  
**Units:** ug/L

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	LOD	PQL
ANTIMONY	0.50	0.525	0.514	0.473	0.500	0.492	0.486	0.530	0.0210	0.0660	0.100	0.50
ARSENIC	0.10	0.099	0.104	0.087	0.048	0.060	0.069	0.120	0.0259	0.0813	0.080	0.10
BARIUM	1.00	1.041	1.059	1.052	1.011	0.967	0.957	1.023	0.0403	0.1264	0.250	1.00
BERYLLIUM	0.50	0.469	0.476	0.473	0.495	0.480	0.488	0.507	0.0135	0.0424	0.100	0.50
CADMIUM	0.50	0.515	0.513	0.492	0.534	0.499	0.483	0.508	0.0168	0.0527	0.100	0.50
CHROMIUM	1.00	0.979	0.986	0.940	0.990	0.946	0.978	0.977	0.0197	0.0618	0.250	1.00
COBALT	0.50	0.499	0.489	0.486	0.488	0.465	0.502	0.505	0.0135	0.0424	0.100	0.50
COPPER	1.00	1.110	0.667	1.039	1.060	1.006	1.099	1.075	0.1544	0.4850	0.500	1.00
IRON	10.00	10.873	10.802	10.142	9.991	9.846	9.852	10.596	0.4463	1.4014	2.500	10.00
LEAD	1.00	0.928	0.931	0.899	0.996	0.990	0.987	0.997	0.0406	0.1274	0.250	1.00
MANGANESE	0.50	0.577	0.588	0.561	0.566	0.517	0.541	0.520	0.0276	0.0866	0.100	0.50
MOLYBDENUM	0.50	0.514	0.504	0.467	0.478	0.456	0.433	0.527	0.0338	0.1061	0.250	0.50
NICKEL	1.00	0.961	0.965	0.977	0.907	0.914	0.962	1.075	0.0551	0.1731	0.250	1.00
SELENIUM	0.50	0.450	0.478	0.419	0.693	0.707	0.495	0.555	0.1155	0.3628	0.400	0.50
SILVER	0.50	0.558	0.511	0.490	0.542	0.458	0.490	0.684	0.0745	0.2340	0.250	0.50
THALLIUM	0.50	0.437	0.428	0.408	0.538	0.446	0.438	0.525	0.0504	0.1583	0.250	0.50
URANIUM	0.50	0.478	0.467	0.461	0.517	0.510	0.521	0.521	0.0267	0.0838	0.100	0.50
VANADIUM	1.00	0.950	0.969	0.900	0.844	0.829	0.848	1.053	0.0820	0.2574	0.500	1.00
ZINC	10.00	11.259	11.279	10.915	9.620	9.849	9.745	10.241	0.7235	2.2717	2.500	10.00



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CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
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NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Units:** ug/L

Analyte	MDLs	MDLb	MDL	LOD	PQL
ANTIMONY	0.0660	0.1564	0.1564	0.300	0.50
ARSENIC	0.0813	0.0387	0.0813	0.080	0.10
BARIUM	0.1264	0.1497	0.1497	0.300	1.00
BERYLLIUM	0.0424	0.0153	0.0424	0.100	0.50
CADMIUM	0.0527	0.0060	0.0527	0.100	0.50
CHROMIUM	0.0618	0.1298	0.1298	0.300	1.00
COBALT	0.0424	0.0339	0.0424	0.100	0.50
COPPER	0.4850	0.5459	0.5459	0.600	1.00
IRON	1.4014	4.3484	4.3484	5.000	10.00
LEAD	0.1274	0.1008	0.1274	0.300	1.00
MANGANESE	0.0866	0.2552	0.2552	0.300	0.50
MOLYBDENUM	0.1061	0.2149	0.2149	0.300	0.50
NICKEL	0.1731	0.2606	0.2606	0.300	1.00
SELENIUM	0.3628	0.0953	0.3628	0.400	0.50
SILVER	0.2340	0.2023	0.2340	0.250	0.50
THALLIUM	0.1583	0.1924	0.1924	0.300	0.50
URANIUM	0.0838	0.0020	0.0838	0.100	0.50
VANADIUM	0.2574	0.2768	0.2768	0.600	1.00
ZINC	2.2717	0.4511	2.2717	3.000	10.00



October 22, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032329

RE: PG&E Topock - PMP, RC000753.801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on October 02, 2018 by ASSET Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Nancy Libucos for*

Quennie Manimtim  
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories - Las Vegas.



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
ELAP Cert 2921  
EPA ID CA01638

**NEVADA** | P:702.307.2659 F:702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118  
ELAP Cert 2676 | NV Cert NV00922  
ORELAP/NELAP Cert 4046

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab Order:** N032329

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**CASE NARRATIVE****SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time except for pH. pH testing is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

**Analytical Comments for EPA 200.7\_Dissolved:**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Calcium in QC samples N032326-001E-MS1 and N032326-001E-MSD1 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Sodium in QC samples N032329-001D-MS2 and N032329-001D-MSD2 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

**Analytical Comments for EPA 218.6:**

Because the results for total dissolved chromium (5.6 ug/L) and hexavalent chromium (7.6 ug/L) for sample N032329-001 (PE-01-1018) are discrepant, sample re-analysis and Matrix Spike protocol were performed and result confirmed initial analysis.

**Analytical Comments for EPA 6020\_Dissolved:**

Because the results for total dissolved chromium (5.6 ug/L) and hexavalent chromium (7.6 ug/L) for sample N032329-001 (PE-01-1018) are discrepant, sample from both the total dissolved chromium and hexavalent chromium containers were redigested and analyzed for total dissolved chromium. The results from the redigested samples were 5.7 and 7.1 ug/L, respectively. Since these data confirmed the



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab Order:** N032329

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**CASE NARRATIVE**

original result for total dissolved chromium, the original result is reported.



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab Order:** N032329  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032329-001A	PE-01-1018	Groundwater	10/2/2018 7:45:00 AM	10/2/2018	10/22/2018
N032329-001B	PE-01-1018	Groundwater	10/2/2018 7:45:00 AM	10/2/2018	10/22/2018
N032329-001C	PE-01-1018	Groundwater	10/2/2018 7:45:00 AM	10/2/2018	10/22/2018
N032329-001D	PE-01-1018	Groundwater	10/2/2018 7:45:00 AM	10/2/2018	10/22/2018
N032329-002A	TW-03D-1018	Groundwater	10/2/2018 7:35:00 AM	10/2/2018	10/22/2018
N032329-002B	TW-03D-1018	Groundwater	10/2/2018 7:35:00 AM	10/2/2018	10/22/2018
N032329-002C	TW-03D-1018	Groundwater	10/2/2018 7:35:00 AM	10/2/2018	10/22/2018
N032329-002D	TW-03D-1018	Groundwater	10/2/2018 7:35:00 AM	10/2/2018	10/22/2018



**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_181003D</b>	QC Batch: <b>R128996</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	4400	0.10	0.10		umhos/cm	1	10/3/2018 02:05 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_181003D</b>	QC Batch: <b>R128996</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	7500	0.10	0.10		umhos/cm	1	10/3/2018 02:05 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID <b>N032326-003ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>120.1_WPGE</b>	Units: <b>umhos/cm</b>	Prep Date:	RunNo: <b>128996</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128996</b>	TestNo: <b>EPA 120.1</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161443</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	64300.000	0.10						63900	0.624		2

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_181003E</b>	QC Batch: <b>R128997</b>				PrepDate		Analyst: <b>LR</b>
pH	7.4	0.10	0.10	H	pH Units	1	10/3/2018 02:45 PM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	10/3/2018 02:45 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_181003E</b>	QC Batch: <b>R128997</b>				PrepDate		Analyst: <b>LR</b>
pH	7.3	0.10	0.10	H	pH Units	1	10/3/2018 02:45 PM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	10/3/2018 02:45 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 150.1\_4500H+B\_W**

Sample ID	<b>N032329-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>150.1_4500H</b>	Units:	<b>pH Units</b>	Prep Date:		RunNo:	<b>128997</b>											
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R128997</b>	TestNo:	<b>SM4500-H+B</b>			Analysis Date:	<b>10/3/2018</b>	SeqNo:	<b>3161449</b>											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual
pH		7.360		0.10												7.350		0.136		10		H
Temp. at time of pH Analysis		25.000		0.10												25.00		0		10		H

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_181003H</b>	QC Batch: <b>70874</b>				PrepDate	<b>10/3/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	2600	33	33		mg/L	1	10/3/2018 01:14 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_181003H</b>	QC Batch: <b>70874</b>				PrepDate	<b>10/3/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	4300	50	50		mg/L	1	10/3/2018 01:14 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 160.1\_2540C\_W**

Sample ID	<b>LCS-70874</b>	SampType:	<b>LCS</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/3/2018</b>	RunNo:	<b>129005</b>											
Client ID:	<b>LCSW</b>	Batch ID:	<b>70874</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>10/3/2018</b>	SeqNo:	<b>3161513</b>											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual
Total Dissolved Solids (Residue, Filtera		950.000		10		1000		0		95.0		80		120								

Sample ID	<b>MB-70874</b>	SampType:	<b>MBLK</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/3/2018</b>	RunNo:	<b>129005</b>											
Client ID:	<b>PBW</b>	Batch ID:	<b>70874</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>10/3/2018</b>	SeqNo:	<b>3161514</b>											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual
Total Dissolved Solids (Residue, Filtera		ND		10																		

Sample ID	<b>N032326-003ADUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/3/2018</b>	RunNo:	<b>129005</b>											
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>70874</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>10/3/2018</b>	SeqNo:	<b>3161523</b>											
Analyte		Result		PQL		SPK value		SPK Ref Val		%REC		LowLimit		HighLimit		RPD Ref Val		%RPD		RPDLimit		Qual
Total Dissolved Solids (Residue, Filtera		44900.000		500												42750		4.91		5		

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 200.7**

RunID: NV00922-ICP2_181011A	QC Batch: 70949			PrepDate	10/9/2018	Analyst: CEI
Calcium	180000	85	500	µg/L	1	10/11/2018 03:55 PM
Iron	ND	18	20	µg/L	1	10/11/2018 03:55 PM
Magnesium	41000	48	100	µg/L	1	10/11/2018 03:55 PM
Sodium	670000	2400	12000	µg/L	25	10/16/2018 09:57 AM

- Qualifiers:**
- B Analyte detected in the associated Method Blank
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
  - DO Surrogate Diluted Out
  - E Value above quantitation range
  - ND Not Detected at the Reporting Limit
  - Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 200.7**

RunID: NV00922-ICP2_181011A	QC Batch: 70949			PrepDate	10/9/2018	Analyst: CEI
Calcium	210000	85	500	µg/L	1	10/11/2018 04:33 PM
Iron	ND	18	20	µg/L	1	10/11/2018 04:33 PM
Magnesium	25000	48	100	µg/L	1	10/11/2018 04:33 PM
Sodium	1300000	4800	25000	µg/L	50	10/16/2018 10:14 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>MB-70949</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>10/9/2018</b>	RunNo: <b>129210</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170798</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	500									
Iron	ND	20									
Magnesium	ND	100									

Sample ID <b>LCS1-70949</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>10/9/2018</b>	RunNo: <b>129210</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170799</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	5202.693	500	5000	0	104	85	115				
Iron	111.140	20	100.0	0	111	85	115				
Magnesium	5449.785	100	5000	0	109	85	115				

Sample ID <b>N032326-001E-MS1</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>10/9/2018</b>	RunNo: <b>129210</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170803</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	228040.524	500	5000	215400	253	75	125				S
Iron	111.404	20	100.0	0	111	75	125				
Magnesium	31999.845	100	5000	26560	109	75	125				

Sample ID <b>N032326-001E-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>10/9/2018</b>	RunNo: <b>129210</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170804</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	226924.742	500	5000	215400	231	75	125	228000	0.490	20	S
Iron	110.454	20	100.0	0	110	75	125	111.4	0.856	20	
Magnesium	31718.876	100	5000	26560	103	75	125	32000	0.882	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>MB-70949</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>10/9/2018</b>	RunNo: <b>129305</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175547</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium ND 500

Sample ID <b>LCS2-70949</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>10/9/2018</b>	RunNo: <b>129305</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175548</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium 18899.519 500 20000 0 94.5 85 115

Sample ID <b>N032329-001D-MS2</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>10/9/2018</b>	RunNo: <b>129305</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175554</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium 760667.747 12000 20000 673700 435 75 125 S

Sample ID <b>N032329-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>10/9/2018</b>	RunNo: <b>129305</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175555</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium 762512.034 12000 20000 673700 444 75 125 760700 0.242 20 S

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICPMS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_181015B</b>	QC Batch: <b>70934</b>			PrepDate	<b>10/8/2018</b>	Analyst: <b>CEI</b>
Manganese	30	0.26	0.50	µg/L	1	10/15/2018 07:44 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICPMS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_181015B</b>	QC Batch: <b>70934</b>				PrepDate: <b>10/8/2018</b>		Analyst: <b>CEI</b>
Manganese	12	0.26	0.50		µg/L	1	10/15/2018 08:47 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>MB-70934</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/8/2018</b>	RunNo: <b>129310</b>
Client ID: <b>PBW</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176079</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			

Sample ID <b>LCS-70934</b>	SampType: <b>LCS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/8/2018</b>	RunNo: <b>129310</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176070</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	104.018	0.50	100.0	0	104 85 115

Sample ID <b>N032329-001D-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/8/2018</b>	RunNo: <b>129310</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176085</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	123.977	0.50	100.0	29.60	94.4 75 125

Sample ID <b>N032329-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/8/2018</b>	RunNo: <b>129310</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176087</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	123.150	0.50	100.0	29.60	93.6 75 125 124.0 0.670 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181003A</b>	QC Batch: <b>R129017</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	7.6	0.033	0.20		µg/L	1	10/3/2018 03:08 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_181015B</b>	QC Batch: <b>70934</b>				PrepDate	<b>10/8/2018</b>	Analyst: <b>CEI</b>
Chromium	5.6	0.13	1.0		µg/L	1	10/15/2018 07:44 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181003A</b>	QC Batch: <b>R129017</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	480	3.3	20		µg/L	100	10/3/2018 03:27 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_181016A</b>	QC Batch: <b>70934</b>				PrepDate	<b>10/8/2018</b>	Analyst: <b>CEI</b>
Chromium	500	0.65	5.0		µg/L	5	10/17/2018 02:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>MB-70934</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>10/8/2018</b>	RunNo: <b>129310</b>
Client ID: <b>PBW</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3175986</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	ND	1.0			
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Sample ID <b>LCS-70934</b>	SampType: <b>LCS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>10/8/2018</b>	RunNo: <b>129310</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3175987</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	10.218	1.0	10.00	0	102 85 115
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Sample ID <b>N032329-001D-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>10/8/2018</b>	RunNo: <b>129310</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176002</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	15.407	1.0	10.00	5.642	97.7 75 125
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Sample ID <b>N032329-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>10/8/2018</b>	RunNo: <b>129310</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176004</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	15.242	1.0	10.00	5.642	96.0 75 125 15.41 1.08 20
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID: <b>MB-R129017</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161822</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	ND	0.20									
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Sample ID: <b>LCS-R129017</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161823</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	5.267	0.20	5.000	0	105	90	110				
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Sample ID: <b>N032317-003ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161837</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	ND	0.20						0	0	20	
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Sample ID: <b>N032317-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161839</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	59.135	1.0	25.00	33.71	102	90	110				
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Sample ID: <b>N032317-004AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161840</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	58.689	1.0	25.00	33.71	99.9	90	110	59.14	0.758	20	
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032317-011AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161849</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	622.320	10	250.0	370.0	101	90	110				

Sample ID <b>N032329-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161854</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	988.040	20	500.0	477.2	102	90	110				

Sample ID <b>N032329-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161855</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	12.965	0.20	5.000	7.620	107	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_181004A</b>	QC Batch: <b>R129006</b>				PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	260	1.2	5.0		mg/L	1	10/4/2018 09:25 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



**ASSET LABORATORIES**  
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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_181004A</b>	QC Batch: <b>R129006</b>				PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	150	1.2	5.0		mg/L	1	10/4/2018 09:25 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 2320\_W\_SP**

Sample ID	<b>LCS-R129006</b>	SampType:	<b>LCS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129006</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R129006</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>10/4/2018</b>	SeqNo:	<b>3161534</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		99.585		5.0	100.0	0		99.6	85	115				

Sample ID	<b>MB-R129006</b>	SampType:	<b>MBLK</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129006</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R129006</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>10/4/2018</b>	SeqNo:	<b>3161535</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		ND		5.0										

Sample ID	<b>N032329-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129006</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R129006</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>10/4/2018</b>	SeqNo:	<b>3161539</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		149.378		5.0						149.4		0	30	

Sample ID	<b>N032329-002BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129006</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R129006</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>10/4/2018</b>	SeqNo:	<b>3161540</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		246.888		5.0	100.0	149.4		97.5	75	125				

Sample ID	<b>N032329-002BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129006</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R129006</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>10/4/2018</b>	SeqNo:	<b>3161541</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		248.963		5.0	100.0	149.4		99.6	75	125	246.9	0.837	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: <b>NV00922-IC8_181009A</b>	QC Batch: <b>R129169</b>				PrepDate		Analyst: <b>RAB</b>
Chloride	1100	1.8	100		mg/L	200	10/9/2018 03:50 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: <b>NV00922-IC8_181010A</b>	QC Batch: <b>R129173</b>				PrepDate		Analyst: <b>RAB</b>
Sulfate	360	1.1	25		mg/L	50	10/10/2018 06:27 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: <b>NV00922-IC8_181009A</b>	QC Batch: <b>R129169</b>				PrepDate		Analyst: <b>RAB</b>
Chloride	2100	4.6	250		mg/L	500	10/9/2018 04:07 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: <b>NV00922-IC8_181010A</b>	QC Batch: <b>R129173</b>				PrepDate		Analyst: <b>RAB</b>
Sulfate	500	1.1	25		mg/L	50	10/10/2018 06:44 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_CLPGE**

Sample ID	<b>MB-R129169_CL</b>	SampType:	<b>MBLK</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129169</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R129169</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168928</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		0.164		0.50										

Sample ID	<b>LCS-R129169_CL</b>	SampType:	<b>LCS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129169</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R129169</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168929</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		2.001		0.50	2.000	0		100	90	110				

Sample ID	<b>N032329-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129169</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R129169</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168937</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		2089.150		250							2088	0.0646	20	

Sample ID	<b>N032329-001BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129169</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R129169</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168940</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		1502.200		100	400.0	1084		104	80	120				

Sample ID	<b>N032329-001BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129169</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R129169</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168941</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		1499.060		100	400.0	1084		104	80	120	1502	0.209	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID	<b>MB-R129173_SO4</b>	SampType:	<b>MBLK</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129173</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R129173</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>10/10/2018</b>	SeqNo:	<b>3169327</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate		ND		0.50										
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Sample ID	<b>LCS-R129173_SO4</b>	SampType:	<b>LCS</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129173</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R129173</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>10/10/2018</b>	SeqNo:	<b>3169328</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate		3.974		0.50	4.000	0		99.4	90	110				
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Sample ID	<b>N032345-012BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129173</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R129173</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>10/10/2018</b>	SeqNo:	<b>3169332</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate		3197.880		100	800.0	2393		101	80	120				
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Sample ID	<b>N032345-012BMDS</b>	SampType:	<b>MSD</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129173</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R129173</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>10/10/2018</b>	SeqNo:	<b>3169333</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate		3200.220		100	800.0	2393		101	80	120	3198	0.0731	20	
---------	--	----------	--	-----	-------	------	--	-----	----	-----	------	--------	----	--

Sample ID	<b>N032345-012BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_SO4P</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129173</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R129173</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>10/10/2018</b>	SeqNo:	<b>3169334</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sulfate		2401.100		100							2393	0.358	20	
---------	--	----------	--	-----	--	--	--	--	--	--	------	-------	----	--

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
----------	--------	-----	-----	------	-------	----	---------------

**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181012A</b>	QC Batch: <b>R129235</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.33	0.032	0.050		mg/L	1	10/12/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
----------	--------	-----	-----	------	-------	----	---------------

**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181012A</b>	QC Batch: <b>R129235</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	2.6	0.16	0.25		mg/L	5	10/12/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R129235</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171932</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R129235</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171933</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.505	0.050	0.5000	0	101 85 115

Sample ID <b>N032329-002CMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171937</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	5.200	0.25	2.500	2.636	103 75 125

Sample ID <b>N032329-002CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171938</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	4.553	0.25	2.500	2.636	76.7 75 125 5.200 13.3 20

Sample ID <b>N032305-001CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171940</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	3.630	0.25			3.570 1.68 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

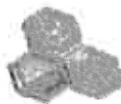
Calculations are based on raw values



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**CHAIN OF CUSTODY RECORD**

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P: 702.307.2659 F: 702.307.2691  
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www.assetlaboratories.com

Client: Arcadis		Report to: Dan Bush		Bill to: Marty Bloes		EDD Requirement		QA/QC		Sample Receipt Condition					
Address: 1410 Rocky Ridge Dr # 330		Company: Arcadis		Address:		Excel EDD		RTNE		1. Chilled <input checked="" type="checkbox"/> Y <input type="checkbox"/> N					
Address: Roseville, CA 95661		Email: dan.bush@arcadis.com daniel.moore@cribgen.com		Address:		Geotracker		RWQCB <input checked="" type="checkbox"/>		2. Headspace <input type="checkbox"/> <input checked="" type="checkbox"/>					
Phone: 916-788-3302		Address: 1410 Rocky Ridge Dr # 330		Email to: mbloes@pivox.com		Labspec		CaTrans		3. Container Intact <input type="checkbox"/> <input checked="" type="checkbox"/>					
Fax: 916-788-3302		Roseville, CA 95661		P.O.#		Others <input checked="" type="checkbox"/>		LEVEL III		4. Seal Present <input type="checkbox"/> <input checked="" type="checkbox"/>					
Submitted By: Gantt Jeffers		Phone: 916-788-3302		Phone: 949-727-1400, ext 200		Specify: RWQCB		LEVEL IV		5. IR number <input type="checkbox"/> <input checked="" type="checkbox"/>					
Title: Geologist II		Fax:		Fax:		Global ID:		Regulatory		6. Method of Cooling: ICE					
Signature:		Date: 10/2/2018		Sampled By: Spencer Doolittle		Ground: x Sediment		250 mL poly		Sample Temp: 4.6 °C					
I hereby authorize ASSET Labs to perform the tests indicated below. Project Name: PC&E Topock - PMP Project Number: RC000753.801D		Signature: Date: 10/2/2018		I attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection is considered fraud and may be grounds for legal action.		Potable		1 liter poly		Cr(VI) FF (E218.6) (NH4)2 SO4, NH4, OH Alkalinity, Total as CaCO3 (SM2520B) Sulfate and Chloride (EPA 300.0) Specific Conductance (EPA 120.1) Total Dissolved Solids (SM2540C) pH (SM4500-HB) Nitrate/Nitrite (SM4500NO3 F) Nitrate; H2SO4 Metals Dissolved (EPA 200.7 FF) (Ca, Fe, Mg, Na), HNO3 Dissolved metals (EPA 200.8 FF) (Cr, Mn); HNO3		Turn Around Time No. of Container Container Type PRESERVATION		Remarks	
				NPDES		1 liter poly									
				Surface		1 liter poly									
				Others		1 liter poly									
Item No.	Laboratory Work Order No.	Sample ID/Location	Sample Date	Sample Time	Others										
1	N032329-01	PE-01-1018	10/2/2018	7:45		X	X	X	X	X	X	X	X	4 P BNS	
2	-02	TW-03D-1018	10/2/2018	7:35		X	X	X	X	X	X	X	X	4 P BNS	
3															
4															
5															
6															
7															
8															
9															
10															

Relinquished by (Signature and Printed Name): Date/Time: 10/2/18 11:15  
 Relinquished by (Signature and Printed Name): Date/Time: 10/2/18 16:59  
 Relinquished by (Signature and Printed Name): Date/Time: 10/2/18 16:59

Turn Around Time (TAT)

A < 24 Hrs or Same Day TAT  
 B = Next Workday  
 C = 2 Workdays  
 D = 3 Workdays  
 E = Routine 5-7 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00PM.

Special Instruction:  
 Title 22 Metals - Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Terms  
 1. All samples will be disposed in 45 days and records will be destroyed in 5 years upon submission of final report.  
 2. Regular TAT is 5-7 business days, surcharges will apply for rush analysis.  
 Less than 24 Hrs: ~200% Next Day=100% 2 Workdays=50% 3 Workdays=35% 4 Workdays=20%  
 3. Custom EDD Reports will be an additional 3% of the total project price.  
 4. Add 15% surcharge for Level III Data Packages, 15% for Level IV Data Packages. Surcharges applied on total project price.

5. Trip Blanks and Equipment Blanks are billable samples.  
 6. Asset Laboratories is not responsible for samples collected using incorrect methodology.  
 7. Terms are net 30 days.  
 8. All reports are submitted in electronic format. Please inform ASSET Laboratories if hard copy of report is needed.  
 9. For subcontract analysis, TAT and Surcharges will vary.

Preservatives:				Container Type:		
H=HCL	N=HNO3	S=H2SO4	C=4°C	T=Tube	V=VOA	P=Pin
Z=Zn(AC)2	O=NaOH	T=Na2S2O3		J=Jar	B=Tedlar	G=Glass
Others/Specify: B (NH4)2SO4/NH4OH				M=Metal	M=Metal	C=Can

White=Laboratory Copy

Yellow=Customer's Copy

Final QC Review Performed By (Sign/Date): 10/2/18

# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 10/2/2018 Workorder: N032329  
 Rep sample Temp (Deg C): 4.6 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |   |  |   |
|---|---|--|---|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>                                  |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                       |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                       |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 11. All samples received within holding time?   | Yes <input type="checkbox"/>  | No <input checked="" type="checkbox"/>                     |   |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>                                |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input checked="" type="checkbox"/><br>Yes <input type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input type="checkbox"/><br>NA <input checked="" type="checkbox"/> |

Comments: Samples for pH were past holding time upon receipt.

Checklist Completed By: YR  10/4/2018

Reviewed By:  LG 100418

# ASSET Laboratories

## WORK ORDER Summary

03-Oct-18

WorkOrder: N032329

Client ID: ARCUS02

Project: PG&E Topock - PMP, RC000753.801D

QC Level: Level IV

Date Received: 10/2/2018

Comments: Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032329-001A	PE-01-1018	10/2/2018 7:45:00 AM	10/16/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032329-001B			10/16/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		SM 1030F1	Cation-Anion Balance Calculation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032329-001C			10/16/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032329-001D			10/16/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 200.7	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 200.8	DISSOLVED METALS BY ICPMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 200.8	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032329-002A	TW-03D-1018	10/2/2018 7:35:00 AM	10/16/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032329-002B			10/16/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

03-Oct-18

**WorkOrder:** N032329

**Client ID:** ARCUS02

**Project:** PG&E Topock - PMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 10/2/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032329-002B	TW-03D-1018	10/2/2018 7:35:00 AM	10/16/2018	Groundwater	EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		SM 1030F1	Cation-Anion Balance Calculation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032329-002C			10/16/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032329-002D			10/16/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 200.7	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 200.8	DISSOLVED METALS BY ICPMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018			DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 200.8	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032329-003A	FOLDER	10/16/2018	10/16/2018		EDD	RWQCB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/16/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/16/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB



# ***ARCADIS***

Project: PG&E Topock - GMP

Project No.: RC000753.801D

ASSET Laboratories Work Order:  
N032329

## ***ANALYTICAL and QC RESULTS SAMPLE RECEIVING ITEMS***

***PRIVILEGED AND CONFIDENTIAL***



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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October 22, 2018

Dan Bush  
ARCADIS U.S., Inc. - California  
1410 Rocky Ridge Dr #330  
Roseville, CA 95661  
TEL: (916) 786-3302  
FAX:

Workorder No.: N032329

RE: PG&E Topock - PMP, RC000753.801D

Attention: Dan Bush

Enclosed are the results for sample(s) received on October 02, 2018 by ASSET Laboratories . The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

*Nancy Libucos for*

Quennie Manimtim  
Laboratory Director

The cover letter is an integral part of this analytical report. This Laboratory Report cannot be reproduced in part or in its entirety without written permission from the client and Advanced Technology Laboratories - Las Vegas.



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab Order:** N032329

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**CASE NARRATIVE****SAMPLE RECEIVING/GENERAL COMMENTS:**

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time except for pH. pH testing is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

**Analytical Comments for EPA 200.7\_Dissolved:**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Calcium in QC samples N032326-001E-MS1 and N032326-001E-MSD1 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria for Sodium in QC samples N032329-001D-MS2 and N032329-001D-MSD2 since the analyte concentration in the sample is disproportionate to the spike level. The associated Laboratory Control Sample (LCS) recovery was acceptable.

**Analytical Comments for EPA 218.6:**

Because the results for total dissolved chromium (5.6 ug/L) and hexavalent chromium (7.6 ug/L) for sample N032329-001 (PE-01-1018) are discrepant, sample re-analysis and Matrix Spike protocol were performed and result confirmed initial analysis.

**Analytical Comments for EPA 6020\_Dissolved:**

Because the results for total dissolved chromium (5.6 ug/L) and hexavalent chromium (7.6 ug/L) for sample N032329-001 (PE-01-1018) are discrepant, sample from both the total dissolved chromium and hexavalent chromium containers were redigested and analyzed for total dissolved chromium. The results from the redigested samples were 5.7 and 7.1 ug/L, respectively. Since these data confirmed the



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab Order:** N032329

---

**CASE NARRATIVE**

original result for total dissolved chromium, the original result is reported.



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab Order:** N032329  
**Contract No:**

**Work Order Sample Summary**

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N032329-001A	PE-01-1018	Groundwater	10/2/2018 7:45:00 AM	10/2/2018	10/22/2018
N032329-001B	PE-01-1018	Groundwater	10/2/2018 7:45:00 AM	10/2/2018	10/22/2018
N032329-001C	PE-01-1018	Groundwater	10/2/2018 7:45:00 AM	10/2/2018	10/22/2018
N032329-001D	PE-01-1018	Groundwater	10/2/2018 7:45:00 AM	10/2/2018	10/22/2018
N032329-002A	TW-03D-1018	Groundwater	10/2/2018 7:35:00 AM	10/2/2018	10/22/2018
N032329-002B	TW-03D-1018	Groundwater	10/2/2018 7:35:00 AM	10/2/2018	10/22/2018
N032329-002C	TW-03D-1018	Groundwater	10/2/2018 7:35:00 AM	10/2/2018	10/22/2018
N032329-002D	TW-03D-1018	Groundwater	10/2/2018 7:35:00 AM	10/2/2018	10/22/2018



**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

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Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_181003D</b>	QC Batch: <b>R128996</b>			PrepDate			Analyst: <b>LR</b>
Specific Conductance	4400	0.10	0.10	umhos/cm	1		10/3/2018 02:05 PM

---

**Qualifiers:** B Analyte detected in the associated Method Blank  
H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference  
DO Surrogate Diluted Out  
E Value above quantitation range  
ND Not Detected at the Reporting Limit  
Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**SPECIFIC CONDUCTANCE**

**EPA 120.1**

RunID: <b>NV00922-WC_181003D</b>	QC Batch: <b>R128996</b>				PrepDate		Analyst: <b>LR</b>
Specific Conductance	7500	0.10	0.10		umhos/cm	1	10/3/2018 02:05 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 120.1\_WPGE**

Sample ID <b>N032326-003ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>120.1_WPGE</b>	Units: <b>umhos/cm</b>	Prep Date:	RunNo: <b>128996</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R128996</b>	TestNo: <b>EPA 120.1</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161443</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Specific Conductance	64300.000	0.10						63900	0.624		2

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_181003E</b>	QC Batch: <b>R128997</b>				PrepDate		Analyst: <b>LR</b>
pH	7.4	0.10	0.10	H	pH Units	1	10/3/2018 02:45 PM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	10/3/2018 02:45 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**PH**

**SM4500-H+B**

RunID: <b>NV00922-WC_181003E</b>	QC Batch: <b>R128997</b>				PrepDate		Analyst: <b>LR</b>
pH	7.3	0.10	0.10	H	pH Units	1	10/3/2018 02:45 PM
Temp. at time of pH Analysis	25	0.10	0.10	H	°C	1	10/3/2018 02:45 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 150.1\_4500H+B\_W**

Sample ID	<b>N032329-001BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>150.1_4500H</b>	Units:	<b>pH Units</b>	Prep Date:		RunNo:	<b>128997</b>			
Client ID:	<b>ZZZZZZ</b>	Batch ID:	<b>R128997</b>	TestNo:	<b>SM4500-H+B</b>			Analysis Date:	<b>10/3/2018</b>	SeqNo:	<b>3161449</b>			
Analyte		Result		PQL		SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
pH		7.360		0.10							7.350	0.136	10	H
Temp. at time of pH Analysis		25.000		0.10							25.00	0	10	H

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_181003H</b>	QC Batch: <b>70874</b>				PrepDate	<b>10/3/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	2600	33	33		mg/L	1	10/3/2018 01:14 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**TOTAL FILTERABLE RESIDUE**

**SM2540C**

RunID: <b>NV00922-WC_181003H</b>	QC Batch: <b>70874</b>				PrepDate	<b>10/3/2018</b>	Analyst: <b>LR</b>
Total Dissolved Solids (Residue, Filterable)	4300	50	50		mg/L	1	10/3/2018 01:14 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 160.1\_2540C\_W**

Sample ID	<b>LCS-70874</b>	SampType:	<b>LCS</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/3/2018</b>	RunNo:	<b>129005</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>70874</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>10/3/2018</b>	SeqNo:	<b>3161513</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		950.000		10	1000	0		95.0	80	120				

Sample ID	<b>MB-70874</b>	SampType:	<b>MBLK</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/3/2018</b>	RunNo:	<b>129005</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>70874</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>10/3/2018</b>	SeqNo:	<b>3161514</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		ND		10										

Sample ID	<b>N032326-003ADUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>160.1_2540C</b>	Units:	<b>mg/L</b>	Prep Date:	<b>10/3/2018</b>	RunNo:	<b>129005</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>70874</b>	TestNo:	<b>SM2540C</b>			Analysis Date:	<b>10/3/2018</b>	SeqNo:	<b>3161523</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera		44900.000		500						42750		4.91	5	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 200.7**

RunID: NV00922-ICP2_181011A	QC Batch: 70949	PrepDate	10/9/2018	Analyst: CEI		
Calcium	180000	85	500	µg/L	1	10/11/2018 03:55 PM
Iron	ND	18	20	µg/L	1	10/11/2018 03:55 PM
Magnesium	41000	48	100	µg/L	1	10/11/2018 03:55 PM
Sodium	670000	2400	12000	µg/L	25	10/16/2018 09:57 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ASSET Laboratories**

**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICP**

**EPA 200.7**

RunID: NV00922-ICP2_181011A	QC Batch: 70949			PrepDate	10/9/2018	Analyst: CEI
Calcium	210000	85	500	µg/L	1	10/11/2018 04:33 PM
Iron	ND	18	20	µg/L	1	10/11/2018 04:33 PM
Magnesium	25000	48	100	µg/L	1	10/11/2018 04:33 PM
Sodium	1300000	4800	25000	µg/L	50	10/16/2018 10:14 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>MB-70949</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>10/9/2018</b>	RunNo: <b>129210</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170798</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	ND	500									
Iron	ND	20									
Magnesium	ND	100									

Sample ID <b>LCS1-70949</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>10/9/2018</b>	RunNo: <b>129210</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170799</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	5202.693	500	5000	0	104	85	115				
Iron	111.140	20	100.0	0	111	85	115				
Magnesium	5449.785	100	5000	0	109	85	115				

Sample ID <b>N032326-001E-MS1</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>10/9/2018</b>	RunNo: <b>129210</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170803</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	228040.524	500	5000	215400	253	75	125				S
Iron	111.404	20	100.0	0	111	75	125				
Magnesium	31999.845	100	5000	26560	109	75	125				

Sample ID <b>N032326-001E-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>10/9/2018</b>	RunNo: <b>129210</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170804</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	226924.742	500	5000	215400	231	75	125	228000	0.490	20	S
Iron	110.454	20	100.0	0	110	75	125	111.4	0.856	20	
Magnesium	31718.876	100	5000	26560	103	75	125	32000	0.882	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>MB-70949</b>	SampType: <b>MBLK</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>10/9/2018</b>	RunNo: <b>129305</b>						
Client ID: <b>PBW</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175547</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium ND 500

Sample ID <b>LCS2-70949</b>	SampType: <b>LCS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>10/9/2018</b>	RunNo: <b>129305</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175548</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium 18899.519 500 20000 0 94.5 85 115

Sample ID <b>N032329-001D-MS2</b>	SampType: <b>MS</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>10/9/2018</b>	RunNo: <b>129305</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175554</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium 760667.747 12000 20000 673700 435 75 125 S

Sample ID <b>N032329-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date: <b>10/9/2018</b>	RunNo: <b>129305</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175555</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sodium 762512.034 12000 20000 673700 444 75 125 760700 0.242 20 S

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICPMS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_181015B</b>	QC Batch: <b>70934</b>			PrepDate	<b>10/8/2018</b>	Analyst: <b>CEI</b>
Manganese	30	0.26	0.50	µg/L	1	10/15/2018 07:44 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**DISSOLVED METALS BY ICPMS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_181015B</b>	QC Batch: <b>70934</b>			PrepDate	<b>10/8/2018</b>	Analyst: <b>CEI</b>
Manganese	12	0.26	0.50	µg/L	1	10/15/2018 08:47 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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"Servina Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>MB-70934</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/8/2018</b>	RunNo: <b>129310</b>
Client ID: <b>PBW</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176079</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	ND	0.50			

Sample ID <b>LCS-70934</b>	SampType: <b>LCS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/8/2018</b>	RunNo: <b>129310</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176070</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	104.018	0.50	100.0	0	104 85 115

Sample ID <b>N032329-001D-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/8/2018</b>	RunNo: <b>129310</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176085</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	123.977	0.50	100.0	29.60	94.4 75 125

Sample ID <b>N032329-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date: <b>10/8/2018</b>	RunNo: <b>129310</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176087</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Manganese	123.150	0.50	100.0	29.60	93.6 75 125 124.0 0.670 20

**Qualifiers:**

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- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181003A</b>	QC Batch: <b>R129017</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	7.6	0.033	0.20		µg/L	1	10/3/2018 03:08 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_181015B</b>	QC Batch: <b>70934</b>				PrepDate	<b>10/8/2018</b>	Analyst: <b>CEI</b>
Chromium	5.6	0.13	1.0		µg/L	1	10/15/2018 07:44 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**HEXAVALENT CHROMIUM BY IC**

**EPA 218.6**

RunID: <b>NV00922-IC7_181003A</b>	QC Batch: <b>R129017</b>				PrepDate		Analyst: <b>RAB</b>
Hexavalent Chromium	480	3.3	20		µg/L	100	10/3/2018 03:27 PM

**DISSOLVED METALS BY ICP-MS**

**EPA 200.8**

RunID: <b>NV00922-ICP7_181016A</b>	QC Batch: <b>70934</b>				PrepDate	<b>10/8/2018</b>	Analyst: <b>CEI</b>
Chromium	500	0.65	5.0		µg/L	5	10/17/2018 02:00 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>MB-70934</b>	SampType: <b>MBLK</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>10/8/2018</b>	RunNo: <b>129310</b>
Client ID: <b>PBW</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3175986</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	ND	1.0			
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Sample ID <b>LCS-70934</b>	SampType: <b>LCS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>10/8/2018</b>	RunNo: <b>129310</b>
Client ID: <b>LCSW</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3175987</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	10.218	1.0	10.00	0	102 85 115
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Sample ID <b>N032329-001D-MS</b>	SampType: <b>MS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>10/8/2018</b>	RunNo: <b>129310</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176002</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	15.407	1.0	10.00	5.642	97.7 75 125
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Sample ID <b>N032329-001D-MSD</b>	SampType: <b>MSD</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date: <b>10/8/2018</b>	RunNo: <b>129310</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176004</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Chromium	15.242	1.0	10.00	5.642	96.0 75 125 15.41 1.08 20
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID: <b>MB-R129017</b>	SampType: <b>MBLK</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>PBW</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161822</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	ND	0.20									
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Sample ID: <b>LCS-R129017</b>	SampType: <b>LCS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>LCSW</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161823</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	5.267	0.20	5.000	0	105	90	110				
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Sample ID: <b>N032317-003ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161837</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	ND	0.20						0	0	20	
---------------------	----	------	--	--	--	--	--	---	---	----	--

Sample ID: <b>N032317-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161839</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	59.135	1.0	25.00	33.71	102	90	110				
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Sample ID: <b>N032317-004AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161840</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexavalent Chromium	58.689	1.0	25.00	33.71	99.9	90	110	59.14	0.758	20	
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>N032317-011AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161849</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	622.320	10	250.0	370.0	101	90	110				

Sample ID <b>N032329-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161854</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	988.040	20	500.0	477.2	102	90	110				

Sample ID <b>N032329-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>		Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161855</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	12.965	0.20	5.000	7.620	107	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ALKALINITY, SPECIATED**

**SM 2320 B**

RunID: <b>NV00922-WC_181004A</b>	QC Batch: <b>R129006</b>				PrepDate		Analyst: <b>LR</b>
Alkalinity, Total (As CaCO3)	260	1.2	5.0		mg/L	1	10/4/2018 09:25 AM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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ANALYTICAL RESULTS

Print Date: 22-Oct-18

CLIENT: ARCADIS U.S., Inc. - California
Lab Order: N032329
Project: PG&E Topock - PMP, RC000753.801D
Lab ID: N032329-002

Client Sample ID: TW-03D-1018
Collection Date: 10/2/2018 7:35:00 AM
Matrix: GROUNDWATER

Analyses Result MDL PQL Qual Units DF Date Analyzed

ALKALINITY, SPECIATED

SM 2320 B

RunID: NV00922-WC\_181004A QC Batch: R129006 PrepDate Analyst: LR
Alkalinity, Total (As CaCO3) 150 1.2 5.0 mg/L 1 10/4/2018 09:25 AM

- Qualifiers: B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
S Spike/Surrogate outside of limits due to matrix interference
DO Surrogate Diluted Out
E Value above quantitation range
ND Not Detected at the Reporting Limit
Results are wet unless otherwise specified



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3151 W. Post Rd., Las Vegas, NV 89118
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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 2320\_W\_SP**

Sample ID	<b>LCS-R129006</b>	SampType:	<b>LCS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129006</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R129006</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>10/4/2018</b>	SeqNo:	<b>3161534</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		99.585		5.0	100.0	0		99.6	85	115				

Sample ID	<b>MB-R129006</b>	SampType:	<b>MBLK</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129006</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R129006</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>10/4/2018</b>	SeqNo:	<b>3161535</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		ND		5.0										

Sample ID	<b>N032329-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129006</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R129006</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>10/4/2018</b>	SeqNo:	<b>3161539</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		149.378		5.0							149.4	0	30	

Sample ID	<b>N032329-002BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129006</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R129006</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>10/4/2018</b>	SeqNo:	<b>3161540</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		246.888		5.0	100.0	149.4		97.5	75	125				

Sample ID	<b>N032329-002BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>2320_W_SP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129006</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R129006</b>	TestNo:	<b>SM 2320 B</b>			Analysis Date:	<b>10/4/2018</b>	SeqNo:	<b>3161541</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)		248.963		5.0	100.0	149.4		99.6	75	125	246.9	0.837	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: <b>NV00922-IC8_181009A</b>	QC Batch: <b>R129169</b>				PrepDate		Analyst: <b>RAB</b>
Chloride	1100	1.8	100		mg/L	200	10/9/2018 03:50 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: <b>NV00922-IC8_181010A</b>	QC Batch: <b>R129173</b>				PrepDate		Analyst: <b>RAB</b>
Sulfate	360	1.1	25		mg/L	50	10/10/2018 06:27 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: <b>NV00922-IC8_181009A</b>	QC Batch: <b>R129169</b>				PrepDate		Analyst: <b>RAB</b>
Chloride	2100	4.6	250		mg/L	500	10/9/2018 04:07 PM

**ANIONS BY ION CHROMATOGRAPHY**

**EPA 300.0**

RunID: <b>NV00922-IC8_181010A</b>	QC Batch: <b>R129173</b>				PrepDate		Analyst: <b>RAB</b>
Sulfate	500	1.1	25		mg/L	50	10/10/2018 06:44 PM

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_CLPGE**

Sample ID	<b>MB-R129169_CL</b>	SampType:	<b>MBLK</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129169</b>			
Client ID:	<b>PBW</b>	Batch ID:	<b>R129169</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168928</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		0.164		0.50										

Sample ID	<b>LCS-R129169_CL</b>	SampType:	<b>LCS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129169</b>			
Client ID:	<b>LCSW</b>	Batch ID:	<b>R129169</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168929</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		2.001		0.50	2.000	0		100	90	110				

Sample ID	<b>N032329-002BDUP</b>	SampType:	<b>DUP</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129169</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R129169</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168937</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		2089.150		250							2088	0.0646	20	

Sample ID	<b>N032329-001BMS</b>	SampType:	<b>MS</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129169</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R129169</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168940</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		1502.200		100	400.0	1084		104	80	120				

Sample ID	<b>N032329-001BMSD</b>	SampType:	<b>MSD</b>	TestCode:	<b>300_W_CLP</b>	Units:	<b>mg/L</b>	Prep Date:		RunNo:	<b>129169</b>			
Client ID:	<b>ZZZZZ</b>	Batch ID:	<b>R129169</b>	TestNo:	<b>EPA 300.0</b>			Analysis Date:	<b>10/9/2018</b>	SeqNo:	<b>3168941</b>			
Analyte		Result		PQL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride		1499.060		100	400.0	1084		104	80	120	1502	0.209	20	

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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"Serving Clients with Passion and Professionalism"

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID	<b>MB-R129173_SO4</b>	SampType: <b>MBLK</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129173</b>
Client ID:	<b>PBW</b>	Batch ID: <b>R129173</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3169327</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	ND	0.50				
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Sample ID	<b>LCS-R129173_SO4</b>	SampType: <b>LCS</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129173</b>
Client ID:	<b>LCSW</b>	Batch ID: <b>R129173</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3169328</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	3.974	0.50	4.000	0	99.4	90 110
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Sample ID	<b>N032345-012BMS</b>	SampType: <b>MS</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129173</b>
Client ID:	<b>ZZZZZ</b>	Batch ID: <b>R129173</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3169332</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	3197.880	100	800.0	2393	101	80 120
---------	----------	-----	-------	------	-----	--------

Sample ID	<b>N032345-012BMSD</b>	SampType: <b>MSD</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129173</b>
Client ID:	<b>ZZZZZ</b>	Batch ID: <b>R129173</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3169333</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	3200.220	100	800.0	2393	101	80 120 3198 0.0731 20
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Sample ID	<b>N032345-012BDUP</b>	SampType: <b>DUP</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129173</b>
Client ID:	<b>ZZZZZ</b>	Batch ID: <b>R129173</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3169334</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	2401.100	100				2393 0.358 20
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |

Calculations are based on raw values



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-001

**Client Sample ID:** PE-01-1018  
**Collection Date:** 10/2/2018 7:45:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181012A</b>	QC Batch: <b>R129235</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	0.33	0.032	0.050		mg/L	1	10/12/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**ANALYTICAL RESULTS**

Print Date: 22-Oct-18

**CLIENT:** ARCADIS U.S., Inc. - California  
**Lab Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D  
**Lab ID:** N032329-002

**Client Sample ID:** TW-03D-1018  
**Collection Date:** 10/2/2018 7:35:00 AM  
**Matrix:** GROUNDWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
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**NITRATE/NITRITE-N BY CADMIUM REDUCTION**

**SM4500-NO3F**

RunID: <b>NV00922-WC_181012A</b>	QC Batch: <b>R129235</b>				PrepDate		Analyst: <b>QBM</b>
Nitrate/Nitrite as N	2.6	0.16	0.25		mg/L	5	10/12/2018

**Qualifiers:** B Analyte detected in the associated Method Blank  
 H Holding times for preparation or analysis exceeded  
 S Spike/Surrogate outside of limits due to matrix interference  
 DO Surrogate Diluted Out  
 E Value above quantitation range  
 ND Not Detected at the Reporting Limit  
 Results are wet unless otherwise specified



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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>MB-R129235</b>	SampType: <b>MBLK</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>PBW</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171932</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	ND	0.050			

Sample ID <b>LCS-R129235</b>	SampType: <b>LCS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>LCSW</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171933</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	0.505	0.050	0.5000	0	101 85 115

Sample ID <b>N032329-002CMS</b>	SampType: <b>MS</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171937</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	5.200	0.25	2.500	2.636	103 75 125

Sample ID <b>N032329-002CMSD</b>	SampType: <b>MSD</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171938</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	4.553	0.25	2.500	2.636	76.7 75 125 5.200 13.3 20

Sample ID <b>N032305-001CDUP</b>	SampType: <b>DUP</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>		Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171940</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Nitrate/Nitrite as N	3.630	0.25			3.570 1.68 20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference

Calculations are based on raw values



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# SAMPLE RECEIVING ITEMS



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# ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On: 10/2/2018 Workorder: N032329  
 Rep sample Temp (Deg C): 4.6 IR Gun ID: 2  
 Temp Blank:  Yes  No  
 Carrier name: ASSET  
 Last 4 digits of Tracking No.: NA Packing Material Used: None  
 Cooling process:  Ice  Ice Pack  Dry Ice  Other  None

## Sample Receipt Checklist

- |   |   |  |   |
|---|---|--|---|
| 1. Shipping container/cooler in good condition?   | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | Not Present <input type="checkbox"/>                                  |
| 2. Custody seals intact, signed, dated on shipping container/cooler?                    | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                       |
| 3. Custody seals intact on sample bottles?  | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | Not Present <input checked="" type="checkbox"/>                       |
| 4. Chain of custody present?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 5. Sampler's name present in COC?   | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 6. Chain of custody signed when relinquished and received?                              | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 7. Chain of custody agrees with sample labels?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 8. Samples in proper container/bottle?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 9. Sample containers intact?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 10. Sufficient sample volume for indicated test?  | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                |   |
| 11. All samples received within holding time?   | Yes <input type="checkbox"/>  | No <input checked="" type="checkbox"/>                     |   |
| 12. Temperature of rep sample or Temp Blank within acceptable limit?                    | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 13. Water - VOA vials have zero headspace?  | Yes <input type="checkbox"/>  | No <input type="checkbox"/>                                | NA <input checked="" type="checkbox"/>                                |
| 14. Water - pH acceptable upon receipt?<br>Example: pH > 12 for (CN,S); pH<2 for Metals | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 15. Did the bottle labels indicate correct preservatives used?                          | Yes <input checked="" type="checkbox"/>                                 | No <input type="checkbox"/>                                | NA <input type="checkbox"/>   |
| 16. Were there Non-Conformance issues at login?<br>Was Client notified?                 | Yes <input checked="" type="checkbox"/><br>Yes <input type="checkbox"/> | No <input type="checkbox"/><br>No <input type="checkbox"/> | NA <input type="checkbox"/><br>NA <input checked="" type="checkbox"/> |

Comments: Samples for pH were past holding time upon receipt.

Checklist Completed By: YR  10/4/2018

Reviewed By:  LG 100418



# ASSET Laboratories

## WORK ORDER Summary

03-Oct-18

WorkOrder: N032329

Client ID: ARCUS02

Project: PG&E Topock - PMP, RC000753.801D

QC Level: Level IV

Date Received: 10/2/2018

Comments: Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032329-001A	PE-01-1018	10/2/2018 7:45:00 AM	10/16/2018	Groundwater	EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032329-001B			10/16/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		SM 1030F1	Cation-Anion Balance Calculation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032329-001C			10/16/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032329-001D			10/16/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 200.7	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 200.8	DISSOLVED METALS BY ICPMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 200.8	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032329-002A	TW-03D-1018	10/2/2018 7:35:00 AM	10/16/2018		EPA 218.6	Hexavalent Chromium by IC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032329-002B			10/16/2018		EPA 120.1	SPECIFIC CONDUCTANCE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		SM4500-H+B	pH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		SM2540C	TOTAL FILTERABLE RESIDUE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018			Total Dissolved Solids Prep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		SM 2320 B	ALKALINITY, SPECIATED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW

# ASSET Laboratories

## WORK ORDER Summary

03-Oct-18

**WorkOrder:** N032329

**Client ID:** ARCUS02

**Project:** PG&E Topock - PMP, RC000753.801D

**QC Level:** Level IV

**Date Received:** 10/2/2018

**Comments:** Title 22 Metals: Al, Sb, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn, K, Na

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N032329-002B	TW-03D-1018	10/2/2018 7:35:00 AM	10/16/2018	Groundwater	EPA 300.0	ANIONS BY ION CHROMATOGRAPHY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		SM 1030F1	Cation-Anion Balance Calculation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032329-002C			10/16/2018		SM4500-NO3F	NITRATE/NITRITE-N BY CADMIUM REDUCTION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032329-002D			10/16/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 200.7	DISSOLVED METALS BY ICP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018			AQPREP TOTAL METALS: ICP, FLAA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 200.8	DISSOLVED METALS BY ICPMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
			10/16/2018		EPA 200.8	DISSOLVED METALS BY ICP-MS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WW
N032329-003A	FOLDER	10/16/2018	10/16/2018		EDD	RWQCB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/16/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB
			10/16/2018		Folder	Folder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	LAB

## List of Analysts

### ASSET Laboratories Work Order: N032329

NAME	TEST METHOD
Quennie Manimtim	SM 4500-NO3F
Claire Ignacio	EPA 200.7_Dissolved, EPA 200.8_Dissolved
Ria Abes	EPA 218.6, EPA 300.0
Lilia Ramit	EPA 120.1, SM 4500-H+B, SM 2540C, SM 2320 B



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# EPA 120.1



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R128996 Analyst: LSR  
 ASSET #: N032329 Date Analyzed: 3-Oct

Method: EPA 120.1

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
<b>Sample Information</b>						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.			X			
11. LCS compounds within control limits.			X			
12. MS/MSD, <del>RPD's</del> are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Julia Ramit

Date: 10/11/2018

2nd Level Reviewer Theresa 10/27/2018

Date: \_\_\_\_\_

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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# Conductivity Logbook

Date: 10/3/18 1405

Analyst: LSN

Standard	Std ID	Reading	Comments
4911 <sup>MS</sup> / <sub>am</sub>	QMV-1807316	7.99 @ 24.9°C	% Rec: (90-110%)
1413	1805150	1420 @ 24.9°C	
9988	1807314	9930 @ 24.8°C	
99922	1809148	16130 @ 24.8°C	

Sample ID	Matrix	Reading	Comments
1 N032326-001B	Am	7860 @ 24.9°C	
2   2B		780 @ 24.9°C	
3   3A		6390 @ 24.2°C	
4   3A.DUP		6430 @ 23.8°C	
5 N032328-001B		1790 @ 22.9°C	
6   2B		1770 @ 22.1°C	
7 N032329-001B		4350 @ 24.8°C	
8   02B		7540 @ 22.1°C	
9			
10 1413 <sup>MS</sup> / <sub>am</sub>	QMV-180417B	1459 @ 24.3°C	2% 10/3/18 LSN
Dup 10000	180716A	10150 @ 24.4°C	Accept: 10% water, 20% soil
Std Chk: 99922	1809148	10220 @ 24.7°C	% Rec: (90-110%)

Date: \_\_\_\_\_

Analyst: \_\_\_\_\_

*Julia Ramit*

10/11/2018

Standard	Std ID	Reading	Comments
			% Rec: (90-110%)

Sample ID	Matrix	Reading	Comments
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Dup			Accept: 10% water, 20% soil
Std Chk:			% Rec: (90-110%)

Logbook # 6



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# SM 4500-H+B



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**pH Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

pH ARCUS  
 REV 0  
 101215

**FIRST LEVEL REVIEW:**

QC Batch Number: R128997

Instrument ID: pH meter

ASSET #: N032329

Analyst: LSR

Date Analyzed: 3-Oct

Method: EPA 150.1

pH Meter Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Was the meter calibrated using 3 buffers (4,7 and 10)?	X			X		
2. Was a closing buffer used at the end of analysis?	X			X		
3. Was the meter checked every 10 samples?	X			X		
<b>Sample Information</b>						
4. Are all samples analyzed within hold time.			X		X	
<b>QC Items</b>						
5. Was a duplicate sample analyzed?	X			X		
<b>Raw Data and Miscellaneous Information</b>						
6. Are Non-Conformances documented			X			X
7. Runlog complete and included in package.	X			X		
<b>Preliminary Report</b>						
8. Does the raw data match the preliminary report?	X			X		
9. Are analytical results correct?	X			X		
10. Is the QC summary report present and complete?	X			X		

Comments:

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed	X		
2. Matrix / units correct	X		
3. Does batch meet QC requirements?	X		
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)	X		
5. Is first level review correct and complete?	X		

1st Level Reviewer Silvia Ramit

Date: 10/4/2018

2nd Level Reviewer [Signature] 10/20/2018

Date: \_\_\_\_\_

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



**pH Logbook**

Date: 10/3/18 1346

Analyst: LR

Standard	Std ID	pH	Comments
Buffer 7	CIM-180515B	7.04 @ 25.0C	
Buffer 4	180515A	4.01 @ 25.0C	
Buffer 10	180131B	10.00 @ 25.0C	
Slope		97.6%	Acceptance Criteria: 95%-105%

Sample ID	Matrix	pH	Comments
1 NO32334-001A	Soil	8.32 @ 25.0C	
2   1A-DUP		8.34 @ 25.0C	
3   CA		8.29 @ 25.0C	
4			
5			
6			
7			
8			
9			
10			
Dup Buffer 7, 4, 10	CIM-180802E	6.97 @ 25.0C	Accept: +/-0.05 pH units from expected value

Date: 10/3/18 1445

Analyst: LR

Standard	Std ID	pH	Comments
Buffer 7	CIM-180515B	7.04 @ 25.0C	
Buffer 4	180515A	4.01 @ 25.0C	
Buffer 10	180131B	10.00 @ 25.0C	
Slope		97.6%	Acceptance Criteria: 95%-105%

Sample ID	Matrix	pH	Comments
1 NO32329-001B	H2O	7.35 @ 25.0C	
2   1B-DUP		7.36 @ 25.0C	
3   2B		7.29 @ 25.0C	
4			
5			
6			
7			Buffer 7 CIM 180802E
8			= 6.97 @ 25.0C
9 Julia Ramit	10/4/2018		
10			

Dup Buffer 7, 4, 10

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 Accept: +/-0.05 pH units from expected value

# SM 2540C



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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: 70874

Analyst: LSR

ASSET #: N032329

Date Analyzed: 3-Oct

Method: **EPA 160.1**

	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
<b>Initial Calibration</b>						
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
<b>Continuing Calibration</b>						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
<b>Sample Information</b>						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
<b>QC Items</b>						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
<b>Raw Data and Miscellaneous Information</b>						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
<b>Preliminary Report</b>						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Julia Ramit

Date: 10/12/2018

2nd Level Reviewer Nancy 10/20/2018

Date:

# SAMPLE CALCULATION



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## SAMPLE CALCULATION

METHOD: SM 2540C

TEST NAME: Total Filterable Residue

MATRIX: Water

FORMULA:

Calculate TDS concentration in mg/L, in the original sample as follows:

$$\text{TDS, mg/L} = \frac{(A-B)*1000000}{C}$$

Where:

A = weight in g of dish + residue after drying

B = weight of dish in g

C = volume of sample used in mL

For N032329-001B, TDS concentration in mg/L is calculated as follows:

$$\begin{aligned}\text{TDS, mg/L} &= \frac{(54.4255-54.3471)*1000000}{30} \\ &= 2613.3333 \text{ mg/L}\end{aligned}$$

Reporting result in two significant figures,

$$\text{TDS} = 2600 \text{ mg/L}$$

*Silia Ramit*

10/12/2018

# SAMPLE PREPARATION LOG



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PREP BATCH REPORT

Prep Start Date: **10/3/2018 1:14:21 P**  
 Prep End Date: **10/4/2018 10:40:00**

Reviewed/ Date: *Nancy* 10/20/2018

Page: 1 of 1

Initials/ Date: *Lilia Ramit* 10/12/2018 Prep Factor Units Temp. (°C):  
 Technician: **Lilia Ramit** mL / mL **180**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70874	Water		100	<input type="checkbox"/>	0	0	100	1.000		
MB-70874	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N032318-002E	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032318-003E	Groundwater		100	<input type="checkbox"/>	0	0	100	1.000		
N032318-014E	Groundwater		75	<input type="checkbox"/>	0	0	100	1.333		
N032320-001C	Groundwater		75	<input type="checkbox"/>	0	0	100	1.333		
N032320-002C	Groundwater		75	<input type="checkbox"/>	0	0	100	1.333		
N032326-001B	Water		20	<input type="checkbox"/>	0	0	100	5.000		
N032326-002B	Water		20	<input type="checkbox"/>	0	0	100	5.000		
N032326-003A	Water		2	<input type="checkbox"/>	0	0	100	50.000		
N032326-003A-DU	Water		2	<input type="checkbox"/>	0	0	100	50.000		
N032329-001B	Groundwater		30	<input type="checkbox"/>	0	0	100	3.333		
N032329-002B	Groundwater		20	<input type="checkbox"/>	0	0	100	5.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name	Spk ID	Spike Name	SampType	AmtAdd
10188	Glass Fiber Filter, 47mm	IWST180904A	1000 ppm NaCl	LCS	100

ASSET Laboratories

PREP BATCH REPORT

Page:1 of 1

Prep Start Date: 10/3/2018 1:14:21 P

Reviewed/ Date:

Prep End Date:

Initials/ Date: *Lilia Ramit* 10/12/2018

Prep Batch 70874 Prep Code: 160.1 W PRE

Technician: Lilia Ramit

Prep Factor Units  
mL / mL

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70874	Water	159180904	100	<input type="checkbox"/>	0	0	100	1.000		
MB-70874	Water		100	<input type="checkbox"/>	0	0	100	1.000		
N032318-002E	Groundwater	1332	100	<input type="checkbox"/>	0	0	100	1.000		
N032318-003E	Groundwater	1304	100	<input type="checkbox"/>	0	0	100	1.000		
N032318-014E	Groundwater	1552	100/75	<input type="checkbox"/>	0	0	100	1.000		
N032320-001C	Groundwater	1756	100/75	<input type="checkbox"/>	0	0	100	1.000		
N032320-002C	Groundwater	1579	100/75	<input type="checkbox"/>	0	0	100	1.000		
N032326-001B	Water	7860	100/20	<input type="checkbox"/>	0	0	100	1.000		
N032326-002B	Water	7850	100/20	<input type="checkbox"/>	0	0	100	1.000		
N032326-003A	Water	639W	100/2	<input type="checkbox"/>	0	0	100	1.000		
N032326-003A-DU	Water	↓	100/2	<input type="checkbox"/>	0	0	100	1.000		
N032329-001B	Groundwater	4350	100/30	<input type="checkbox"/>	0	0	100	1.000		
N032329-002B	Groundwater	7540	100/20	<input type="checkbox"/>	0	0	100	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

10188

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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SOLIDS RAW DATA

TEST : TSS (TDS/TS)

Date	Sample ID	Sample Vol. (ml)	Crucible + Filter (TSS) Crucible (TDS, TS) Tare Wt.(g)	Crucible + Filter+Sample (TSS) Crucible + Sample (TDS, TS) Tare Wt.(g)	Comments
10/31/18 1314 LL	MB 70874	100	68.9461 68.9462	68.9461 68.9461	
	LS 70874	100	69.8632 69.8635	69.9583 69.9585	
	NO32318-001E CC	100	69.8412 69.8416	69.9201 69.9205	
	3E EE	100	68.1551 68.1555	68.2342 68.2346	
	14E KK	75	70.6794 70.6797	70.7469 70.7472	
	NO32320-001C L2	75	76.4503 76.4506	76.5346 76.5350	
	2C 1A	75	76.5347 76.5351	76.6268 76.6272	
	NO32326-001B FF	20	68.1467 68.1471	68.2304 68.2308	
	2B CS	20	67.7541 67.7545	67.8388 67.8391	
	3A DD	2	53.7318 53.7322	53.8174 53.8177	

Julia Ramit

10/12/2018

ASSET Laboratories

Logbook#12





# TOTAL DISSOLVED SOLIDS, TDS

TDS, mg/L =

$$(A-B) \times 10000 \times PF$$

where:

- A = weight in grams of dish + residue after drying  
 B = weight of dish in grams  
 PF = 100/volume of sample used in mL

	vol of sample (mL)	weight of dish in grams (B)	weight in grams of dish + residue after drying (A)	(A-B)*10000	prep fact (PF)	TDS, mg/L	CONDUCTIVITY	RATIO	Sample Type
Date Finished:									
10/4/2018									
MB-70874	100	68.9462	68.9461	-1	1	-1			MBLK
LCS-70874	100	69.8635	69.9585	950	1	950			LCS
N032318-002E	100	69.8416	69.9205	789	1	789	1332	0.592	SAMP
N032318-003E	100	68.1555	68.2346	791	1	791	1304	0.607	SAMP
N032318-014E	75	70.6797	70.7472	675	1.33333333	900	1552	0.580	SAMP
N032320-001C	75	76.4506	76.535	844	1.33333333	1125.33333	1756	0.641	SAMP
N032320-002C	75	76.5551	76.6272	721	1.33333333	961.333333	1579	0.609	SAMP
N032326-001B	20	68.1471	68.2308	837	5	4185	7860	0.532	SAMP
N032326-002B	20	67.7545	67.8391	846	5	4230	7850	0.539	SAMP
N032326-003A	2	53.7322	53.8177	855	50	42750	63900	0.669	SAMP
N032326-003ADUP	2	61.0604	61.1502	898	50	44900	63900	0.703	DUP
N032329-001B	30	54.3471	54.4255	784	3.33333333	2613.33333	4350	0.601	SAMP
N032329-002B	20	53.6695	53.7562	867	5	4335	7540	0.575	SAMP

*Silia Ramit*

10/12/2018

# EPA 200.7 Dissolved



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**Metals Technical Batch Review Checklist (CH2MHILL)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS CH2M  
 REV 8.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70949  
 ASSET #: N032329

Instrument ID: ICP-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 10/11/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ?( r = 0.995)	X					
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X					
3. Does the ICP/MS meet tune criteria? (ICP/MS Only)			X			
4. % RSD calculated from 3 injections?	X					
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X					
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X					
7. Are ICSA and AB within ± 20% of expected value?	X					
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X					
9. For CCV, all analytes within ± 10% of expected value?	X					
10. Calibration blank after ICV and CCV analysis.	X					
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X					
Is low level check twice during 8 hr period or at end within ± 30% of expected value?						
12. (ICP/ICPMS only)	X					
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X					
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X					
15. Are all samples analyzed/digested within hold time.	X					
16. Dilution test performed and within ± 10% of undiluted sample.			X			
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X					
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below 1/2 the reporting limit.	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits			X			
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X				
27. Runlog complete and included in package.	X					
28. Digestion log complete and included in package (if applicable)	X					
29. All sample raw data present in package.	X					
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X					
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
32. Are special instructions met?	X					

**Comments:**

%Rec of Ca in N032326-001EPS/MS/MSD failed. However, LCS passed criteria.  
 Dilution test failed for Mg. However, PS passed criteria.

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI

Date: 10/26/18

2nd Level Reviewer Harvey 10/27/2018

Date: \_\_\_\_\_





**Metals Technical Batch Review Checklist (CH2MHILL)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS CH2M  
 REV 8.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70949

Instrument ID: ICP-02

ASSET #: N032329

Analyst: CEI

**Method:**

Date Analyzed: 10/16/2018

- EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ?( r = 0.995)	X					
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X					
3. Does the ICP/MS meet tune criteria? (ICP/MS Only)			X			
4. % RSD calculated from 3 injections?	X					
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X					
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X					
7. Are ICSA and AB within ± 20% of expected value?	X					
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X					
9. For CCV, all analytes within ± 10% of expected value?	X					
10. Calibration blank after ICV and CCV analysis.	X					
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X					
Is low level check twice during 8 hr period or at end within ± 30% of expected value?						
12. (ICP/ICPMS only)	X					
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X					
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X					
15. Are all samples analyzed/digested within hold time.	X					
16. Dilution test performed and within ± 10% of undiluted sample.	X					
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X					
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X					
23. Method blank values are below 1/2 the reporting limit.	X					
24. LCS compounds within control limits.	X					
25. MS/MSD, RPD's are within control limits		X				
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X				
27. Runlog complete and included in package.	X					
28. Digestion log complete and included in package (if applicable)	X					
29. All sample raw data present in package.	X					
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X					
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
32. Are special instructions met?	X					

**Comments:**

%Rec of Na in N032329-001DPS/MS/MSD failed. However, LCS passed criteria.

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI

Date: 10/26/18

2nd Level Reviewer [Signature] 10/27/2018

Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
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## SAMPLE CALCULATION

**METHOD:** EPA 6010B  
**TEST NAME:** Heavy Metals by ICP  
**MATRIX:** Water

### FORMULA:

Calculate the Calcium concentration, in ug/L, in the original sample as follows:

$$\text{Calcium, ug/L} = A * DF * PF * CF$$

where:

A = mg/L, calculated concentration

DF = Dilution Factor

PF = Final Volume of Digestate, mL / Amount of Sample, mL

CF= Conversion Factor from mg/L to ug/L, 1000

For Sample **N032329-001D**, the concentration in ug/L is calculated as follows:

$$\text{Calcium, ug/L} = 176.452 * 1 * (25/25) * 1000$$

$$\text{Calcium, ug/L} = 176452$$

Reporting results in two significant figures,

$$\text{Calcium, ug/L} = 180000$$

# % RSD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**RSD SUMMARY: 181011B**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Ca	0	6.14	15	PASS
Standard1	ICAL	1	Ca	0.2	25.77	15	<PQL
Standard2	ICAL	1	Ca	1	1.51	15	PASS
Standard3	ICAL	1	Ca	2	0.52	15	PASS
Standard4	ICAL	1	Ca	5	0.45	15	PASS
Standard5	ICAL	1	Ca	7.5	0.55	15	PASS
Standard6	ICAL	1	Ca	10	0.55	15	PASS
Standard7	ICAL	1	Ca	20	0.38	15	PASS
ICV	ICV	1	Ca	10	0.069	15	PASS
ICB	ICB	1	Ca	-0.053	45.051	15	<PQL
ICB	ICB	1	Ca	-0.064	60.52	15	<PQL
LLICV	CCV1	1	Ca	0.18	14.95	20	PASS
ICSA1	ICSA	1	Ca	493.26	0.21	15	PASS
ICSAB1	ICSAB	1	Ca	550.86	0.073	15	PASS
MB-70949	MBLK	1	Ca	-0.026	10.9	15	PASS
MB-70949	MBLK	1	Ca	-0.022	104.84	15	<PQL
LCS1-70949	LCS	1	Ca	5.2	0.36	15	PASS
N032326-001E	SAMP	1	Ca	215.39	0.21	15	PASS
N032326-001E	SAMP	5	Ca	45.52	0.34	15	PASS
N032326-001E-PS	PS	1	Ca	229.79	0.34	15	PASS
N032326-001E-MS1	MS	1	Ca	228.04	0.34	15	PASS
N032326-001E-MSD1	MSD	1	Ca	226.92	0.097	15	PASS
N032326-002E	SAMP	1	Ca	206.05	0.96	15	PASS
N032329-001D	SAMP	1	Ca	176.45	0.24	15	PASS
CCV1	CCV	1	Ca	9.84	0.59	15	PASS
CCB1	CCB	1	Ca	-106.82	163.61	15	<PQL
CCB1	CCB	1	Ca	-0.015	148.14	15	<PQL
N032329-002D	SAMP	1	Ca	205.14	0.42	15	PASS
CCV2	CCV	1	Ca	9.76	0.59	15	PASS
CCB2	CCB	1	Ca	0.006	135.71	15	<PQL
ICSA2	ICSA	1	Ca	486.57	0.096	15	PASS
ICSAB2	ICSAB	1	Ca	544.81	0.18	15	PASS
CalBlk	IBLK	1	Fe	0	7.94	15	PASS
Standard1	ICAL	1	Fe	0.02	1.45	15	PASS
Standard2	ICAL	1	Fe	0.05	0.38	15	PASS
Standard3	ICAL	1	Fe	2	0.41	15	PASS
Standard4	ICAL	1	Fe	5	0.67	15	PASS
Standard5	ICAL	1	Fe	7.5	0.35	15	PASS
Standard6	ICAL	1	Fe	10	0.085	15	PASS
Standard7	ICAL	1	Fe	20	0.25	15	PASS
ICV	ICV	1	Fe	10.13	0.13	15	PASS
ICB	ICB	1	Fe	0.0015	44.51	15	<PQL

**RSD SUMMARY: 181011B**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
ICB	ICB	1	Fe	0	10892.12	15	<PQL
LLICV	CCV1	1	Fe	0.021	1.29	20	PASS
ICSA1	ICSA	1	Fe	170.72	0.7	15	PASS
ICSAB1	ICSAB	1	Fe	179.55	0.45	15	PASS
MB-70949	MBLK	1	Fe	0.015	83.48	15	<PQL
MB-70949	MBLK	1	Fe	0.0023	22.41	15	<PQL
LCS1-70949	LCS	1	Fe	0.11	0.16	15	PASS
N032326-001E	SAMP	1	Fe	0.0072	3.85	15	PASS
N032326-001E	SAMP	5	Fe	0.0019	9.4	15	PASS
N032326-001E-PS	PS	1	Fe	0.1	0.29	15	PASS
N032326-001E-MS1	MS	1	Fe	0.11	0.21	15	PASS
N032326-001E-MSD1	MSD	1	Fe	0.11	0.29	15	PASS
N032326-002E	SAMP	1	Fe	0.013	3.82	15	PASS
N032329-001D	SAMP	1	Fe	0.012	2.31	15	PASS
CCV1	CCV	1	Fe	9.85	0.27	15	PASS
CCB1	CCB	1	Fe	-2.2	161.85	15	<PQL
CCB1	CCB	1	Fe	0.0014	14.32	15	PASS
N032329-002D	SAMP	1	Fe	0.017	5.26	15	PASS
CCV2	CCV	1	Fe	9.72	0.19	15	PASS
CCB2	CCB	1	Fe	0.0029	19.69	15	<PQL
ICSA2	ICSA	1	Fe	165.18	0.11	15	PASS
ICSAB2	ICSAB	1	Fe	172.41	0.087	15	PASS
CaIBlk	IBLK	1	Mg	0	5.0081	15	PASS
Standard1	ICAL	1	Mg	0.1	0.7	15	PASS
Standard2	ICAL	1	Mg	1	0.19	15	PASS
Standard3	ICAL	1	Mg	2	0.2	15	PASS
Standard4	ICAL	1	Mg	5	0.74	15	PASS
Standard5	ICAL	1	Mg	7.5	0.45	15	PASS
Standard6	ICAL	1	Mg	10	0.13	15	PASS
Standard7	ICAL	1	Mg	20	0.3	15	PASS
ICV	ICV	1	Mg	10.091	0.14	15	PASS
ICB	ICB	1	Mg	-0.00005	944.67	15	<PQL
ICB	ICB	1	Mg	0.00042	36.046	15	<PQL
LLICV	CCV1	1	Mg	0.095	0.3	20	PASS
ICSA1	ICSA	1	Mg	452.89	0.8	15	PASS
ICSAB1	ICSAB	1	Mg	499.74	0.43	15	PASS
MB-70949	MBLK	1	Mg	0.02	137.86	15	<PQL
MB-70949	MBLK	1	Mg	0.0067	19.69	15	<PQL
LCS1-70949	LCS	1	Mg	5.45	0.34	15	PASS
N032326-001E	SAMP	1	Mg	26.56	0.32	15	PASS
N032326-001E	SAMP	5	Mg	6.36	0.1	15	PASS
N032326-001E-PS	PS	1	Mg	32.27	0.28	15	PASS

**RSD SUMMARY: 181011B****Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
N032326-001E-MS1	MS	1	Mg	32	0.36	15	PASS
N032326-001E-MSD1	MSD	1	Mg	31.72	0.088	15	PASS
N032326-002E	SAMP	1	Mg	25.31	0.57	15	PASS
N032329-001D	SAMP	1	Mg	40.96	0.13	15	PASS
CCV1	CCV	1	Mg	9.75	0.33	15	PASS
CCB1	CCB	1	Mg	2.14	163.73	15	NR!
CCB1	CCB	1	Mg	0.0049	11.36	15	PASS
N032329-002D	SAMP	1	Mg	25.075	0.16	15	PASS
CCV2	CCV	1	Mg	9.58	0.34	15	PASS
CCB2	CCB	1	Mg	0.0048	12.68	15	PASS
ICSA2	ICSA	1	Mg	436.37	0.16	15	PASS
ICSAB2	ICSAB	1	Mg	475.02	0.011	15	PASS

**RSD SUMMARY: 181016A**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Analyte	Reported Conc	RSD	Criteria	Comment
CalBlk	IBLK	1	Na	0	8.73	15	PASS
Standard1	ICAL	1	Na	0.1	3.23	15	PASS
Standard2	ICAL	1	Na	1	0.45	15	PASS
Standard3	ICAL	1	Na	5	0.1	15	PASS
Standard4	ICAL	1	Na	10	0.11	15	PASS
Standard5	ICAL	1	Na	20	0.043	15	PASS
Standard6	ICAL	1	Na	40	0.11	15	PASS
ICV	ICV	1	Na	9.86	0.17	15	PASS
ICB	ICB	1	Na	-0.019	16.91	15	<PQL
LLICV	CCV	1	Na	0.097	6.2	20	PASS
ICSA1	ICSA	1	Na	-0.022	6.48	15	PASS
ICSAB1	ICSAB	1	Na	9.9	0.11	15	PASS
MB-70949	MBLK	1	Na	-0.015	61.55	15	<PQL
LCS2-70949	LCS	1	Na	18.9	0.25	15	PASS
N032329-001D	SAMP	5	Na	135.95	0.85	15	PASS
N032329-002D	SAMP	5	Na	263.18	0.55	15	PASS
N032329-001D	SAMP	25	Na	26.95	0.15	15	PASS
N032329-001D	SAMP	125	Na	5.46	0.21	15	PASS
N032329-001D-PS	PS	25	Na	30.28	0.21	15	PASS
N032329-001D-MS2	MS	25	Na	30.43	0.13	15	PASS
N032329-001D-MSD2	MSD	25	Na	30.5	0.17	15	PASS
N032329-002D	SAMP	50	Na	26.72	0.15	15	PASS
CCV1	CCV	1	Na	9.87	0.086	15	PASS
CCB1	CCB	1	Na	-0.012	6.33	15	PASS
CCV2	CCV	1	Na	10.053	0.022	15	PASS
CCB2	CCB	1	Na	-0.012	25.89	15	<PQL
CCV3	CCV	1	Na	10.14	0.34	15	PASS
CCB3	CCB	1	Na	-0.019	12.74	15	PASS
ICSA2	ICSA	1	Na	-0.02	19.43	15	<PQL
ICSAB2	ICSAB	1	Na	10.13	0.13	15	PASS



# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INJECTION LOG: 181011B**

**Instrument ID: ICP-02**

STANDARD CODE	
Standard1	MWST-181001A,0.5<50mL
Standard2	MWST-181001E
Standard3	MWST-181001J,5<50mL
Standard4	MWST-181001J,12.5<50mL
Standard5	MWST-181001J,15<40mL
Standard6	MWST-181001J,25<50mL
Standard7	MWST-181001J
ICV	MWST-181001O
CCV	MWST-181001J,25<50mL
ICSA/ICSAB	MWST-181001R/MWST-180730A
Int. Std. (Y)	MSST-180926A/B
PS Spike	MWST-180930D/E/F

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	10/11/2018	12:54:26 PM
2	Standard1	ICAL	1	10/11/2018	01:00:16 PM
3	Standard2	ICAL	1	10/11/2018	01:06:37 PM
11	Standard3	ICAL	1	10/11/2018	01:12:56 PM
12	Standard4	ICAL	1	10/11/2018	01:19:18 PM
6	Standard5	ICAL	1	10/11/2018	01:27:40 PM
7	Standard6	ICAL	1	10/11/2018	01:36:02 PM
8	Standard7	ICAL	1	10/11/2018	01:43:56 PM
9	ICV	ICV	1	10/11/2018	01:48:23 PM
1	ICB	ICB	1	10/11/2018	01:57:19 PM
1	ICB	ICB	1	10/11/2018	02:02:04 PM
2	LLICV	CCV1	1	10/11/2018	02:08:21 PM
4	ICSA1	ICSA	1	10/11/2018	02:14:43 PM
5	ICSAB1	ICSAB	1	10/11/2018	02:24:17 PM
38	MB-70949	MBLK	1	10/11/2018	02:33:24 PM
38	MB-70949	MBLK	1	10/11/2018	02:39:44 PM
39	LCS1-70949	LCS	1	10/11/2018	02:51:34 PM
40	N032326-001E	SAMP	1	10/11/2018	03:02:05 PM
41	N032326-001E	SAMP	5	10/11/2018	03:11:25 PM
42	N032326-001E-PS	PS	1	10/11/2018	03:17:46 PM
43	N032326-001E-MS1	MS	1	10/11/2018	03:27:06 PM
44	N032326-001E-MSD1	MSD	1	10/11/2018	03:36:26 PM
45	N032326-002E	SAMP	1	10/11/2018	03:45:47 PM
46	N032329-001D	SAMP	1	10/11/2018	03:55:08 PM
7	CCV1	CCV	1	10/11/2018	04:04:29 PM
1	CCB1	CCB	1	10/11/2018	04:13:23 PM
1	CCB1	CCB	1	10/11/2018	04:26:53 PM
47	N032329-002D	SAMP	1	10/11/2018	04:33:11 PM

<b>A/S Loc</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq Date</b>	<b>Acq Time</b>
7	CCV2	CCV	1	10/11/2018	04:42:34 PM
1	CCB2	CCB	1	10/11/2018	04:51:28 PM
4	ICSA2	ICSA	1	10/11/2018	04:57:46 PM
5	ICSAB2	ICSAB	1	10/11/2018	05:07:22 PM

**INJECTION LOG: 181016A**

**Instrument ID: ICP-02**

STANDARD CODE	
Standard1	MWST-181001P,0.025<50mL
Standard2	MWST-181001P,0.25<50mL
Standard3	MWST-181001P,1.25<50mL
Standard4	MWST-181001P,2.5<50mL
Standard5	MWST-181001P,5<50mL
Standard6	MWST-181001P,10<50mL
ICV	MWST-180615A
CCV	MWST-181001P,2.5<50mL
ICSA/ICSAB	MWST-181001R/Q
Int. Std. (Sc):	MSST-180926A/B
PS Spike	MSST-140120B/ -180608B/A

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
1	CalBlk	IBLK	1	10/16/2018	08:50:40 AM
26	Standard1	ICAL	1	10/16/2018	08:53:57 AM
27	Standard2	ICAL	1	10/16/2018	08:57:15 AM
28	Standard3	ICAL	1	10/16/2018	09:01:02 AM
29	Standard4	ICAL	1	10/16/2018	09:04:55 AM
30	Standard5	ICAL	1	10/16/2018	09:08:49 AM
31	Standard6	ICAL	1	10/16/2018	09:12:55 AM
32	ICV	ICV	1	10/16/2018	09:21:01 AM
1	ICB	ICB	1	10/16/2018	09:24:58 AM
26	LLICV	CCV	1	10/16/2018	09:28:14 AM
33	ICSA1	ICSA	1	10/16/2018	09:31:32 AM
34	ICSAB1	ICSAB	1	10/16/2018	09:34:50 AM
98	MB-70949	MBLK	1	10/16/2018	09:38:44 AM
99	LCS2-70949	LCS	1	10/16/2018	09:42:04 AM
100	N032329-001D	SAMP	5	10/16/2018	09:47:14 AM
101	N032329-002D	SAMP	5	10/16/2018	09:52:10 AM
102	N032329-001D	SAMP	25	10/16/2018	09:57:04 AM
103	N032329-001D	SAMP	125	10/16/2018	10:00:55 AM
104	N032329-001D-PS	PS	25	10/16/2018	10:04:17 AM
105	N032329-001D-MS2	MS	25	10/16/2018	10:07:04 AM
106	N032329-001D-MSD2	MSD	25	10/16/2018	10:10:56 AM
107	N032329-002D	SAMP	50	10/16/2018	10:14:48 AM
29	CCV1	CCV	1	10/16/2018	10:18:09 AM
1	CCB1	CCB	1	10/16/2018	10:22:03 AM
108	MB-70926	MBLK	1	10/16/2018	10:25:21 AM
109	LCS2-70926	LCS	1	10/16/2018	10:30:16 AM
110	N032390-004A	SAMP	1	10/16/2018	10:34:23 AM
111	N032390-004A	SAMP	5	10/16/2018	10:37:45 AM
112	N032390-004A-PS	PS	1	10/16/2018	10:41:07 AM

A/S Loc	Sample Name	Type	DF	Acq Date	Acq Time
113	N032390-004A-MS2	MS	1	10/16/2018	10:45:16 AM
114	N032390-004A-MSD2	MSD	1	10/16/2018	10:49:24 AM
115	MB-70917	MBLK	1	10/16/2018	10:53:34 AM
116	LCS-70917	LCS	1	10/16/2018	10:56:54 AM
117	N032390-001A	SAMP	1	10/16/2018	11:00:54 AM
29	CCV2	CCV	1	10/16/2018	11:04:51 AM
1	CCB2	CCB	1	10/16/2018	11:08:46 AM
118	N032390-002A	SAMP	1	10/16/2018	11:12:03 AM
119	N032390-003A	SAMP	1	10/16/2018	11:15:59 AM
120	N032374-001D	SAMP	1	10/16/2018	11:19:52 AM
121	N032374-001D	SAMP	5	10/16/2018	11:23:47 AM
122	N032374-001D-PS	PS	1	10/16/2018	11:27:38 AM
123	N032374-001D-MS	MS	1	10/16/2018	11:31:37 AM
124	N032374-001D-MSD	MSD	1	10/16/2018	11:35:36 AM
124	N032374-001D-MSD	MSD	1	10/16/2018	11:40:25 AM
124	N032374-001D-MSD	MSD	1	10/16/2018	11:46:13 AM
29	CCV3	CCV	1	10/16/2018	11:50:15 AM
1	CCB3	CCB	1	10/16/2018	11:54:09 AM
33	ICSA2	ICSA	1	10/16/2018	11:57:25 AM
34	ICSAB2	ICSAB	1	10/16/2018	12:00:45 PM

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: **10/9/2018 10:04:19**  
 Prep End Date: **10/9/2018 1:00:00 P**

Reviewed/ Date: 10/27/2018  
 Initials/ Date: for

Page: 1 of 1

Prep Batch **70949** Prep Code: **200.7\_PR**

Technician: **Mark Gesmundo** Prep Factor Units **mL / mL** Temp. (°C): **95** Location: **Db-2-11**

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS1-70949	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
LCS2-70949	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70949	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N032326-001E	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032326-001E-MS	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032326-001E-MS	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032326-002E	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032329-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032329-001D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032329-001D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032329-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
10131	NITRIC ACID
10135	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
MSST-140120B	Sodium	LCS,MS,MSD	0.05
MSST-180608A	Strontium	LCS,MS,MSD	0.125
MSST-180608B	Potassium	LCS,MS,MSD	0.05
MWST-180930D	ICP Solution A	LCS,MS,MSD	0.5
MWST-180930E	ICP Solution B	LCS,MS,MSD	0.5
MWST-180930F	ICP Solution C	LCS,MS,MSD	0.5

# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**INITIAL CALIBRATION SUMMARY: 181011B**

**Instrument ID: ICP-02**

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
<b>Magnesium</b>								
CalBlk	10/11/2018	12:54:26 PM	Mg	279.079	203	0.00	mg/L	
Standard1	10/11/2018	01:00:16 PM	Mg	279.079	1605	0.1000	mg/L	
Standard2	10/11/2018	01:06:37 PM	Mg	279.079	17245	1.000	mg/L	
Standard3	10/11/2018	01:12:56 PM	Mg	279.079	35168	2.000	mg/L	
Standard4	10/11/2018	01:19:18 PM	Mg	279.079	90265	5.000	mg/L	
Standard5	10/11/2018	01:27:40 PM	Mg	279.079	134826	7.500	mg/L	
Standard6	10/11/2018	01:36:02 PM	Mg	279.079	173638	10.000	mg/L	
Standard7	10/11/2018	01:43:56 PM	Mg	279.079	340155	20.000	mg/L	0.9998
<b>Calcium</b>								
CalBlk	10/11/2018	12:54:26 PM	Ca	227.546	-137	0.00	mg/L	
Standard1	10/11/2018	01:00:16 PM	Ca	227.546	52	0.2000	mg/L	
Standard2	10/11/2018	01:06:37 PM	Ca	227.546	363	1.000	mg/L	
Standard3	10/11/2018	01:12:56 PM	Ca	227.546	709	2.000	mg/L	
Standard4	10/11/2018	01:19:18 PM	Ca	227.546	1807	5.000	mg/L	
Standard5	10/11/2018	01:27:40 PM	Ca	227.546	2720	7.500	mg/L	
Standard6	10/11/2018	01:36:02 PM	Ca	227.546	3547	10.000	mg/L	
Standard7	10/11/2018	01:43:56 PM	Ca	227.546	7131	20.000	mg/L	1.0000
<b>Iron</b>								
CalBlk	10/11/2018	12:54:26 PM	Fe	273.953	-284	0.00	mg/L	
Standard1	10/11/2018	01:00:16 PM	Fe	273.953	578	0.0200	mg/L	
Standard2	10/11/2018	01:06:37 PM	Fe	273.953	2065	0.050	mg/L	
Standard3	10/11/2018	01:12:56 PM	Fe	273.953	56409	2.000	mg/L	
Standard4	10/11/2018	01:19:18 PM	Fe	273.953	144034	5.000	mg/L	
Standard5	10/11/2018	01:27:40 PM	Fe	273.953	215132	7.500	mg/L	
Standard6	10/11/2018	01:36:02 PM	Fe	273.953	277870	10.000	mg/L	
Standard7	10/11/2018	01:43:56 PM	Fe	273.953	543072	20.000	mg/L	0.9998

INITIAL CALIBRATION SUMMARY: 181016A

Instrument ID: ICP-02

Sample ID	Date	Time	Elem	Wavelength	Corrected Intensity	Concentration	Units	R
<b>Sodium</b>								
CalBlk	10/16/2018	08:50:40 AM	Na	589.594	169	0.00	mg/L	
Standard1	10/16/2018	08:53:57 AM	Na	589.594	391	0.1000	mg/L	
Standard2	10/16/2018	08:57:15 AM	Na	589.594	3816	1.000	mg/L	
Standard3	10/16/2018	09:01:02 AM	Na	589.594	19660	5.000	mg/L	
Standard4	10/16/2018	09:04:55 AM	Na	589.594	38952	10.000	mg/L	
Standard5	10/16/2018	09:08:49 AM	Na	589.594	78981	20.000	mg/L	
Standard6	10/16/2018	09:12:55 AM	Na	589.594	158969	40.000	mg/L	1.0000

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129210</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129210</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170791</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9997.959	500	10000	0	100	90	110				
Iron	10131.824	20	10000	0	101	90	110				
Magnesium	10091.116	100	10000	0	101	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129210</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129210</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170794</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	176.354	500	200.0	0	88.2	80	120				
Iron	20.680	20	20.00	0	103	80	120				
Magnesium	94.549	100	100.0	0	94.5	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129210</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129210</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170807</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9844.002	500	10000	0	98.4	90	110				
Iron	9844.987	20	10000	0	98.4	90	110				
Magnesium	9750.776	100	10000	0	97.5	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129210</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129210</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170811</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	9759.420	500	10000	0	97.6	90	110				
Iron	9722.449	20	10000	0	97.2	90	110				
Magnesium	9579.972	100	10000	0	95.8	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129305</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129305</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175542</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9861.919	500	10000	0	98.6	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129305</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129305</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175544</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	97.023	500	100.0	0	97.0	90	110				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129305</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129305</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175557</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	9868.920	500	10000	0	98.7	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129305</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129305</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175569</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	10053.146	500	10000	0	101	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129305</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129305</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175580</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	10140.375	500	10000	0	101	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129210</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R129210</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170793</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	-64.223116	500									
Iron	-0.004752	20									
Magnesium	0.419	100									

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129210</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129210</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170809</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	-14.676981	500									
Iron	1.443	20									
Magnesium	4.943	100									

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129210</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129210</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170812</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	5.982	500									
Iron	2.918	20									
Magnesium	4.783	100									

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129305</b>
Client ID: <b>ICB</b>	Batch ID: <b>R129305</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175543</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sodium -19.423511 500

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129305</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129305</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175558</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sodium -12.031414 500

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129305</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129305</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175570</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sodium -11.808333 500

Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129305</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129305</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175581</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sodium -19.121765 500

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGISTS

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPBB**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129210</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129210</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170795</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	479912.703	50	500000	0	96.0	80	120				
Calcium	493261.086	500	500000	0	98.7	80	120				
Iron	170717.319	20	200000	0	85.4	80	120				
Magnesium	452891.352	100	500000	0	90.6	80	120				

Sample ID <b>ICSA B1</b>	SampType: <b>ICSA B</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129210</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R129210</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170796</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	534777.278	50	500000	0	107	80	120				
Calcium	550857.711	500	500000	0	110	80	120				
Iron	179554.857	20	200000	0	89.8	80	120				
Magnesium	499735.565	100	500000	0	99.9	80	120				

Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129210</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129210</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170813</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	473164.462	50	500000	0	94.6	80	120				
Calcium	486569.630	500	500000	0	97.3	80	120				
Iron	165180.007	20	200000	0	82.6	80	120				
Magnesium	436372.640	100	500000	0	87.3	80	120				

Sample ID <b>ICSA B2</b>	SampType: <b>ICSA B</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129210</b>						
Client ID: <b>ICSA B</b>	Batch ID: <b>R129210</b>	TestNo: <b>EPA 200.7</b>	Analysis Date: <b>10/11/2018</b>	SeqNo: <b>3170814</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aluminum	524930.803	50	500000	0	105	80	120				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
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  - ND Not Detected at the Reporting Limit
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  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID	ICSAB2	SampType:	ICSAB	TestCode:	200.7_WDPG			Units:	µg/L		Prep Date:	RunNo: 129210	
Client ID:	ICSAB	Batch ID:	R129210	TestNo:	EPA 200.7			Analysis Date:	10/11/2018		SeqNo: 3170814		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Calcium	544812.772	500	500000	0	109	80	120						
Iron	172414.377	20	200000	0	86.2	80	120						
Magnesium	475020.300	100	500000	0	95.0	80	120						

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129305</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R129305</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175545</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sodium	-21.523013	500									
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129305</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R129305</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175546</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sodium	9896.656	500	10000	0	99.0	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129305</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R129305</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175582</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sodium	-19.863247	500									
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.7_WDPG</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129305</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R129305</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3175583</b>
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sodium	10132.626	500	10000	0	101	80	120				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**INTERNAL STANDARD: 181011B**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Yttrium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
CalBlk	IBLK	1	1	100	65-125	PASS
Standard1	ICAL	1	1.0058	100.58	65-125	PASS
Standard2	ICAL	1	1.17	116.55	65-125	PASS
Standard3	ICAL	1	1.06	105.99	65-125	PASS
Standard4	ICAL	1	1.018	101.82	65-125	PASS
Standard5	ICAL	1	1.13	113.27	65-125	PASS
Standard6	ICAL	1	1.078	107.81	65-125	PASS
Standard7	ICAL	1	1.0068	100.68	65-125	PASS
ICV	ICV	1	1.065	106.48	65-125	PASS
ICB	ICB	1	1.004	100.4	65-125	PASS
ICB	ICB	1	0.99	99.4	65-125	PASS
LLICV	CCV1	1	1.0067	100.67	65-125	PASS
ICSA1	ICSA	1	1.033	103.28	65-125	PASS
ICSAB1	ICSAB	1	0.92	91.94	65-125	PASS
MB-70949	MBLK	1	1.026	102.62	65-125	PASS
MB-70949	MBLK	1	0.99	99.16	65-125	PASS
LCS1-70949	LCS	1	0.95	95.08	65-125	PASS
N032326-001E	SAMP	1	0.91	91.1	65-125	PASS
N032326-001E	SAMP	5	0.95	94.66	65-125	PASS
N032326-001E-PS	PS	1	0.89	89.036	65-125	PASS
N032326-001E-MS1	MS	1	0.89	89.14	65-125	PASS
N032326-001E-MSD1	MSD	1	0.89	89.1	65-125	PASS
N032326-002E	SAMP	1	0.88	88.33	65-125	PASS
N032329-001D	SAMP	1	0.93	92.99	65-125	PASS
CCV1	CCV	1	1.11	110.68	65-125	PASS
CCB1	CCB	1	0.36	36.19	65-125	NR!
CCB1	CCB	1	1.0076	100.76	65-125	PASS
N032329-002D	SAMP	1	0.88	88.09	65-125	PASS
CCV2	CCV	1	1.1	110.39	65-125	PASS
CCB2	CCB	1	1.018	101.83	65-125	PASS
ICSA2	ICSA	1	1.049	104.87	65-125	PASS
ICSAB2	ICSAB	1	0.93	92.67	65-125	PASS

**INTERNAL STANDARD: 181016A**

**Instrument ID: ICP-02**

Sample Name	Type	DF	Scandium, 1.0 mg/L			
			Reported Conc	%REC	Criteria	Comment
CalBlk	IBLK	1	1	100	65-125	PASS
Standard1	ICAL	1	1.0001	100.01	65-125	PASS
Standard2	ICAL	1	1.0092	100.92	65-125	PASS
Standard3	ICAL	1	0.99	98.9	65-125	PASS
Standard4	ICAL	1	0.98	97.51	65-125	PASS
Standard5	ICAL	1	0.96	96.43	65-125	PASS
Standard6	ICAL	1	0.95	95.21	65-125	PASS
ICV	ICV	1	0.98	98.47	65-125	PASS
ICB	ICB	1	0.99	99.28	65-125	PASS
LLICV	CCV	1	1	99.51	65-125	PASS
ICSA1	ICSA	1	1	99.68	65-125	PASS
ICSAB1	ICSAB	1	0.98	98.27	65-125	PASS
MB-70949	MBLK	1	1.0004	100.04	65-125	PASS
LCS2-70949	LCS	1	1.1	110.2	65-125	PASS
N032329-001D	SAMP	5	1.0009	100.09	65-125	PASS
N032329-002D	SAMP	5	0.98	98.39	65-125	PASS
N032329-001D	SAMP	25	1	99.94	65-125	PASS
N032329-001D	SAMP	125	1.0001	100.01	65-125	PASS
N032329-001D-PS	PS	25	1.0018	100.18	65-125	PASS
N032329-001D-MS2	MS	25	1	99.9	65-125	PASS
N032329-001D-MSD2	MSD	25	0.99	99.086	65-125	PASS
N032329-002D	SAMP	50	0.99	99.44	65-125	PASS
CCV1	CCV	1	0.97	97.38	65-125	PASS
CCB1	CCB	1	0.99	99.17	65-125	PASS
CCV2	CCV	1	0.99	99.03	65-125	PASS
CCB2	CCB	1	1.012	101.21	65-125	PASS
CCV3	CCV	1	0.99	99.14	65-125	PASS
CCB3	CCB	1	1.02	101.97	65-125	PASS
ICSA2	ICSA	1	1.014	101.39	65-125	PASS
ICSAB2	ICSAB	1	1	99.85	65-125	PASS

# SERIAL DILUTION/ POST DIGESTION SPIKE



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ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-Metals in Water**

Work Order No.: N032329  
Test Method: EPA 6010  
Analysis Date: 10/11/2018

**Dilution Test Summary**

Matrix: Water  
Batch No.: 70949

Instrument ID: ICP-02  
Instrument Description: Perkin Elmer Optima DV Series

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Ca and Fe. The calculated concentration is <25RL.

Dilution test failed for Mg. However, PS passed criteria.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032326-001E DT 5X	Calcium	ug/L	227612.3	PASS	215390	5.67%	10
N032326-001E DT 5X	Iron	ug/L	0	NA	0		10
N032326-001E DT 5X	Magnesium	ug/L	31791.28	FAIL	26560.67	19.69%	10

Note: NA - Not applicable

**ASSET Laboratories**

**ICP-Metals in Water**

Work Order No.: N032329  
Test Method: EPA 6010  
Analysis Date: 10/16/2018

**Dilution Test Summary**

Matrix: Water  
Batch No.: 70949

Instrument ID: ICP-02  
Instrument Description: Perkin Elmer Optima DV Series

Comments:

Analyzed By: Mary Claire Ignacio

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Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032329-001D DT 125X	Sodium	ug/L	682011.2	PASS	673688	1.24%	10

Note: NA - Not applicable

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.7\_WDPGEPPB**

Sample ID <b>N032326-001E-PS</b>	SampType: <b>PS</b>	TestCode: <b>200.7_WDPG</b>		Units: <b>µg/L</b>	Prep Date:			RunNo: <b>129210</b>			
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/11/2018</b>			SeqNo: <b>3170802</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Calcium	229789.327	500	5000	215400	288	80	120				S
Iron	104.767	20	100.0	0	105	80	120				
Magnesium	32273.192	100	5000	26560	114	80	120				

Sample ID <b>N032329-001D-PS</b>	SampType: <b>PS</b>	TestCode: <b>200.7_WDPG</b>		Units: <b>µg/L</b>	Prep Date:			RunNo: <b>129305</b>			
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70949</b>	TestNo: <b>EPA 200.7</b>		Analysis Date: <b>10/16/2018</b>			SeqNo: <b>3175553</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sodium	756960.932	12000	20000	673700	416	80	120				S

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# MDL STUDY



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ANALYTICAL SERVICES FOR THE ENVIRONMENT

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Metals by ICP**  
 Method Number: EPA 200.7/ 6010  
 Analysis Date(s): 10/6, 10/7,11/10/17  
 Analyst: Mary Claire Ignacio

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **ICP-02**

Acceptance Criteria: MDL < spike < 10XMDL

Analyte	Wavelength	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	MDL	PQL
Ag	328.069	0.0033	0.0031	0.0033	0.0033	0.0031	0.0030	0.0047	0.003	0.00061604	<b>0.001936</b>	0.003
Al	237.312	0.0664	0.0603	0.0656	0.0650	0.0658	0.0660	0.0946	0.050	0.01254823	<b>0.039439</b>	0.050
As	188.983	0.0131	0.0089	0.0120	0.0089	0.0060	0.0102	0.0080	0.010	0.00223806	<b>0.007034</b>	0.010
B	249.679	0.1491	0.1267	0.1281	0.1467	0.1261	0.1195	0.1015	0.100	0.01801843	<b>0.056632</b>	0.100
Ba	233.529	0.0033	0.0031	0.0033	0.0031	0.0032	0.0030	0.0024	0.003	0.00033070	<b>0.001039</b>	0.003
Be	313.104	0.0012	0.0011	0.0012	0.0012	0.0011	0.0011	0.0011	0.001	0.00006873	<b>0.000216</b>	0.001
Ca	227.546	0.2381	0.2231	0.2559	0.2299	0.2194	0.2473	0.2691	0.200	0.02202408	<b>0.069222</b>	0.200
Cd	214.437	0.0031	0.0029	0.0031	0.0032	0.0031	0.0031	0.0025	0.003	0.00027049	<b>0.000850</b>	0.003
Co	228.614	0.0030	0.0028	0.0030	0.0031	0.0031	0.0031	0.0027	0.003	0.00014491	<b>0.000455</b>	0.003
Cr	267.719	0.0009	0.0008	0.0009	0.0012	0.0012	0.0013	0.0009	0.001	0.00017120	<b>0.000538</b>	0.001
Fe	273.953	0.0255	0.0226	0.0242	0.0255	0.0252	0.0248	0.0387	0.020	0.00552308	<b>0.017359</b>	0.020
Mg	279.079	0.1124	0.1052	0.1129	0.1315	0.1305	0.1314	0.1435	0.100	0.01532024	<b>0.048152</b>	0.100
Mn	257.607	0.0119	0.0111	0.0120	0.0122	0.0121	0.0122	0.0099	0.010	0.00098403	<b>0.003093</b>	0.010
Mo	202.03	0.0079	0.0068	0.0067	0.0065	0.0065	0.0062	0.0057	0.005	0.00083918	<b>0.002638</b>	0.005
Ni	231.604	0.0061	0.0056	0.0062	0.0060	0.0060	0.0062	0.0045	0.005	0.00062690	<b>0.001970</b>	0.005
Pb	220.351	0.0124	0.0117	0.0127	0.0115	0.0120	0.0118	0.0090	0.010	0.00126325	<b>0.003970</b>	0.010
Sb	206.836	0.0102	0.0095	0.0104	0.0112	0.0117	0.0111	0.0080	0.010	0.00117407	<b>0.003690</b>	0.010
Se	196.025	0.0102	0.0087	0.0114	0.0136	0.0144	0.0136	0.0075	0.010	0.00251341	<b>0.007900</b>	0.010
Sn	189.927	0.0095	0.0084	0.0090	0.0124	0.0126	0.0129	0.0099	0.010	0.00175765	<b>0.005524</b>	0.010
Ti	334.943	0.0114	0.0106	0.0115	0.0115	0.0115	0.0115	0.0098	0.010	0.00074093	<b>0.002329</b>	0.010
Tl	190.794	0.0170	0.0150	0.0165	0.0171	0.0180	0.0168	0.0151	0.015	0.00116288	<b>0.003655</b>	0.015
V	292.404	0.0025	0.0024	0.0025	0.0032	0.0032	0.0032	0.0027	0.003	0.00038496	<b>0.001210</b>	0.003
Zn	206.201	0.0109	0.0100	0.0107	0.0125	0.0124	0.0124	0.0095	0.010	0.00123731	<b>0.003889</b>	0.010



**ASSET LABORATORIES**

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 ELAP Cert 2921

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
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## METHOD DETECTION LIMIT 2017

Method Name: **Metals by ICP**  
 Method Number: EPA 200.7/ 6010  
 Analysis Date(s): 10/6, 10/7, 11/10/17  
 Analyst: Mary Claire Ignacio

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **ICP-02**

Analyte	ICP-02 MDL	MDL Blank	Higher MDL	LOD	PQL
Ag	0.001936	0.002362	0.002362	0.002	0.003
Al	0.039439	0.039859	0.039859	0.04	0.5
As	0.007034	0.007672	0.007672	0.0075	0.01
B	0.056632	0.074419	0.074419	0.075	0.1
Ba	0.001039	0.000433	0.001039	0.001	0.003
Be	0.000216	0.000311	0.000311	0.0005	0.003
Ca	0.069222	0.084832	0.084832	0.1	0.5
Cd	0.000850	0.000592	0.000850	0.001	0.003
Co	0.000455	0.001902	0.001902	0.001	0.003
Cr	0.000538	0.000527	0.000538	0.001	0.003
Fe	0.017359	0.017751	0.017751	0.018	0.1
Mg	0.048152	0.043017	0.048152	0.05	0.1
Mn	0.003093	0.000782	0.003093	0.005	0.5
Mo	0.002638	0.002482	0.002638	0.0025	0.005
Ni	0.001970	0.000822	0.001970	0.0025	0.005
Pb	0.003970	0.002762	0.003970	0.005	0.005
Sb	0.003690	0.004504	0.004504	0.005	0.01
Se	0.007900	0.008549	0.008549	0.008	0.01
Sn	0.005524	0.003415	0.005524	0.0075	0.05
Ti	0.002329	0.001493	0.002329	0.005	0.05
Tl	0.003655	0.005987	0.005987	0.005	0.015
V	0.001210	0.000749	0.001210	0.002	0.003
Zn	0.003889	0.007683	0.007683	0.008	0.01



**Method Detection Limit**

**Analytical Method:** EPA 6010B / 200.7  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 2/21/2017  
**Instrument Name:** ICP2  
**Analysts:** MEI

**Matrix:** Water  
**Amount of Sample:** 25 mL  
**Units:** mg/L

Analyte	1	2	3	4	5	6	7	SD	Ave	AMT SPIKED	%RSD	MDL	PQL
Potassium	0.15443	0.16201	0.14301	0.16141	0.16124	0.12965	0.14652	0.01215	0.15118	0.1000	8.0	0.03815	0.5
Sodium	0.11445	0.11459	0.11678	0.11286	0.11394	0.09515	0.10066	0.00835	0.10978	0.1000	7.6	0.02621	0.5
Strontium	0.02939	0.03046	0.0307	0.02962	0.03209	0.02708	0.02772	0.00174	0.02958	0.0250	5.9	0.00545	0.05



**ASSET LABORATORIES**  
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CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

### LOD & PQL VERIFICATION

Analytical Method: EPA 6010B / 200.7  
Date of Analysis: 2/21/2017  
Instrument Name: ICP2  
Analyst: MI

Matrix: Water  
Units: mg/L

Compound	MDL	LOD		PQL		
		Spike	Recovered	Spike	Recovered	% Recovery
Sodium	0.02621	0.10	0.08408	0.5	0.52080	104.2
Potassium	0.03815	0.10	0.13587	0.5	0.48231	96.5
Strontium	0.00545	0.02	0.02459	0.05	0.06052	121.0





# EPA 200.8 Dissolved



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70934  
 ASSET #: N032329

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 10/15/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X		X	X
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X	X		X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		
24. LCS compounds within control limits.	X			X		
25. MS/MSD, RPD's are within control limits	X			X		
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented		X				X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

IS failed for N032329-002D. For rerun.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ with confirmation for sample N032329-001  
 \_\_\_\_\_  
 \_\_\_\_\_

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer Henry 10/27/2018

Date: 10/26/18  
 Date: \_\_\_\_\_



**Metals Technical Batch Review Checklist (ARCUS02)**  
**ASSET LABORATORIES - LAS VEGAS**

METALS ARCUS  
 REV 2.1  
 072018

**FIRST LEVEL REVIEW:**

QC Batch Number: 70934  
 ASSET #: N032329

Instrument ID: ICPMS-02  
 Analyst: CEI

Method:  
 EPA 6010B / 200.7       EPA 7470A / 7471A/245.1  
 EPA 6020 / 200.8       Other \_\_\_\_\_

Date Analyzed: 10/16/2018

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. Does correlation coefficient, r, meet criteria ? ( r = 0.995)	X			X		
2. For ICV, all analytes within ± 10% of expected value? (±5% for EPA 200.7)	X			X		
3. Does the ICP/MMS meet tune criteria? (ICP/MS only)	X			X		
4. % RSD calculated from 3 injections?	X			X		
5. Is low level check at PQL within ± 20% of expected value? (ICP/ICPMS only)	X			X		
<b>Interference Check</b>						
6. ICS A and AB at the start and end of sequence or twice during an 8-hr period.	X			X		
7. Are ICSA and AB within ± 20% of expected value?	X			X		
<b>Continuing Calibration</b>						
8. CCV after every 10 samples and end of analysis sequence.	X			X		
9. For CCV, all analytes within ± 10% of expected value?	X			X		
10. Calibration blank after ICV and CCV analysis.	X			X		
11. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)	X			X		
12. Is low level check twice during 8 hr period or at end within ± 30% of expected value? (ICP/ICPMS only)	X			X		
<b>Sample Information</b>						
13. All samples are within linear dynamic range.	X			X		
14. All hits above PQL have %RSD of less than or equal to 15%? (ICP/ICPMS only)	X			X		
15. Are all samples analyzed/digested within hold time.	X			X		
16. Dilution test performed and within ± 10% of undiluted sample.	X			X		
17. When dilution test fails, post digestion spike recovery within 80-120% of expected value.	X			X		
18. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?	X			X		
19. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?	X			X		
20. For samples that failed Cr6 vs CrT criteria, are samples reanalyzed for confirmation?			X			X
21. For samples with Total and Dissolved analysis, is Total concentration higher or equal to Dissolved concentration?			X			X
<b>QC Items</b>						
22. IS are within control limits (70-125% for ICPMS).	X			X		
23. Method blank values are below 1/2 the reporting limit.	X			X		X
24. LCS compounds within control limits.	X			X		X
25. MS/MSD, RPD's are within control limits	X			X		X
<b>Raw Data and Miscellaneous Information</b>						
26. Are Non-Conformances documented			X			X
27. Runlog complete and included in package.	X			X		
28. Digestion log complete and included in package (if applicable)	X			X		
29. All sample raw data present in package.	X			X		
<b>Preliminary Report</b>						
30. Does the raw data match the preliminary report?	X			X		
31. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
32. Are special instructions met?	X			X		

**Comments:**

For Cr rerun  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer CEI  
 2nd Level Reviewer Harvey 10/27/2018

Date: 10/26/18  
 Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## SAMPLE CALCULATION

**METHOD:** EPA 6020  
**TEST NAME:** Heavy Metals by ICP-MS  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Manganese concentration, in ug/L in the original sample as follows:

$$\text{Manganese , ug/L} = A * DF * PF$$

where:

A = ug/L, calculated concentration  
DF = Dilution Factor  
PF = Final Volume of Digestate, mL / Amount of Sample, mL

For Sample **N032329-001D**, the concentration in ug/L is calculated as follows:

$$\text{Manganese , ug/L} = 29.5974 * 1 * (25/25)$$

$$\text{Manganese , ug/L} = 29.5974$$

Reporting results in two significant figures,

$$\text{Manganese , ug/L} = 30$$

# % RSD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENTAL TECHNOLOGY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

PERCENT RSD SUMMARY: 181015B

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.081	14.34	15	PASS	0.031	95	15	<PQL
Std2-0.5/5 ppb	ICAL	1	0.47	4.24	15	PASS	0.48	3.75	15	PASS
Std3-5/50 ppb	ICAL	1	5.098	2.57	15	PASS	5.062	3.63	15	PASS
Std4-10/100 ppb	ICAL	1	10.24	0.83	15	PASS	9.94	0.69	15	PASS
Std5-20/200 ppb	ICAL	1	20.94	0.55	15	PASS	20.71	0.43	15	PASS
Std6-40/400 ppb	ICAL	1	40.32	1.083	15	PASS	41	1.88	15	PASS
Std7-100/1000 ppb	ICAL	1	100.11	0.55	15	PASS	99.86	0.25	15	PASS
Std8-200/2000 ppb	ICAL	1	199.77	0.67	15	PASS	199.8	0.14	15	PASS
ICV	ICV	1	10.41	1.57	15	PASS	106.11	0.82	15	PASS
ICB	ICB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LLICV	CCV1	1	1.017	9.22	20	PASS	0.47	5.84	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	19.76	2.23	15	PASS	17.56	3.006	15	PASS
LLICV	CCV1	1	1.05	4.84	20	PASS	0.46	3.48	20	PASS
MB-70934	MBLK	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
LCS-70934	LCS	1	10.22	0.49	15	PASS	104.018	1.014	15	PASS
N032326-001E	SAMP	1	473.54	1.046	15	PASS	7.54	2.32	15	PASS
N032326-001E	SAMP	5	91.69	1.35	15	PASS	1.44	6.86	15	PASS
N032326-002E	SAMP	1	<0.000	N/A	15	<PQL	22.31	1.91	15	PASS
N032326-002E	SAMP	5	<0.000	N/A	15	<PQL	4.51	1.61	15	PASS
N032326-003C	SAMP	1	3.42	2.74	15	PASS	0.2	273.79	15	<PQL
N032326-003C	SAMP	5	<0.000	N/A	15	<PQL	7.39	2.76	15	PASS
N032326-003C	SAMP	25	<0.000	N/A	15	<PQL	1.55	7.21	15	PASS
N032329-001D	SAMP	1	5.64	1.14	15	PASS	29.6	0.69	15	PASS
CCV1	CCV	1	21.65	0.76	15	PASS	20.98	0.49	15	PASS
CCB1	CCB	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
N032329-001D	SAMP	5	1.19	3.43	15	PASS	6.23	0.98	15	PASS
N032329-001D	SAMP	25	0.25	2.14	15	PASS	1.22	11.28	15	PASS
N032329-001D-PS	PS	1	15.12	0.52	15	PASS	124.22	0.74	15	PASS
N032329-001D-PS	PS	5	3.28	2.36	15	PASS	27.21	0.76	15	PASS
N032329-001D-MS	MS	1	15.41	0.97	15	PASS	123.98	0.63	15	PASS
N032329-001D-MS	MS	5	3.32	1.59	15	PASS	27.0071	2.55	15	PASS
N032329-001D-MSD	MSD	1	15.24	0.98	15	PASS	123.15	1.32	15	PASS
N032329-001D-MSD	MSD	5	3.36	0.94	15	PASS	26.91	1.18	15	PASS
N032329-002D	SAMP	1	487.81	0.82	15	PASS	12.47	0.45	15	PASS
CCV2	CCV	1	21.73	1.35	15	PASS	20.61	1.15	15	PASS
CCB2	CCB	1	0.034	16.59	15	<PQL	<0.000	N/A	15	<PQL
ICSA2	ICSA	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	20.12	1.17	15	PASS	17.72	2.027	15	PASS
N032329-002D	SAMP	5	100.31	1.085	15	PASS	2.71	5.0051	15	PASS

NR

PERCENT RSD SUMMARY: 181015B

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]				55 Mn [2]			
			Conc. [ppb]	RSD	Criteria	Comment	Conc. [ppb]	RSD	Criteria	Comment
CCV3	CCV	1	21.84	1.53	15	PASS	20.91	1.38	15	PASS
CCB3	CCB	1	0.016	39.58	15	<PQL	<0.000	N/A	15	<PQL
CCV4	CCV	1	21.62	1.76	15	PASS	20.91	1.55	15	PASS
CCB4	CCB	1	0.022	60.67	15	<PQL	<0.000	N/A	15	<PQL
ICSA3	ICSA	1	<0.000	N/A	15	<PQL	<0.000	N/A	15	<PQL
ICSAB3	ICSAB	1	19.69	0.54	15	PASS	18.31	1.81	15	PASS



PERCENT RSD SUMMARY: 181016A

Instrument ID: ICPMS-02

Sample Name	Type	DF	52 Cr [2]			
			Conc. [ppb]	RSD	Criteria	Comment
Cal Blank	IBLK	1	0	N/A	15	<PQL
Std1-0.1/1 ppb	ICAL	1	0.097	5.53	15	PASS
Std2-0.5/5 ppb	ICAL	1	0.51	3.32	15	PASS
Std3-5/50 ppb	ICAL	1	5.11	2.12	15	PASS
Std4-10/100 ppb	ICAL	1	10.27	1.33	15	PASS
Std5-20/200 ppb	ICAL	1	19.9	1.18	15	PASS
Std6-40/400 ppb	ICAL	1	40.46	1.5	15	PASS
Std7-100/1000 ppb	ICAL	1	101.72	0.57	15	PASS
Std8-200/2000 ppb	ICAL	1	199.043	0.8	15	PASS
ICV	ICV	1	10.17	1.46	15	PASS
ICB	ICB	1	<0.000	N/A	15	<PQL
LLICV	CCV1	1	1.031	1.51	20	PASS
ICSA1	ICSA	1	<0.000	N/A	15	<PQL
ICSAB1	ICSAB	1	20.34	1.27	15	PASS
LLICV	CCV1	1	1.056	3.24	20	PASS
MB-70934	MBLK	1	0.00068	736.56	15	<PQL
LCS-70934	LCS	1	10.084	0.46	15	PASS
N032329-001D	SAMP	1	5.7	0.57	15	PASS
CCV1	CCV	1	20.44	1.21	15	PASS
CCB1	CCB	1	0.0072	34.23	15	<PQL
N032329-001D	SAMP	5	1.19	2.69	15	PASS
N032329-001D	SAMP	25	0.24	3.49	15	PASS
N032329-001D-PS	PS	1	14.92	0.63	15	PASS
N032329-001D-PS	PS	5	3.37	0.35	15	PASS
N032329-001D-MS	MS	1	14.96	0.71	15	PASS
N032329-001D-MS	MS	5	3.29	1.37	15	PASS
N032329-001D-MSD	MSD	1	15.17	0.76	15	PASS
N032329-001D-MSD	MSD	5	3.32	1.13	15	PASS
N032329-002D	SAMP	1	465.2	0.33	15	PASS
N032329-002D	SAMP	5	99.39	0.77	15	PASS
CCV2	CCV	1	20.29	1.0098	15	PASS
CCB2	CCB	1	0.041	17.55	15	<PQL
CCV3	CCV	1	20.27	0.73	15	PASS
CCB3	CCB	1	0.0061	70.67	15	<PQL
ICSA2	ICSA	1	<0.000	N/A	15	<PQL
ICSAB2	ICSAB	1	19.88	1.25	15	PASS

NR

NR

NR- batch was rerun for Cu only

*Nancy*

10/27/2018

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**INJECTION LOG: 181015B**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
B1015001.D	RINSE	RINSE	1	10/15/18 5:15 PM
B1015002.D	Cal Blank	IBLK	1	10/15/18 5:21 PM
B1015003.D	Std1-0.1/1 ppb	ICAL	1	10/15/18 5:26 PM
B1015004.D	Std2-0.5/5 ppb	ICAL	1	10/15/18 5:33 PM
B1015005.D	Std3-5/50 ppb	ICAL	1	10/15/18 5:39 PM
B1015006.D	Std4-10/100 ppb	ICAL	1	10/15/18 5:44 PM
B1015007.D	Std5-20/200 ppb	ICAL	1	10/15/18 5:50 PM
B1015008.D	Std6-40/400 ppb	ICAL	1	10/15/18 5:56 PM
B1015009.D	Std7-100/1000 ppb	ICAL	1	10/15/18 6:01 PM
B1015010.D	Std8-200/2000 ppb	ICAL	1	10/15/18 6:07 PM
B1015011.D	ICV	ICV	1	10/15/18 6:13 PM
B1015012.D	ICB	ICB	1	10/15/18 6:20 PM
B1015013.D	LLICV	CCV1	1	10/15/18 6:25 PM
B1015014.D	ICSA1	ICSA	1	10/15/18 6:36 PM
B1015015.D	ICSAB1	ICSAB	1	10/15/18 6:42 PM
B1015016.D	LLICV	CCV1	1	10/15/18 6:47 PM
B1015017.D	MB-70934	MBLK	1	10/15/18 6:53 PM
B1015018.D	LCS-70934	LCS	1	10/15/18 6:59 PM
B1015019.D	N032326-001E	SAMP	1	10/15/18 7:04 PM
B1015020.D	N032326-001E	SAMP	5	10/15/18 7:10 PM
B1015021.D	N032326-002E	SAMP	1	10/15/18 7:15 PM
B1015022.D	N032326-002E	SAMP	5	10/15/18 7:21 PM
B1015023.D	N032326-003C	SAMP	1	10/15/18 7:27 PM
B1015024.D	N032326-003C	SAMP	5	10/15/18 7:33 PM
B1015025.D	N032326-003C	SAMP	25	10/15/18 7:38 PM
B1015026.D	N032329-001D	SAMP	1	10/15/18 7:44 PM
B1015027.D	CCV1	CCV	1	10/15/18 7:50 PM
B1015028.D	CCB1	CCB	1	10/15/18 7:56 PM
B1015029.D	N032329-001D	SAMP	5	10/15/18 8:02 PM
B1015030.D	N032329-001D	SAMP	25	10/15/18 8:08 PM
B1015031.D	N032329-001D-PS	PS	1	10/15/18 8:13 PM
B1015032.D	N032329-001D-PS	PS	5	10/15/18 8:19 PM
B1015033.D	N032329-001D-MS	MS	1	10/15/18 8:24 PM
B1015034.D	N032329-001D-MS	MS	5	10/15/18 8:30 PM
B1015035.D	N032329-001D-MSD	MSD	1	10/15/18 8:36 PM
B1015036.D	N032329-001D-MSD	MSD	5	10/15/18 8:41 PM
B1015037.D	N032329-002D	SAMP	1	10/15/18 8:47 PM
B1015038.D	MB-71039	MBLK	1	10/15/18 8:52 PM
B1015039.D	CCV2	CCV	1	10/15/18 8:58 PM
B1015040.D	CCB2	CCB	1	10/15/18 9:04 PM
B1015041.D	ICSA2	ICSA	1	10/15/18 9:09 PM
B1015042.D	ICSAB2	ICSAB	1	10/15/18 9:15 PM

**INJECTION LOG: 181015B**

Instrument ID: ICPMS-02

Data File	Sample Name	Type	DF	Acq. Date-Time
B1015043.D	LCS-71039	LCS	1	10/15/18 9:20 PM
B1015044.D	N032329-002D	SAMP	5	10/15/18 9:25 PM
B1015045.D	N032390-004A	SAMP	1	10/15/18 9:32 PM
B1015046.D	N032390-004A	SAMP	5	10/15/18 9:37 PM
B1015047.D	N032390-004A	SAMP	25	10/15/18 9:43 PM
B1015048.D	N032390-004A-PS	PS	1	10/15/18 9:48 PM
B1015049.D	N032390-004A-PS	PS	5	10/15/18 9:54 PM
B1015050.D	N032390-004A-MS	MS	1	10/15/18 10:00 PM
B1015051.D	N032390-004A-MS	MS	5	10/15/18 10:05 PM
B1015052.D	N032390-004A-MSD	MSD	1	10/15/18 10:11 PM
B1015053.D	CCV3	CCV	1	10/15/18 10:16 PM
B1015054.D	CCB3	CCB	1	10/15/18 10:24 PM
B1015055.D	N032390-004A-MSD	MSD	5	10/15/18 10:29 PM
B1015056.D	N032492-001E	SAMP	1	10/15/18 10:35 PM
B1015057.D	N032492-001E	SAMP	5	10/15/18 10:40 PM
B1015058.D	N032492-001E	SAMP	25	10/15/18 10:46 PM
B1015059.D	MB-70938	MBLK	1	10/15/18 10:52 PM
B1015060.D	LCS-70938	LCS	1	10/15/18 10:57 PM
B1015061.D	N032382-001B	SAMP	1	10/15/18 11:03 PM
B1015062.D	N032382-001B	SAMP	5	10/15/18 11:09 PM
B1015063.D	N032382-001B-PS	PS	1	10/15/18 11:14 PM
B1015064.D	N032382-001B-MS	MS	1	10/15/18 11:20 PM
B1015065.D	CCV4	CCV	1	10/15/18 11:25 PM
B1015066.D	CCB4	CCB	1	10/15/18 11:31 PM
B1015067.D	ICSA3	ICSA	1	10/15/18 11:36 PM
B1015068.D	ICSAB3	ICSAB	1	10/15/18 11:42 PM
B1015069.D	N032382-001B-MSD	MSD	1	10/15/18 11:48 PM
B1015070.D	N032382-002B	SAMP	1	10/15/18 11:53 PM
B1015071.D	N032382-003B	SAMP	1	10/15/18 11:59 PM
B1015072.D	N032382-004B	SAMP	1	10/16/18 12:04 AM
B1015073.D	N032382-005B	SAMP	1	10/16/18 12:10 AM
B1015074.D	N032382-006B	SAMP	1	10/16/18 12:16 AM
B1015075.D	N032382-007B	SAMP	1	10/16/18 12:21 AM
B1015076.D	N032382-008B	SAMP	1	10/16/18 12:27 AM
B1015077.D	N032382-009B	SAMP	1	10/16/18 12:32 AM
B1015078.D	N032382-010B	SAMP	1	10/16/18 12:38 AM
B1015079.D	CCV5	CCV	1	10/16/18 12:44 AM
B1015080.D	CCB5	CCB	1	10/16/18 12:50 AM
B1015081.D	N032382-011B	SAMP	1	10/16/18 12:55 AM
B1015082.D	N032382-012B	SAMP	1	10/16/18 1:01 AM
B1015083.D	N032382-013B	SAMP	1	10/16/18 1:06 AM
B1015084.D	N032382-014B	SAMP	1	10/16/18 1:12 AM

**INJECTION LOG: 181015B**

**Instrument ID: ICPMS-02**

<b>Data File</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq. Date-Time</b>
B1015085.D	N032382-015B	SAMP	1	10/16/18 1:17 AM
B1015086.D	N032382-016B	SAMP	1	10/16/18 1:23 AM
B1015087.D	N032382-017B	SAMP	1	10/16/18 1:29 AM
B1015088.D	N032382-018B	SAMP	1	10/16/18 1:34 AM
B1015089.D	N032382-019B	SAMP	1	10/16/18 1:40 AM
B1015090.D	CCV6	CCV	1	10/16/18 1:46 AM
B1015091.D	CCB6	CCB	1	10/16/18 1:51 AM
B1015092.D	ICSA4	ICSA	1	10/16/18 1:57 AM
B1015093.D	ICSAB4	ICSAB	1	10/16/18 2:02 AM

**INJECTION LOG: 181016A**

**Instrument ID: ICPMS-02**

Data File	Sample Name	Type	DF	Acq. Date-Time
A1016001.D	RINSE	RINSE	1	10/16/18 10:32 PM
A1016002.D	Cal Blank	IBLK	1	10/16/18 10:37 PM
A1016003.D	Std1-0.1/1 ppb	ICAL	1	10/16/18 10:43 PM
A1016004.D	Std2-0.5/5 ppb	ICAL	1	10/16/18 10:49 PM
A1016005.D	Std3-5/50 ppb	ICAL	1	10/16/18 10:54 PM
A1016006.D	Std4-10/100 ppb	ICAL	1	10/16/18 11:00 PM
A1016007.D	Std5-20/200 ppb	ICAL	1	10/16/18 11:05 PM
A1016008.D	Std6-40/400 ppb	ICAL	1	10/16/18 11:11 PM
A1016009.D	Std7-100/1000 ppb	ICAL	1	10/16/18 11:17 PM
A1016010.D	Std8-200/2000 ppb	ICAL	1	10/16/18 11:22 PM
A1016011.D	ICV	ICV	1	10/16/18 11:28 PM
A1016012.D	ICB	ICB	1	10/16/18 11:34 PM
A1016013.D	LLICV	CCV1	1	10/16/18 11:39 PM
A1016014.D	ICSA1	ICSA	1	10/16/18 11:45 PM
A1016015.D	ICSAB1	ICSAB	1	10/16/18 11:51 PM
A1016016.D	LLICV	CCV1	1	10/16/18 11:56 PM
A1016017.D	MB-70934	MBLK	1	10/17/18 12:02 AM
A1016018.D	LCS-70934	LCS	1	10/17/18 12:07 AM
A1016019.D	N032326-001E	SAMP	1	10/17/18 12:13 AM
A1016020.D	N032326-001E	SAMP	5	10/17/18 12:18 AM
A1016021.D	N032326-002E	SAMP	1	10/17/18 12:24 AM
A1016022.D	N032326-002E	SAMP	5	10/17/18 12:30 AM
A1016023.D	N032326-003C	SAMP	1	10/17/18 12:35 AM
A1016024.D	N032326-003C	SAMP	5	10/17/18 12:41 AM
A1016025.D	N032326-003C	SAMP	25	10/17/18 12:47 AM
A1016026.D	N032329-001D	SAMP	1	10/17/18 12:52 AM
A1016027.D	CCV1	CCV	1	10/17/18 12:58 AM
A1016028.D	CCB1	CCB	1	10/17/18 1:04 AM
A1016029.D	N032329-001D	SAMP	5	10/17/18 1:09 AM
A1016030.D	N032329-001D	SAMP	25	10/17/18 1:15 AM
A1016031.D	N032329-001D-PS	PS	1	10/17/18 1:21 AM
A1016032.D	N032329-001D-PS	PS	5	10/17/18 1:26 AM
A1016033.D	N032329-001D-MS	MS	1	10/17/18 1:32 AM
A1016034.D	N032329-001D-MS	MS	5	10/17/18 1:37 AM
A1016035.D	N032329-001D-MSD	MSD	1	10/17/18 1:43 AM
A1016036.D	N032329-001D-MSD	MSD	5	10/17/18 1:49 AM
A1016037.D	N032329-002D	SAMP	1	10/17/18 1:54 AM
A1016038.D	N032329-002D	SAMP	5	10/17/18 2:00 AM
A1016039.D	CCV2	CCV	1	10/17/18 2:06 AM
A1016040.D	CCB2	CCB	1	10/17/18 2:11 AM
A1016041.D	MB-71039	MBLK	1	10/17/18 2:23 AM
A1016042.D	LCS-71039	LCS	1	10/17/18 2:29 AM

reported N032329-002D @ 5x

**INJECTION LOG: 181016A****Instrument ID: ICPMS-02**

<b>Data File</b>	<b>Sample Name</b>	<b>Type</b>	<b>DF</b>	<b>Acq. Date-Time</b>
A1016043.D	N032390-004A	SAMP	1	10/17/18 2:36 AM
A1016044.D	N032390-004A	SAMP	5	10/17/18 2:42 AM
A1016045.D	N032390-004A	SAMP	25	10/17/18 2:47 AM
A1016046.D	N032390-004A-PS	PS	1	10/17/18 2:53 AM
A1016047.D	N032390-004A-PS	PS	5	10/17/18 2:58 AM
A1016048.D	N032390-004A-MS	MS	1	10/17/18 3:04 AM
A1016049.D	N032390-004A-MS	MS	5	10/17/18 3:09 AM
A1016050.D	N032390-004A-MSD	MSD	1	10/17/18 3:15 AM
A1016051.D	CCV3	CCV	1	10/17/18 3:20 AM
A1016052.D	CCB3	CCB	1	10/17/18 3:26 AM
A1016053.D	ICSA2	ICSA	1	10/17/18 3:31 AM
A1016054.D	ICSAB2	ICSAB	1	10/17/18 3:36 AM
A1016055.D	N032390-004A-MSD	MSD	5	10/17/18 3:43 AM
A1016056.D	N032492-001E	SAMP	1	10/17/18 3:48 AM
A1016057.D	N032492-001E	SAMP	5	10/17/18 3:54 AM
A1016058.D	N032492-001E	SAMP	25	10/17/18 3:59 AM

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



ASSET Laboratories

PREP BATCH REPORT

Prep Start Date: 10/8/2018 3:07:21 P

Prep End Date: 10/8/2018 7:30:00 P

Reviewed/ Date:

10/27/2018

Page 1 of 1

Initials/ Date:

10/26/2018

Prep Factor Units

Temp. (°C):

Location:

Prep Batch 70934

Prep Code: 200.8\_PR

Technician: Claire Ignacio

mL / mL

94.6

01-10

Sample ID	Matrix	pH	SampAmt	3 Replicates	Sol Added	Sol Recov	Fin Vol	factor	Clean Up Code	TURB Check
LCS-70934	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
MB-70934	Aqueous		25	<input type="checkbox"/>	0	0	25	1.000		
N032326-001E	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032326-002E	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032326-003C	Water	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032329-001D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032329-001D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032329-001D-MS	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		
N032329-002D	Groundwater	<2	25	<input type="checkbox"/>	0	0	25	1.000		

Clean Up Code: A = ACID; F = FLORISIL; S = SILICA GEL; M = MERCURY; G = GPC

Number	Reagent Name
9460	NITRIC ACID
9462	HYDROCHLORIC ACID

Spk ID	Spike Name	SampType	AmtAdd
2MWST-180409	ICV/MS/MSD/LCS/LCSD Solution D		0.25
2MWST-180420	ICV/MS/MSD/LCS/LCSD Solution A		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution B		0.25
2MWST-180618	ICV/MS/MSD/LCS/LCSD Solution C		0.25

# INSTRUMENT TUNING CHECK



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 15 Oct 2018 04:22:49 pm  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	196906.00	0.00	
24 Mg	405176.00	0.00	
25 Mg	51975.40	0.00	
26 Mg	58445.40	0.00	
59 Co	234552.00	0.00	
115 In	250639.00	0.00	
206 Pb	86616.20	0.00	
207 Pb	76462.60	0.00	
208 Pb	187601.00	0.00	

## RSD (%)

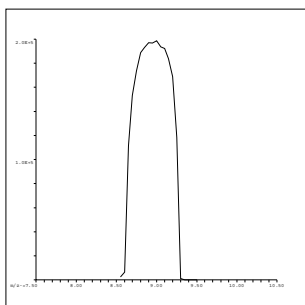
Element	Actual	Required	Flag
9 Be	0.69	5.00	
24 Mg	2.96	5.00	
25 Mg	2.78	5.00	
26 Mg	2.62	5.00	
59 Co	0.68	5.00	
115 In	0.43	5.00	
206 Pb	0.82	5.00	
207 Pb	1.27	5.00	
208 Pb	1.04	5.00	

## Ion Ratio

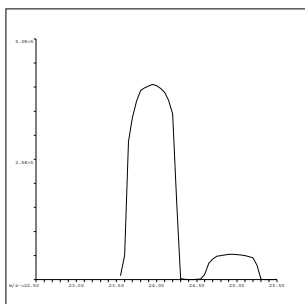
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

## Maximum Bkg. Count (CPS)

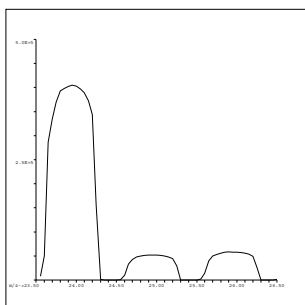
Element	Actual	Required	Flag
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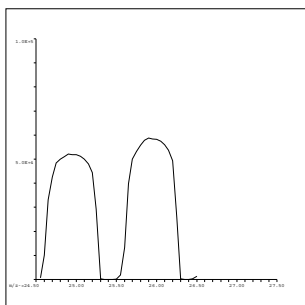
9 Be  
Mass Calib.  
Actual: 8.95  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



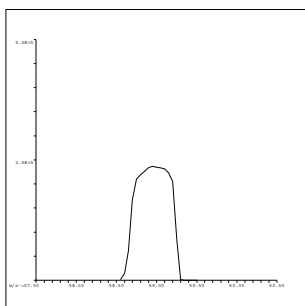
24 Mg  
Mass Calib.  
Actual: 23.95  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



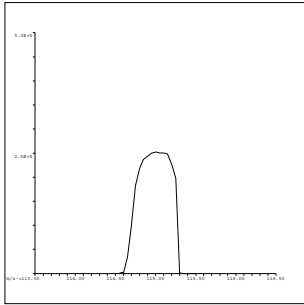
25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



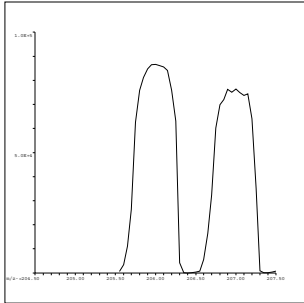
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



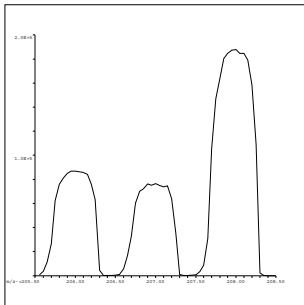
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



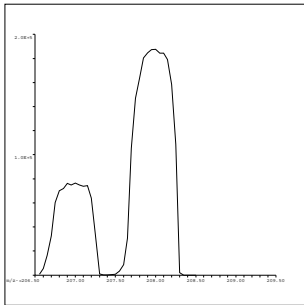
115 In  
Mass Calib.  
Actual: 115.05  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.00  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.00  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 208.00  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:

QC Tune Result:Pass

## QC Tune Report

Data File: C:\ICPMH\1\7500\QCTUNE.D  
 Date Acquired: 16 Oct 2018 05:41:01 pm  
 Operator:  
 Misc Info:  
 Vial Number: 0  
 Current Method: C:\ICPMH\1\METHODS\TuneCHK.m

## Minimum Response (CPS)

Element	Actual	Required	Flag
9 Be	213492.00	0.00	
24 Mg	427076.00	0.00	
25 Mg	55452.30	0.00	
26 Mg	64042.30	0.00	
59 Co	399790.00	0.00	
115 In	486964.00	0.00	
206 Pb	153295.00	0.00	
207 Pb	134061.00	0.00	
208 Pb	333071.00	0.00	

## RSD (%)

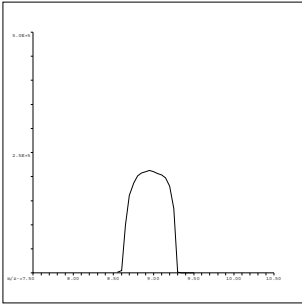
Element	Actual	Required	Flag
9 Be	1.47	5.00	
24 Mg	0.43	5.00	
25 Mg	0.50	5.00	
26 Mg	0.61	5.00	
59 Co	0.75	5.00	
115 In	0.45	5.00	
206 Pb	0.55	5.00	
207 Pb	1.11	5.00	
208 Pb	0.78	5.00	

## Ion Ratio

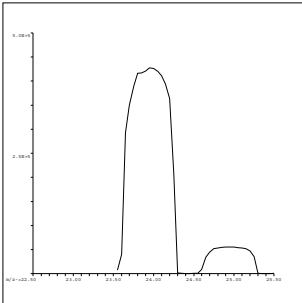
Element	Actual	Required	Flag
9 Be			
24 Mg			
25 Mg			
26 Mg			
59 Co			
115 In			
206 Pb			
207 Pb			
208 Pb			

## Maximum Bkg. Count (CPS)

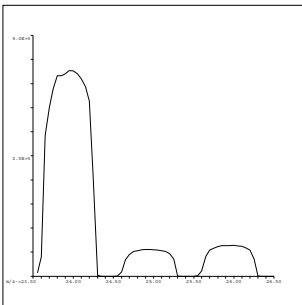
Element	Actual	Required	Flag
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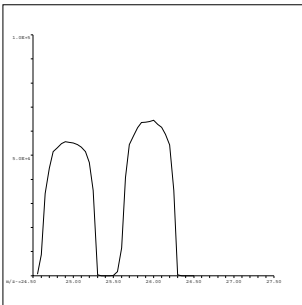
9 Be  
Mass Calib.  
Actual: 8.95  
Required: 8.90-9.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



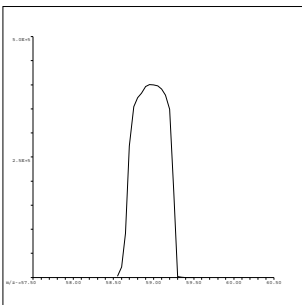
24 Mg  
Mass Calib.  
Actual: 23.95  
Required: 23.90-24.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



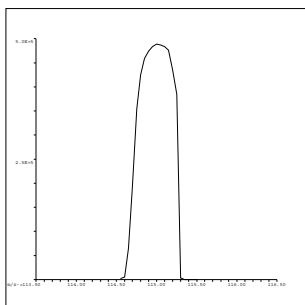
25 Mg  
Mass Calib.  
Actual: 24.95  
Required: 24.90-25.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



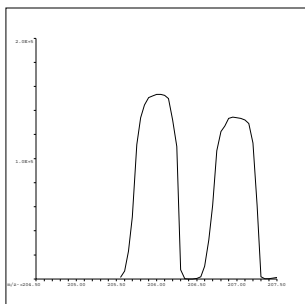
26 Mg  
Mass Calib.  
Actual: 25.95  
Required: 25.90-26.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



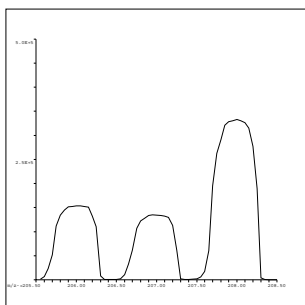
59 Co  
Mass Calib.  
Actual: 59.00  
Required: 58.90-59.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



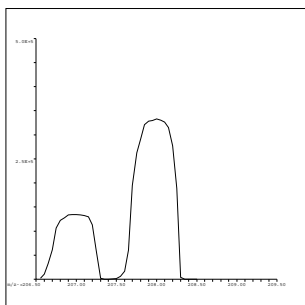
115 In  
Mass Calib.  
Actual: 115.05  
Required: 114.90-115.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



206 Pb  
Mass Calib.  
Actual: 206.00  
Required: 205.90-206.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:



207 Pb  
Mass Calib.  
Actual: 207.00  
Required: 206.90-207.10  
Flag:  
Peak Width  
Actual: 0.65  
Required: 0.75  
Flag:



208 Pb  
Mass Calib.  
Actual: 208.00  
Required: 207.90-208.10  
Flag:  
Peak Width  
Actual: 0.60  
Required: 0.75  
Flag:

QC Tune Result:Pass



# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

INITIAL CALIBRATION SUMMARY: 181015B

Instrument ID: ICPMS-02

Analyte	Data File	B1015002.D	B1015004.D	B1015005.D	B1015006.D	B1015007.D	B1015008.D	B1015009.D	B1015010.D	R
	Acq. Date-Time	10/15/2018 05:21 PM	10/15/2018 05:33 PM	10/15/2018 05:39 PM	10/15/2018 05:44 PM	10/15/2018 05:50 PM	10/15/2018 05:56 PM	10/15/2018 06:01 PM	10/15/2018 06:07 PM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L		
45 Sc ( ISTD ) [ 2 ]	CPS	48869	51505.8	51181.4	51261.7	47102.8	51023.3	50464.6	49555.4	
55 Mn [ 2 ]	CPS	169.2	940.5	8092.1	15742.9	29964	64073.5	154129.8	302659	1.0000
52 Cr [ 2 ]	CPS	234.3	1745.6	16433.7	32825.7	61432.4	127885.9	313711.8	614539.8	1.0000

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MWST-180618C

Calibration Acceptance Criteria: > 0.995 Correlation

INITIAL CALIBRATION SUMMARY: 181016A

Instrument ID: ICPMS-02

Analyte	Data File	A1016002.D	A1016004.D	A1016005.D	A1016006.D	A1016007.D	A1016008.D	A1016009.D	A1016010.D	
	Acq. Date-Time	10/16/2018 10:37 PM	10/16/2018 10:49 PM	10/16/2018 10:54 PM	10/16/2018 11:00 PM	10/16/2018 11:05 PM	10/16/2018 11:11 PM	10/16/2018 11:17 PM	10/16/2018 11:22 PM	
	Type	CalBlk	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	CalStd	
	Level	1	3	4	5	6	7	8	9	
	Sample Name	Cal Blank	Std2-0.5/5 ppb	Std3-5/50 ppb	Std4-10/100 ppb	Std5-20/200 ppb	Std6-40/400 ppb	Std7-100/1000 ppb	Std8-200/2000 ppb	
Concentration	0.00	0.5/5 ug/L	5/50 ug/L	10/100 ug/L	20/200 ug/L	40/400 ug/L	100/1000 ug/L	200/2000 ug/L	R	
45 Sc ( ISTD ) [ 2 ]	CPS	80779.9	81647.6	82739.4	81991.5	83977.6	82205.7	80755.6	82274.9	
52 Cr [ 2 ]	CPS	208.7	3142.5	29903.8	59340	117562.4	233694.3	576911.8	1150010.7	0.9999

Standard Code
ICAL: 2MSST-180608B
ICAL: 2MSST-170620B
ICAL: 2MWST-180409H
IS Mix: 2MWST-180618C

Calibration Acceptance Criteria: > 0.995 Correlation

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176063</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	106.109	0.50	100.0	0	106	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176065</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	0.469	0.50	0.5000	0	93.9	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176079</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.976	0.50	20.00	0	105	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176091</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	20.607	0.50	20.00	0	103	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3175980</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.413	1.0	10.00	0	104	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3175982</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.017	1.0	1.000	0	102	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3175996</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	21.646	1.0	20.00	0	108	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176008</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	21.734	1.0	20.00	0	109	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129311</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129311</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3176194</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	10.168	1.0	10.00	0	102	90	110				

Sample ID <b>LLICV</b>	SampType: <b>CCV1</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129311</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129311</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3176196</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	1.031	1.0	1.000	0	103	80	120				

Sample ID <b>CCV1</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129311</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129311</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/17/2018</b>	SeqNo: <b>3176210</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.438	1.0	20.00	0	102	90	110				

Sample ID <b>CCV2</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129311</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129311</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/17/2018</b>	SeqNo: <b>3176222</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.291	1.0	20.00	0	101	90	110				

Sample ID <b>CCV3</b>	SampType: <b>CCV</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129311</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129311</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/17/2018</b>	SeqNo: <b>3176234</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	20.270	1.0	20.00	0	101	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>
Client ID: <b>ICB</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176064</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176080</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176092</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese ND 0.50

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3175981</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3175997</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176009</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium ND 1.0

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129311</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R129311</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3176195</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0
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Sample ID <b>CCB1</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129311</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129311</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/17/2018</b>	SeqNo: <b>3176211</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0
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Sample ID <b>CCB2</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129311</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129311</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/17/2018</b>	SeqNo: <b>3176223</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0
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Sample ID <b>CCB3</b>	SampType: <b>CCB</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129311</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129311</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/17/2018</b>	SeqNo: <b>3176235</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT CHECK (ICSA & ICSAB)



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176066</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese	ND	0.50			
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176067</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese	17.562	0.50	20.00	0	87.8 80 120
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176093</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese	ND	0.50			
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>
Client ID: <b>ICSA</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176094</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Manganese	17.720	0.50	20.00	0	88.6 80 120
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**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - ND Not Detected at the Reporting Limit
  - E Value above quantitation range
  - R RPD outside accepted recovery limits
  - H Holding times for preparation or analysis exceeded
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3175983</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3175983</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	19.761	1.0	20.00	0	98.8	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176010</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129310</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176011</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	20.123	1.0	20.00	0	101	80	120				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129311</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129311</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3176197</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA1</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129311</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129311</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/16/2018</b>	SeqNo: <b>3176198</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	20.338	1.0	20.00	0	102	80	120				
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129311</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129311</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/17/2018</b>	SeqNo: <b>3176236</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	ND	1.0									
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Sample ID <b>ICSA2</b>	SampType: <b>ICSA</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129311</b>						
Client ID: <b>ICSA</b>	Batch ID: <b>R129311</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/17/2018</b>	SeqNo: <b>3176237</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium	19.878	1.0	20.00	0	99.4	80	120				
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# INTERNAL STANDARD SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## INTERNAL STANDARD: 181015B

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	48869	48869	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	52061.9	48869	106.53	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	51505.8	48869	105.4	PASS	70-125
Std3-5/50 ppb	ICAL	1	51181.4	48869	104.73	PASS	70-125
Std4-10/100 ppb	ICAL	1	51261.7	48869	104.9	PASS	70-125
Std5-20/200 ppb	ICAL	1	47102.8	48869	96.39	PASS	70-125
Std6-40/400 ppb	ICAL	1	51023.3	48869	104.41	PASS	70-125
Std7-100/1000 ppb	ICAL	1	50464.6	48869	103.27	PASS	70-125
Std8-200/2000 ppb	ICAL	1	49555.4	48869	101.4	PASS	70-125
ICV	ICV	1	49459.6	48869	101.21	PASS	70-125
ICB	ICB	1	47460.4	48869	97.12	PASS	70-125
LLICV	CCV1	1	46336.2	48869	94.82	PASS	70-125
ICSA1	ICSA	1	56128.4	48869	114.85	PASS	70-125
ICSAB1	ICSAB	1	53719.5	48869	109.93	PASS	70-125
LLICV	CCV1	1	51011	48869	104.38	PASS	70-125
MB-70934	MBLK	1	46210.4	48869	94.56	PASS	70-125
LCS-70934	LCS	1	49695.9	48869	101.69	PASS	70-125
N032326-001E	SAMP	1	47289.9	48869	96.77	PASS	70-125
N032326-001E	SAMP	5	54284.6	48869	111.08	PASS	70-125
N032326-002E	SAMP	1	48835.6	48869	99.93	PASS	70-125
N032326-002E	SAMP	5	54839.7	48869	112.22	PASS	70-125
N032326-003C	SAMP	1	31060.8	48869	63.56	NR!	70-125
N032326-003C	SAMP	5	44260.7	48869	90.57	PASS	70-125
N032326-003C	SAMP	25	50017	48869	102.35	PASS	70-125
N032329-001D	SAMP	1	50677.7	48869	103.7	PASS	70-125
CCV1	CCV	1	54865.5	48869	112.27	PASS	70-125
CCB1	CCB	1	47539.7	48869	97.28	PASS	70-125
N032329-001D	SAMP	5	49802.8	48869	101.91	PASS	70-125
N032329-001D	SAMP	25	49952.2	48869	102.22	PASS	70-125
N032329-001D-PS	PS	1	50058.1	48869	102.43	PASS	70-125
N032329-001D-PS	PS	5	49786.1	48869	101.88	PASS	70-125
N032329-001D-MS	MS	1	48028.7	48869	98.28	PASS	70-125
N032329-001D-MS	MS	5	49607.9	48869	101.51	PASS	70-125
N032329-001D-MSD	MSD	1	47897.2	48869	98.011	PASS	70-125
N032329-001D-MSD	MSD	5	50618.5	48869	103.58	PASS	70-125
N032329-002D	SAMP	1	49830.8	48869	101.97	PASS	70-125
CCV2	CCV	1	52075.4	48869	106.56	PASS	70-125
CCB2	CCB	1	47852.7	48869	97.92	PASS	70-125
ICSA2	ICSA	1	55535.2	48869	113.64	PASS	70-125
ICSAB2	ICSAB	1	56253.2	48869	115.11	PASS	70-125
N032329-002D	SAMP	5	28822.3	48869	58.98	NR!	70-125

INTERNAL STANDARD: 181015B

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria
CCV3	CCV	1	42495	48869	86.96	PASS	70-125
CCB3	CCB	1	40782.8	48869	83.45	PASS	70-125
CCV4	CCV	1	41330.8	48869	84.57	PASS	70-125
CCB4	CCB	1	38770.2	48869	79.33	PASS	70-125
ICSA3	ICSA	1	44485.6	48869	91.03	PASS	70-125
ICSAB3	ICSAB	1	45769.1	48869	93.66	PASS	70-125

INTERNAL STANDARD: 181016A

Instrument ID: ICPMS-02

Sample Name	Type	DF	45 Sc ( ISTD ) [ 2 ]				
			CPS	REF	%REC	Comment	Criteria
Cal Blank	IBLK	1	80779.9	80779.9	100	PASS	70-125
Std1-0.1/1 ppb	ICAL	1	81842.8	80779.9	101.32	PASS	70-125
Std2-0.5/5 ppb	ICAL	1	81647.6	80779.9	101.07	PASS	70-125
Std3-5/50 ppb	ICAL	1	82739.4	80779.9	102.43	PASS	70-125
Std4-10/100 ppb	ICAL	1	81991.5	80779.9	101.5	PASS	70-125
Std5-20/200 ppb	ICAL	1	83977.6	80779.9	103.96	PASS	70-125
Std6-40/400 ppb	ICAL	1	82205.7	80779.9	101.77	PASS	70-125
Std7-100/1000 ppb	ICAL	1	80755.6	80779.9	99.97	PASS	70-125
Std8-200/2000 ppb	ICAL	1	82274.9	80779.9	101.85	PASS	70-125
ICV	ICV	1	80569	80779.9	99.74	PASS	70-125
ICB	ICB	1	82409	80779.9	102.02	PASS	70-125
LLICV	CCV1	1	84791.7	80779.9	104.97	PASS	70-125
ICSA1	ICSA	1	81096	80779.9	100.39	PASS	70-125
ICSAB1	ICSAB	1	94240.7	80779.9	116.66	PASS	70-125
LLICV	CCV1	1	94984	80779.9	117.58	PASS	70-125
MB-70934	MBLK	1	87262.4	80779.9	108.03	PASS	70-125
LCS-70934	LCS	1	86543	80779.9	107.13	PASS	70-125
N032329-001D	SAMP	1	90212.4	80779.9	111.68	PASS	70-125
CCV1	CCV	1	97842.6	80779.9	121.12	PASS	70-125
CCB1	CCB	1	95974	80779.9	118.81	PASS	70-125
N032329-001D	SAMP	5	92931.9	80779.9	115.04	PASS	70-125
N032329-001D	SAMP	25	96377.7	80779.9	119.31	PASS	70-125
N032329-001D-PS	PS	1	92127.1	80779.9	114.05	PASS	70-125
N032329-001D-PS	PS	5	93764.8	80779.9	116.07	PASS	70-125
N032329-001D-MS	MS	1	91774.9	80779.9	113.61	PASS	70-125
N032329-001D-MS	MS	5	93301.5	80779.9	115.5	PASS	70-125
N032329-001D-MSD	MSD	1	91580.7	80779.9	113.37	PASS	70-125
N032329-001D-MSD	MSD	5	93597.7	80779.9	115.87	PASS	70-125
N032329-002D	SAMP	1	90564.4	80779.9	112.11	PASS	70-125
N032329-002D	SAMP	5	95351.9	80779.9	118.04	PASS	70-125
CCV2	CCV	1	98459.7	80779.9	121.89	PASS	70-125
CCB2	CCB	1	92525	80779.9	114.54	PASS	70-125
CCV3	CCV	1	92061	80779.9	113.97	PASS	70-125
CCB3	CCB	1	88745.7	80779.9	109.86	PASS	70-125
ICSA2	ICSA	1	86724.3	80779.9	107.36	PASS	70-125
ICSAB2	ICSAB	1	97495	80779.9	120.69	PASS	70-125

NR

NR

reported N032329-002D @ 5x

*Nancy* 10/27/2018

# SERIAL DILUTION/ POST DIGESTION SPIKE



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MULTI-PHASE CHEMISTRY FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N032329  
Test Method: EPA 6020  
Analysis Date: 10/15/2018

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70934

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

Comments:

Analyzed By: Mary Claire Ignacio

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Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032329-001D DT 5X	Manganese	ug/L	31.17484	PASS	29.59739	5.33%	10

Note: NA - Not applicable

**ASSET Laboratories**

**ICP-MS-Metals in Water**

Work Order No.: N032329  
Test Method: EPA 6020  
Analysis Date: 10/16/2018  
15

Instrument ID: ICP-MS #2  
Instrument Description: Agilent 7700x

**Dilution Test Summary**

Matrix: Groundwater  
Batch No.: 70934

Comments:

Analyzed By: Mary Claire Ignacio

Dilution test is not applicable to Cr. The calculated concentration is <25RL.

Sample ID	Analyte	Units	Calc Val	OQual	SAMPRefVal	%DIFF	%DIFFlimit
N032329-001D DT 5X	Chromium	ug/L	5.930752	NA	5.641572	5.13%	10

Note: NA - Not applicable

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 200.8\_WDISS**

Sample ID <b>N032329-001D-PS</b>	SampType: <b>PS</b>	TestCode: <b>200.8_WDISS</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>	Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176083</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Manganese	124.217	0.50	100.0	29.60	94.6	80	120				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 200.8DIS\_CrPGE**

Sample ID <b>N032329-001D-PS</b>	SampType: <b>PS</b>	TestCode: <b>200.8DIS_Cr</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129310</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>70934</b>	TestNo: <b>EPA 200.8</b>		Analysis Date: <b>10/15/2018</b>	SeqNo: <b>3176000</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chromium	15.117	1.0	10.00	5.642	94.8	80	120				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



# MDL STUDY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Amount of Sample:** 25 mL  
**Units:** ug/L

Analyte	AMT SPIKED, ppb	1	2	3	4	5	6	7	SD	MDL	LOD	PQL
ANTIMONY	0.50	0.525	0.514	0.473	0.500	0.492	0.486	0.530	0.0210	0.0660	0.100	0.50
ARSENIC	0.10	0.099	0.104	0.087	0.048	0.060	0.069	0.120	0.0259	0.0813	0.080	0.10
BARIUM	1.00	1.041	1.059	1.052	1.011	0.967	0.957	1.023	0.0403	0.1264	0.250	1.00
BERYLLIUM	0.50	0.469	0.476	0.473	0.495	0.480	0.488	0.507	0.0135	0.0424	0.100	0.50
CADMIUM	0.50	0.515	0.513	0.492	0.534	0.499	0.483	0.508	0.0168	0.0527	0.100	0.50
CHROMIUM	1.00	0.979	0.986	0.940	0.990	0.946	0.978	0.977	0.0197	0.0618	0.250	1.00
COBALT	0.50	0.499	0.489	0.486	0.488	0.465	0.502	0.505	0.0135	0.0424	0.100	0.50
COPPER	1.00	1.110	0.667	1.039	1.060	1.006	1.099	1.075	0.1544	0.4850	0.500	1.00
IRON	10.00	10.873	10.802	10.142	9.991	9.846	9.852	10.596	0.4463	1.4014	2.500	10.00
LEAD	1.00	0.928	0.931	0.899	0.996	0.990	0.987	0.997	0.0406	0.1274	0.250	1.00
MANGANESE	0.50	0.577	0.588	0.561	0.566	0.517	0.541	0.520	0.0276	0.0866	0.100	0.50
MOLYBDENUM	0.50	0.514	0.504	0.467	0.478	0.456	0.433	0.527	0.0338	0.1061	0.250	0.50
NICKEL	1.00	0.961	0.965	0.977	0.907	0.914	0.962	1.075	0.0551	0.1731	0.250	1.00
SELENIUM	0.50	0.450	0.478	0.419	0.693	0.707	0.495	0.555	0.1155	0.3628	0.400	0.50
SILVER	0.50	0.558	0.511	0.490	0.542	0.458	0.490	0.684	0.0745	0.2340	0.250	0.50
THALLIUM	0.50	0.437	0.428	0.408	0.538	0.446	0.438	0.525	0.0504	0.1583	0.250	0.50
URANIUM	0.50	0.478	0.467	0.461	0.517	0.510	0.521	0.521	0.0267	0.0838	0.100	0.50
VANADIUM	1.00	0.950	0.969	0.900	0.844	0.829	0.848	1.053	0.0820	0.2574	0.500	1.00
ZINC	10.00	11.259	11.279	10.915	9.620	9.849	9.745	10.241	0.7235	2.2717	2.500	10.00



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ANALYTICAL SERVICES

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436  
 ELAP Cert 2921

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691  
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**Method Detection Limit**

**Analytical Method:** EPA 6020 / 200.8  
**Digestion Method:** EPA 3010A  
**Date of Analysis:** 9/25,10/2,11/3/17  
**Digestion Date:** 9/21, 9/28,10/9/17  
**Instrument Name:** ICPMS2  
**Analysts:** MEI

**Matrix:** Water  
**Units:** ug/L

Analyte	MDLs	MDLb	MDL	LOD	PQL
ANTIMONY	0.0660	0.1564	0.1564	0.300	0.50
ARSENIC	0.0813	0.0387	0.0813	0.080	0.10
BARIUM	0.1264	0.1497	0.1497	0.300	1.00
BERYLLIUM	0.0424	0.0153	0.0424	0.100	0.50
CADMIUM	0.0527	0.0060	0.0527	0.100	0.50
CHROMIUM	0.0618	0.1298	0.1298	0.300	1.00
COBALT	0.0424	0.0339	0.0424	0.100	0.50
COPPER	0.4850	0.5459	0.5459	0.600	1.00
IRON	1.4014	4.3484	4.3484	5.000	10.00
LEAD	0.1274	0.1008	0.1274	0.300	1.00
MANGANESE	0.0866	0.2552	0.2552	0.300	0.50
MOLYBDENUM	0.1061	0.2149	0.2149	0.300	0.50
NICKEL	0.1731	0.2606	0.2606	0.300	1.00
SELENIUM	0.3628	0.0953	0.3628	0.400	0.50
SILVER	0.2340	0.2023	0.2340	0.250	0.50
THALLIUM	0.1583	0.1924	0.1924	0.300	0.50
URANIUM	0.0838	0.0020	0.0838	0.100	0.50
VANADIUM	0.2574	0.2768	0.2768	0.600	1.00
ZINC	2.2717	0.4511	2.2717	3.000	10.00



# EPA 218.6



**ASSET LABORATORIES**  
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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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IC Technical Batch Review Checklist (ARCUS02)  
ASSET LABORATORIES - LAS VEGAS

IC ARCUS  
REV 2.0  
011416

QC Batch Number: R129017  
ASSET #: N032329

Instrument ID: IC-07  
Analyst: RBA  
Date Analyzed: 10/3/2018

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X					
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X					
3. ICV within ± 10% of expected value.	X					
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X					
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X					
6. Calibration blanks run after ICV and CCV?	X					
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)	X					
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X					
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?	X					
<b>Sample Information</b>						
10. All samples are within linear range.	X					
11. All samples pH within 9.3-9.7 when analyzed?	X					
12. Duplicate sample injections for every sample. (7199 only)			X			
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)	X					
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?						
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?	X					
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)	X					
19. EPA 3060A digestion performed on solid samples (7199 only)			X			
20. Are all peaks within RT window, ± 0.2 min?	X					
21. Are all samples analyzed within hold time?	X					
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X					
24. LCS compounds are within control limits.	X					
25. MS/MSD, RPD's are within control limits.	X					
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X					
28. Extraction log complete and included in package (if applicable)			X			
29. All manual integrations initialed, date and reasons included.	X					
30. Before and after manual integration chromatogram included in the package	X					
31. All samples and QC raw data present in package.	X					
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X					
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X					
34. Is the QC summary report present and complete?	X					

Comments:

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Is QC present and complete?			
4. Are analytical results correct? (dilutions, calculations)			
5. Is first level review correct and complete?			

1st Level Reviewer RBA

Date: 10/13/2018

2nd Level Reviewer Thomy 10/27/2018

Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 218.6  
**TEST NAME:** HEXAVALENT CHROMIUM BY IC  
**MATRIX:** Groundwater

### FORMULA:

Calculate the Hexavalent Chromium concentration, in  $\mu\text{g/L}$ , in the original sample as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = A * \text{DF}$$

where:

A =  $\mu\text{g/L}$ , IC Cr+6 calculated concentration  
DF = dilution factor

For Sample **N032329-001A**, the concentration in  $\mu\text{g/L}$  is calculated as follows:

$$\text{Cr}^{+6}, \mu\text{g/L} = 7.6202 * 1$$

$$\text{Cr}^{+6}, \mu\text{g/L} = 7.6202$$

Reporting results in two significant figures,

$$\text{Cr}^{+6}, \mu\text{g/L} = 7.6$$

*rba* 10/13/2018

# ANALYSIS RUN LOG



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

"Serving Clients with Passion and Professionalism"



**INJECTION LOG: 180921A**

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	ICV	ICV	1	Hexavalent Chromium	09/21/18 4:09 PM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/21/18 4:18 PM	Reported
11	ICB	ICB	1	Hexavalent Chromium	09/21/18 4:28 PM	Reported

## Injection Log Summary

### Sequence Details

Name:	IC-07_180921A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	25/Sep/18 09:28:56
No. of Injections:	14	Updated By:	ics 5000

### Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	ICV.ICV,1,	10	1000	Unknown		09/21/2018 16:09	Finished	ICV @5ppb, IWST-180622B
10	PQL@0.2ppb.CCV2,	11	1000	Unknown		09/21/2018 16:18	Finished	PQL @ 0.2ppb
11	ICB.ICB,1,	12	1000	Unknown		09/21/2018 16:28	Finished	ICB R180919A
12	SHUTDOWN	14	1000	Unknown		09/21/2018 16:45	Finished	
13	Eluent: R180917A	14	1000	Unknown		n.a.	Finished	Eluent
14	PCR: R180921A	15	1000	Unknown		n.a.	Finished	Post-Column Reagent

**INJECTION LOG: 181003A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	10/03/18 8:51 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	10/03/18 9:02 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	10/03/18 9:11 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	10/03/18 9:21 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	10/03/18 9:30 AM	Reported
14	MB-R129017	MBLK	1	Hexavalent Chromium	10/03/18 9:40 AM	Reported
15	LCS-R129017	LCS	1	Hexavalent Chromium	10/03/18 9:49 AM	Reported
16	N032317-001A	SAMP	1	Hexavalent Chromium	10/03/18 10:13 AM	Reported
17	N032317-003A	SAMP	1	Hexavalent Chromium	10/03/18 10:25 AM	Reported
18	N032317-002A	SAMP	50	Hexavalent Chromium	10/03/18 10:34 AM	Reported
19	N032317-004A	SAMP	20	Hexavalent Chromium	10/03/18 10:43 AM	Not Reported
20	N032317-005A	SAMP	100	Hexavalent Chromium	10/03/18 10:53 AM	Reported
21	N032317-006A	SAMP	100	Hexavalent Chromium	10/03/18 11:02 AM	Reported
22	N032317-007A	SAMP	50	Hexavalent Chromium	10/03/18 11:12 AM	Reported
23	N032317-008A	SAMP	20	Hexavalent Chromium	10/03/18 11:21 AM	Reported
24	CCV-2	CCV	1	Hexavalent Chromium	10/03/18 11:31 AM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	10/03/18 11:40 AM	Reported
26	N032317-009A	SAMP	100	Hexavalent Chromium	10/03/18 11:50 AM	Reported
27	N032317-010A	SAMP	50	Hexavalent Chromium	10/03/18 11:59 AM	Reported
28	N032317-011A	SAMP	1	Hexavalent Chromium	10/03/18 12:09 PM	Not Reported
29	N032317-012A	SAMP	50	Hexavalent Chromium	10/03/18 12:18 PM	Reported
30	N032316-001A	SAMP	5	Hexavalent Chromium	10/03/18 12:28 PM	Reported
31	N032316-002A	SAMP	5	Hexavalent Chromium	10/03/18 12:37 PM	Not Reported
32	N032317-003ADUP	DUP	1	Hexavalent Chromium	10/03/18 12:46 PM	Reported
33	N032317-004A	SAMP	5	Hexavalent Chromium	10/03/18 12:56 PM	Reported
34	N032317-004AMS	MS	5	Hexavalent Chromium	10/03/18 1:05 PM	Reported
35	N032317-004AMSD	MSD	5	Hexavalent Chromium	10/03/18 1:15 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	10/03/18 1:24 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	10/03/18 1:34 PM	Reported
38	N032319-001A	SAMP	1	Hexavalent Chromium	10/03/18 1:43 PM	Reported
39	N032319-002A	SAMP	1	Hexavalent Chromium	10/03/18 1:53 PM	Reported
40	N032319-003A	SAMP	1	Hexavalent Chromium	10/03/18 2:02 PM	Reported
41	N032319-004A	SAMP	1	Hexavalent Chromium	10/03/18 2:12 PM	Reported
42	N032316-002A	SAMP	1	Hexavalent Chromium	10/03/18 2:21 PM	Reported

**INJECTION LOG: 181003A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N032317-011A	SAMP	50	Hexavalent Chromium	10/03/18 2:31 PM	Reported
44	N032317-011AMS	SMS	50	Hexavalent Chromium	10/03/18 2:40 PM	Reported
45	CCV-4	CCV	1	Hexavalent Chromium	10/03/18 2:49 PM	Reported
46	CCB-4	CCB	1	Hexavalent Chromium	10/03/18 2:59 PM	Reported
47	N032329-001A	SAMP	1	Hexavalent Chromium	10/03/18 3:08 PM	Reported
48	N032329-001AMS	MS	1	Hexavalent Chromium	10/03/18 3:18 PM	Not Reported
49	N032329-002A	SAMP	100	Hexavalent Chromium	10/03/18 3:27 PM	Reported
50	N032329-002AMS	MS	100	Hexavalent Chromium	10/03/18 3:37 PM	Reported
51	N032329-001AMS	MS	1	Hexavalent Chromium	10/03/18 3:46 PM	Reported
52	LCS-R129018	LCS	1	Hexavalent Chromium	10/03/18 3:56 PM	Reported
53	MB-R129018	MBLK	1	Hexavalent Chromium	10/03/18 4:05 PM	Reported
54	N032318-008A	SAMP	100	Hexavalent Chromium	10/03/18 4:43 PM	Reported
55	N032318-008AMS	MS	100	Hexavalent Chromium	10/03/18 4:54 PM	Reported
56	N032318-008AMSD	MSD	100	Hexavalent Chromium	10/03/18 5:03 PM	Reported
57	CCV-5	CCV	1	Hexavalent Chromium	10/03/18 5:13 PM	Reported
58	CCB-5	CCB	1	Hexavalent Chromium	10/03/18 5:22 PM	Reported
59	N032318-002A	SAMP	5	Hexavalent Chromium	10/03/18 5:31 PM	Reported
60	N032318-002AMS	MS	5	Hexavalent Chromium	10/03/18 5:41 PM	Reported
61	N032320-002A	SAMP	1	Hexavalent Chromium	10/03/18 5:50 PM	Reported
62	N032320-002ADUP	DUP	1	Hexavalent Chromium	10/03/18 6:00 PM	Reported
63	N032318-001A	SAMP	20	Hexavalent Chromium	10/03/18 6:09 PM	Reported
64	N032318-003A	SAMP	5	Hexavalent Chromium	10/03/18 6:19 PM	Reported
65	N032318-004A	SAMP	1	Hexavalent Chromium	10/03/18 6:28 PM	Reported
66	N032318-007A	SAMP	20	Hexavalent Chromium	10/03/18 6:37 PM	Reported
67	N032318-009A	SAMP	100	Hexavalent Chromium	10/03/18 6:47 PM	Reported
68	N032318-010A	SAMP	1	Hexavalent Chromium	10/03/18 6:56 PM	Reported
69	CCV-6	CCV	1	Hexavalent Chromium	10/03/18 7:06 PM	Reported
70	CCB-6	CCB	1	Hexavalent Chromium	10/03/18 7:15 PM	Reported
71	N032318-011A	SAMP	20	Hexavalent Chromium	10/03/18 7:25 PM	Reported
72	N032318-012A	SAMP	20	Hexavalent Chromium	10/03/18 7:34 PM	Reported
73	N032318-013A	SAMP	1	Hexavalent Chromium	10/03/18 7:44 PM	Reported
74	N032318-014A	SAMP	1	Hexavalent Chromium	10/03/18 7:53 PM	Reported
75	N032318-015A	SAMP	1	Hexavalent Chromium	10/03/18 8:03 PM	Reported
76	N032320-001A	SAMP	1	Hexavalent Chromium	10/03/18 8:12 PM	Reported
77	N032320-003A	SAMP	1	Hexavalent Chromium	10/03/18 8:22 PM	Reported
78	N032320-004A	SAMP	1	Hexavalent Chromium	10/03/18 8:31 PM	Reported
79	CCV-7	CCV	1	Hexavalent Chromium	10/03/18 8:40 PM	Reported
80	CCB-7	CCB	1	Hexavalent Chromium	10/03/18 8:50 PM	Reported

### Injection Log Summary

**Sequence Details**

Name:	IC-07_181003A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	04/Oct/18 18:39:55
No. of Injections:	83	Updated By:	ics 5000

**Injection Details**

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	BLANK	1	1000	Unknown		10/03/2018 08:51	Finished	BLANK
10	BLANK	2	1000	Unknown		10/03/2018 09:02	Finished	BLANK
11	CCV-1,CCV,1,	3	1000	Unknown		10/03/2018 09:11	Finished	CCV @5ppb, IWST-180622A
12	PQL@0.2ppb,CCV2,	4	1000	Unknown		10/03/2018 09:21	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		10/03/2018 09:30	Finished	CCB R180919A
14	MB-H2O,MBLK,1,	6	1000	Unknown		10/03/2018 09:40	Finished	MB R180919A
15	LCS-H2O,LCS,1,	7	1000	Unknown		10/03/2018 09:49	Finished	LCS @5ppb, IWST-180622B
16	N032317-001A,SAMF	1	1000	Unknown		10/03/2018 10:13	Finished	SAMP,10mL
17	N032317-003A,SAMF	2	1000	Unknown		10/03/2018 10:25	Finished	SAMP,10mL
18	N032317-002A,SAMF	3	1000	Unknown		10/03/2018 10:34	Finished	SAMP,0.2>10mL
19	N032317-004A,SAMF	4	1000	Unknown		10/03/2018 10:43	Finished	SAMP,0.5>10mL
20	N032317-005A,SAMF	5	1000	Unknown		10/03/2018 10:53	Finished	SAMP,0.1>10mL
21	N032317-006A,SAMF	6	1000	Unknown		10/03/2018 11:02	Finished	SAMP,0.1>10mL
22	N032317-007A,SAMF	7	1000	Unknown		10/03/2018 11:12	Finished	SAMP,0.2>10mL
23	N032317-008A,SAMF	8	1000	Unknown		10/03/2018 11:21	Finished	SAMP,0.5>10mL
24	CCV-2,CCV1,1,	9	1000	Unknown		10/03/2018 11:31	Finished	CCV @10ppb, IWST-180622A
25	CCB-2,CCB,1,	10	1000	Unknown		10/03/2018 11:40	Finished	CCB R180919A
26	N032317-009A,SAMF	11	1000	Unknown		10/03/2018 11:50	Finished	SAMP,0.1>10mL
27	N032317-010A,SAMF	12	1000	Unknown		10/03/2018 11:59	Finished	SAMP,0.2>10mL
28	N032317-011A,SAMF	13	1000	Unknown		10/03/2018 12:09	Finished	SAMP,10mL
29	N032317-012A,SAMF	14	1000	Unknown		10/03/2018 12:18	Finished	SAMP,0.2>10mL
30	N032316-001A,SAMF	15	1000	Unknown		10/03/2018 12:28	Finished	SAMP,2>10mL
31	N032316-002A,SAMF	16	1000	Unknown		10/03/2018 12:37	Finished	SAMP,2>10mL
32	N032317-003ADUP,1	17	1000	Unknown		10/03/2018 12:46	Finished	DUP,2>10mL
33	N032317-004A,SAMF	18	1000	Unknown		10/03/2018 12:56	Finished	SAMP,2>10mL
34	N032317-004AMS,MS	19	1000	Unknown		10/03/2018 13:05	Finished	MS (5ppb), IWST-180622B,2>10mL
35	N032317-004AMSD,MS	20	1000	Unknown		10/03/2018 13:15	Finished	MSD (5ppb), IWST-180622B,2>10mL
36	CCV-3,CCV,1,	21	1000	Unknown		10/03/2018 13:24	Finished	CCV @5ppb, IWST-180622A
37	CCB-3,CCB,1,	22	1000	Unknown		10/03/2018 13:34	Finished	CCB R180919A
38	N032319-001A,SAMF	23	1000	Unknown		10/03/2018 13:43	Finished	SAMP,10mL
39	N032319-002A,SAMF	24	1000	Unknown		10/03/2018 13:53	Finished	SAMP,10mL
40	N032319-003A,SAMF	25	1000	Unknown		10/03/2018 14:02	Finished	SAMP,10mL
41	N032319-004A,SAMF	26	1000	Unknown		10/03/2018 14:12	Finished	SAMP,10mL
42	N032316-002A,SAMF	27	1000	Unknown		10/03/2018 14:21	Finished	DUP,10mL
43	N032317-011A,SAMF	28	1000	Unknown		10/03/2018 14:31	Finished	SAMP,0.2>10mL
44	N032317-011AMS,MS	29	1000	Unknown		10/03/2018 14:40	Finished	MS (5ppb), IWST-180622B,0.2>10mL
45	CCV-4,CCV1,1,	30	1000	Unknown		10/03/2018 14:49	Finished	CCV @10ppb, IWST-180622A
46	CCB-4,CCB,1,	31	1000	Unknown		10/03/2018 14:59	Finished	CCB R180919A
47	N032329-001A,SAMF	32	1000	Unknown		10/03/2018 15:08	Finished	SAMP,10mL
48	N032329-001AMS,MS	33	1000	Unknown		10/03/2018 15:18	Finished	MS (1ppb), IWST-180622B,10mL
49	N032329-002A,SAMF	34	1000	Unknown		10/03/2018 15:27	Finished	SAMP,0.1>10mL
50	N032329-002AMS,MS	35	1000	Unknown		10/03/2018 15:37	Finished	MS (5ppb), IWST-180622B,0.1>10mL
51	N032329-001AMS,MS	36	1000	Unknown		10/03/2018 15:46	Finished	MS (5ppb), IWST-180622B,10mL
52	LCS-2,LCS,1,	37	1000	Unknown		10/03/2018 15:56	Finished	LCS @5ppb, IWST-180622B
53	MB-2,MBLK,1,	38	1000	Unknown		10/03/2018 16:05	Finished	MB R180919A
54	N032318-008A,SAMF	1	1000	Unknown		10/03/2018 16:43	Finished	SAMP,0.1>10mL
55	N032318-008AMS,MS	2	1000	Unknown		10/03/2018 16:54	Finished	MS (5ppb), IWST-180622B,0.1>10mL
56	N032318-008AMSD,MS	3	1000	Unknown		10/03/2018 17:03	Finished	MSD (5ppb), IWST-180622B,0.1>10mL
57	CCV-5,CCV,1,	4	1000	Unknown		10/03/2018 17:13	Finished	CCV @5ppb, IWST-180622A
58	CCB-5,CCB,1,	5	1000	Unknown		10/03/2018 17:22	Finished	CCB R180919A
59	N032318-002A,SAMF	6	1000	Unknown		10/03/2018 17:31	Finished	SAMP,2>10mL
60	N032318-002AMS,MS	7	1000	Unknown		10/03/2018 17:41	Finished	MS (5ppb), IWST-180622B,2>10mL

61	N032320-002A,SAMF	8	1000	Unknown	10/03/2018 17:50	Finished	SAMP,10mL
62	N032320-002ADUP,C	9	1000	Unknown	10/03/2018 18:00	Finished	DUP,10mL
63	N032318-001A,SAMF	10	1000	Unknown	10/03/2018 18:09	Finished	SAMP,0.5>10mL
64	N032318-003A,SAMF	11	1000	Unknown	10/03/2018 18:19	Finished	SAMP,2>10mL
65	N032318-004A,SAMF	12	1000	Unknown	10/03/2018 18:28	Finished	SAMP,10mL
66	N032318-007A,SAMF	13	1000	Unknown	10/03/2018 18:37	Finished	SAMP,0.5>10mL
67	N032318-009A,SAMF	14	1000	Unknown	10/03/2018 18:47	Finished	SAMP,0.1>10mL
68	N032318-010A,SAMF	15	1000	Unknown	10/03/2018 18:56	Finished	SAMP,10mL
69	CCV-6,CCV1,1,	16	1000	Unknown	10/03/2018 19:06	Finished	CCV @10ppb, IWST-180622A
70	CCB-6,CCB,1,	17	1000	Unknown	10/03/2018 19:15	Finished	CCB R180919A
71	N032318-011A,SAMF	18	1000	Unknown	10/03/2018 19:25	Finished	SAMP,0.5>10mL
72	N032318-012A,SAMF	19	1000	Unknown	10/03/2018 19:34	Finished	SAMP,0.5>10mL
73	N032318-013A,SAMF	20	1000	Unknown	10/03/2018 19:44	Finished	SAMP,10mL
74	N032318-014A,SAMF	21	1000	Unknown	10/03/2018 19:53	Finished	SAMP,10mL
75	N032318-015A,SAMF	22	1000	Unknown	10/03/2018 20:03	Finished	SAMP,10mL
76	N032320-001A,SAMF	23	1000	Unknown	10/03/2018 20:12	Finished	SAMP,10mL
77	N032320-003A,SAMF	24	1000	Unknown	10/03/2018 20:22	Finished	SAMP,10mL
78	N032320-004A,SAMF	25	1000	Unknown	10/03/2018 20:31	Finished	SAMP,10mL
79	CCV-7,CCV,1,	26	1000	Unknown	10/03/2018 20:40	Finished	CCV @5ppb, IWST-180622A
80	CCB-7,CCB,1,	27	1000	Unknown	10/03/2018 20:50	Finished	CCB R180919A
81	SHUTDOWN	28	1000	Unknown	10/03/2018 20:59	Finished	
82	Eluent: R181003D	29	1000	Unknown	n.a.	Finished	Eluent
83	PCR: R181003E	30	1000	Unknown	n.a.	Finished	Post-Column Reagent

# SAMPLE PREPARATION LOG



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Hexavalent Chromium Preparation and Runlog

Sample Preparation						
Date Prepared: <u>10/2/18</u>				Reagent ID:		
Time Prepared: <u>1500H</u>				Sulfuric Acid: <u>10704</u>		
Prepared By: <u>MSB</u>				Diphenylcarbazide: <u>CAN-10076A</u>		
				NH4OH + NH4SO4 eluent: <u>MS1003A</u>		
				NH4OH + NH4SO4 buffer: <u>MS999A</u>		
(ON NAME) NLS0911C						
Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1) NO32318-2A	7.23	9.37	-200 uL	-200 uL	+3 drops NaOH	
2)   4A	8.64	9.40			+8 drops "	
3)   5A	<del>8.67</del>	<del>9.39</del>			<del>+8 drops</del> +1 mg	
4)   6A	<del>9.73</del>	<del>9.42</del>			<del>+9 drops</del> + mg	
5)   7A	8.74	9.35			+9 drops "	
6)   8A	9.01	9.34			+8 drops "	
7)   9A	8.99	9.30			+8 drops "	
8)   10A	8.79	9.41			+9 drops "	
9)   11A	8.61	9.37			+8 drops "	
10)   12A	8.79	9.36			+9 drops "	
11)   13A	8.71	9.41			+11 drops "	
12)   14A	8.87	9.31			+8 drops "	
13)   15A	9.30	-				
14) NO32319-1A	9.09	9.30			+8 drops "	
15)   2A	9.30	-				
3A	9.30	-				

Sample Preparation						
Date Prepared: <u>10/2/18</u>				Reagent ID:		
Time Prepared: <u>1500H</u>				Sulfuric Acid: <u>10704</u>		
Prepared By: <u>MSA</u>				Diphenylcarbazide: <u>CAN-10076A</u>		
				NH4OH + NH4SO4 eluent: <u>MS1003A/NLS0911C</u>		
				NH4OH + NH4SO4 buffer: <u>MS999A</u>		
(ON NAME) NLS0911C						
Sample ID.	pH of sample	pH after treatment	Initial Volume of sample	Final Volume after buffer add'n	Volume of buffer added	Comments
1) MS32319-6A	9.36	-	-200 uL	-200 uL		
2) NO32320-1A	8.83	9.45			+8 drops NaOH	
3)   2A	8.78	9.31			+9 drops "	
4)   3A	9.35	-				
5)   4A	9.40	-				
6) NO32321-1A	9.20	9.34			+3 drops NaOH	
7)   2A	9.33	-				
8) NO32324-1C	9.25	9.33			+2 drops "	
9)   2C	9.32	-				
10)   3A	8.74	9.41			+10 drops "	
11) NO32328-1A	9.46	-				
12)   2A	9.51	-				
13)   3A	9.54	-				
14)						
15)						

Logbook No. 15

**rba** 10/13/2018



**ASSET LABORATORIES**

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CALIFORNIA | P: 562.219.7435 F: 562.219.7436  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703

ELAP Cert 2921

13 of 100 ID CA01638

NEVADA | P: 702.307.2659 F: 702.307.2691  
3151 W. Post Rd., Las Vegas, NV 89118

ELAP Cert 2676 | NV Cert NV00922

ORELAP/NELAP Cert 4046



# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

(EPA 218.6) - INITIAL CALIBRATION

Instrument ID: IC-07  
Date Calibrated: 9/21/2018

Initial Calibration:

Hexavalent Chromium	STD1	STD2	STD3	STD4	STD5	STD6	
COMPOUND, in ug/L	0.2	1	5	10	15	20	R <sup>2</sup>
Area,mAU*min	0.0462	0.2400	1.2761	2.5253	3.8020	5.0460	1.0000

	Stock	Working
Standard Concentration:	1,000,000 PPB	1,000 PPB
Standard ID:	ISST-170814H	IWST-180622A

Calibration Acceptance Criteria: > 0.999 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3161816</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.047	0.20	5.000	0	101	90	110				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3161817</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.187	0.20	0.2000	0	93.2	80	120				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161819</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.182	0.20	5.000	0	104	95	105				

Sample ID <b>PQL@0.2ppb</b>	SampType: <b>CCV2</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161820</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	0.210	0.20	0.2000	0	105	80	120				

Sample ID <b>CCV-2</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ZZZZZ</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161831</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.231	0.20	10.00	0	102	95	105				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161841</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.123	0.20	5.000	0	102	95	105				

Sample ID <b>CCV-4</b>	SampType: <b>CCV1</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>ZZZZZZ</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161850</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	10.411	0.20	10.00	0	104	95	105				

Sample ID <b>CCV-5</b>	SampType: <b>CCV</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161856</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	5.196	0.20	5.000	0	104	95	105				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 218.6\_WPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>
Client ID: <b>ICB</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>9/21/2018</b>	SeqNo: <b>3161818</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161821</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161832</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161842</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161851</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Hexavalent Chromium ND 0.20

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 218.6\_WPGE**

Sample ID <b>CCB-5</b>	SampType: <b>CCB</b>	TestCode: <b>218.6_WPGE</b>	Units: <b>µg/L</b>	Prep Date:	RunNo: <b>129017</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129017</b>	TestNo: <b>EPA 218.6</b>	Analysis Date: <b>10/3/2018</b>	SeqNo: <b>3161857</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexavalent Chromium	ND	0.20									

**Qualifiers:**

- |    |   |   |                                      |   |  |
|----|---|---|--------------------------------------|---|--|
| B  | Analyte detected in the associated Method Blank | E | Value above quantitation range       | H | Holding times for preparation or analysis exceeded           |
| ND | Not Detected at the Reporting Limit             | R | RPD outside accepted recovery limits | S | Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values



# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENT

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 10/3/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.115	
CCV-1	4.131	
CCV-2	4.140	
CCV-3	4.140	
CCV-4	4.140	
CCV-5	4.140	
CCV-6	4.140	
CCV-7	4.140	

**Average** 4.139

**Actual RT Window** 4.059 - 4.219

**Applied RT Window** 3.939 - 4.339

MB-R129017	N.A.	N.A.
LCS-R129017	4.131	PASS
N032317-001A	4.115	PASS
N032317-003A	N.A.	N.A.
N032317-002A	4.140	PASS
N032317-004A	4.140	PASS
N032317-005A	4.131	PASS
N032317-006A	4.131	PASS
N032317-007A	4.131	PASS
N032317-008A	4.131	PASS
N032317-009A	4.140	PASS
N032317-010A	4.140	PASS
N032317-011A	4.131	PASS
N032317-012A	4.140	PASS
N032316-001A	4.131	PASS
N032316-002A	4.131	PASS
N032317-003ADUP	N.A.	N.A.
N032317-004A	4.131	PASS
N032317-004AMS	4.131	PASS
N032317-004AMSD	4.131	PASS

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 10/3/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.115	
CCV-1	4.131	
CCV-2	4.140	
CCV-3	4.140	
CCV-4	4.140	
CCV-5	4.140	
CCV-6	4.140	
CCV-7	4.140	

**Average** 4.139

**Actual RT Window** 4.059 - 4.219

**Applied RT Window** 3.939 - 4.339

N032319-001A	4.131	PASS
N032319-002A	4.123	PASS
N032319-003A	N.A.	N.A.
N032319-004A	N.A.	N.A.
N032316-002A	4.131	PASS
N032317-011A	4.140	PASS
N032317-011AMS	4.140	PASS
N032329-001A	4.065	PASS
N032329-001AMS	4.065	PASS
N032329-002A	4.140	PASS
N032329-002AMS	4.140	PASS
N032329-001AMS	4.065	PASS
LCS-R129018	4.140	PASS
MB-R129018	N.A.	N.A.
N032318-008A	4.140	PASS
N032318-008AMS	4.140	PASS
N032318-008AMSD	4.140	PASS
N032318-002A	4.131	PASS
N032318-002AMS	4.131	PASS
N032320-002A	4.123	PASS
N032320-002ADUP	4.123	PASS

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-07

### Analytical Sequence

Date Analyzed: 10/3/2018

<u>Sample Name</u>	<u>Retention Time</u>	<u>Evaluation</u>
ICV	4.115	
CCV-1	4.131	
CCV-2	4.140	
CCV-3	4.140	
CCV-4	4.140	
CCV-5	4.140	
CCV-6	4.140	
CCV-7	4.140	

**Average** 4.139

**Actual RT Window** 4.059 - 4.219

**Applied RT Window** 3.939 - 4.339

N032318-001A	4.140	PASS
N032318-003A	4.131	PASS
N032318-004A	4.140	PASS
N032318-007A	4.140	PASS
N032318-009A	4.140	PASS
N032318-010A	N.A.	N.A.
N032318-011A	4.140	PASS
N032318-012A	4.140	PASS
N032318-013A	4.131	PASS
N032318-014A	4.123	PASS
N032318-015A	N.A.	N.A.
N032320-001A	4.115	PASS
N032320-003A	N.A.	N.A.
N032320-004A	N.A.	N.A.

# MDL STUDY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **HEXAVALENT CHROMIUM by Ion Chromatography**  
 Method Number: EPA 218.6  
 Analysis Date(s): 5/5/2017, 5/8/2017, 5/9/2017, 5/10/2017, 5/11/2017, 5/12/2017, 5/15/2017  
 Analyst: Ria Abes

Matrix: **WATER**  
 Unit: ug/L

Instrument Name: **IC-07**

Acceptance Criteria: MDL < spike < 10X MDL

Datafile	170505	170508	170509	170510	170511	170512	170515						
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	t <sub>(n-1)</sub> value	MDL	PQL	Remarks
Hexavalent Chromium	0.1949	0.2135	0.1840	0.1828	0.2011	0.1936	0.1911	0.20	0.0105	3.143	<b>0.0331</b>	<b>0.20</b>	OK,meets criteria

Students' t Values at 99% CL

#	t <sub>(n-1)</sub>
10	2.821
9	2.896
8	2.998
7	3.143



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL • CHEMISTRY • METALLURGY

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

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## LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Hexavalent Chromium by IC** Matrix: **WATER**  
 Method Number: EPA Method 218.6/7199 Unit:  $\mu\text{g/L}$   
 Analysis Date(s): 3/21/2018  
 Analyst: Ria Abes  
  
 Instrument Name: **IC-07**

Compound	MDL	LOD Spike Conc., $\mu\text{g/L}$	LOD actual Conc., $\mu\text{g/L}$
Hexavalent Chromium	0.0331	0.100	0.116

Compound	PQL	PQL Spike Conc., $\mu\text{g/L}$	PQL actual Conc., $\mu\text{g/L}$	% Recovery
Hexavalent Chromium	0.200	0.200	0.201	<u>100</u>



# INITIAL CALIBRATION



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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INJECTION LOG: 180921A

Instrument ID: IC-07

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	ICV	ICV	1	Hexavalent Chromium	09/21/18 4:09 PM	Reported
10	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	09/21/18 4:18 PM	Reported
11	ICB	ICB	1	Hexavalent Chromium	09/21/18 4:28 PM	Reported

*rba* 9/30/2018

*Nancy* 10/8/2018

IC7 RBA 9/26/2018 8:55 AM

## Injection Log Summary

## Sequence Details

Name:	IC-07_180921A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	25/Sep/18 09:28:56
No. of Injections:	14	Updated By:	ics 5000

## Injection Details

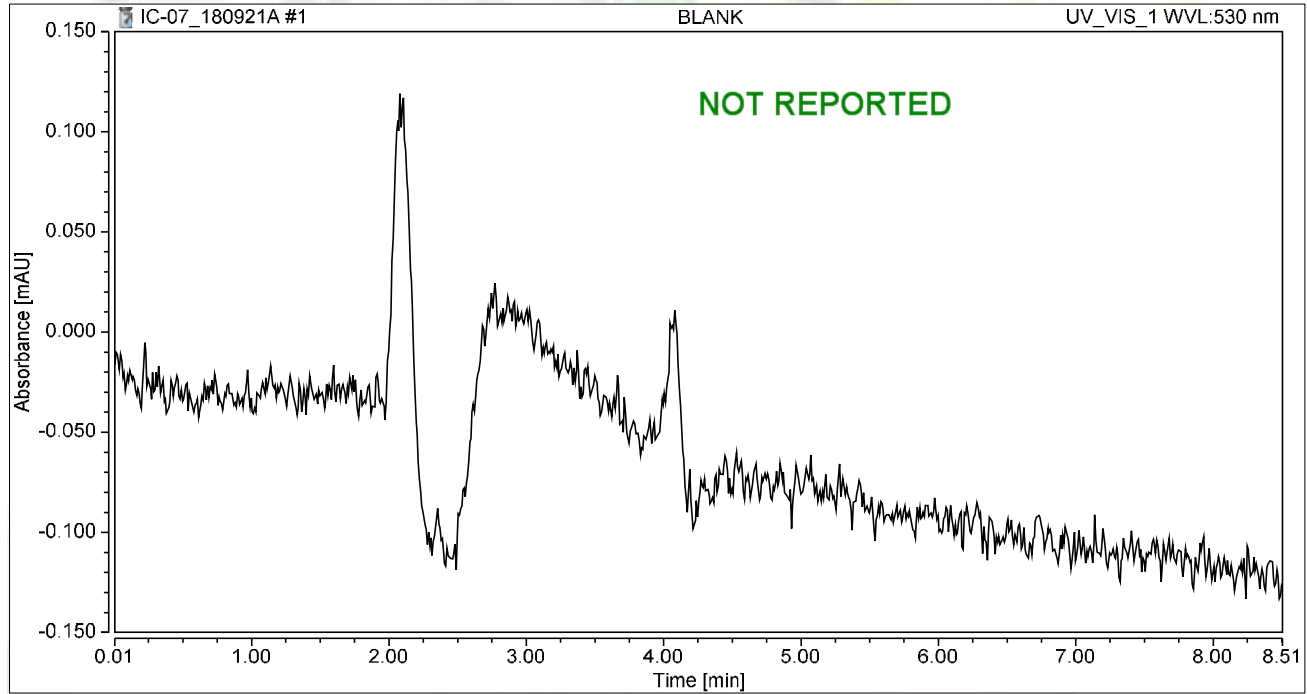
No.	Injection Name	Position	Volume μL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	ICV.ICV,1,	10	1000	Unknown		09/21/2018 16:09	Finished	ICV @5ppb, IWST-180622B
10	PQL@0.2ppb,CCV2,	11	1000	Unknown		09/21/2018 16:18	Finished	PQL @ 0.2ppb
11	ICB,ICB,1,	12	1000	Unknown		09/21/2018 16:28	Finished	ICB R180919A
12	SHUTDOWN	14	1000	Unknown		09/21/2018 16:45	Finished	
13	Eluent: R180917A	14	1000	Unknown		n.a.	Finished	Eluent
14	PCR: R180921A	15	1000	Unknown		n.a.	Finished	Post-Column Reagent

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

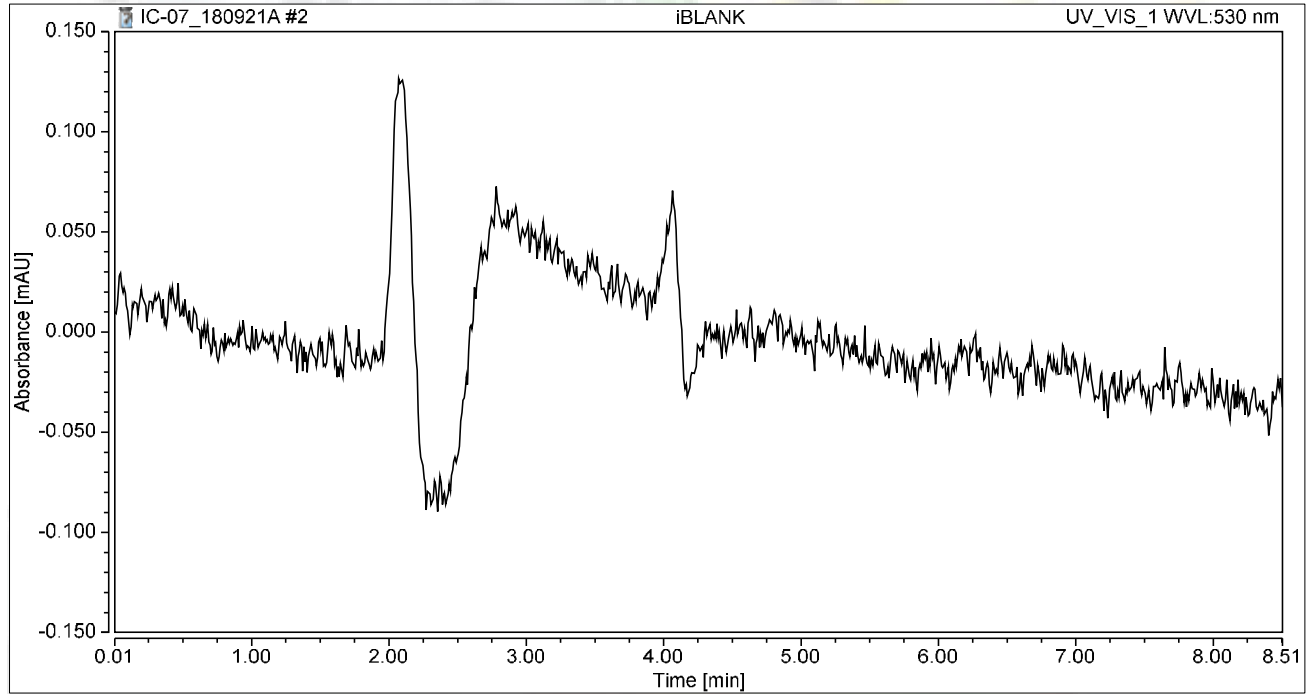
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	iBLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

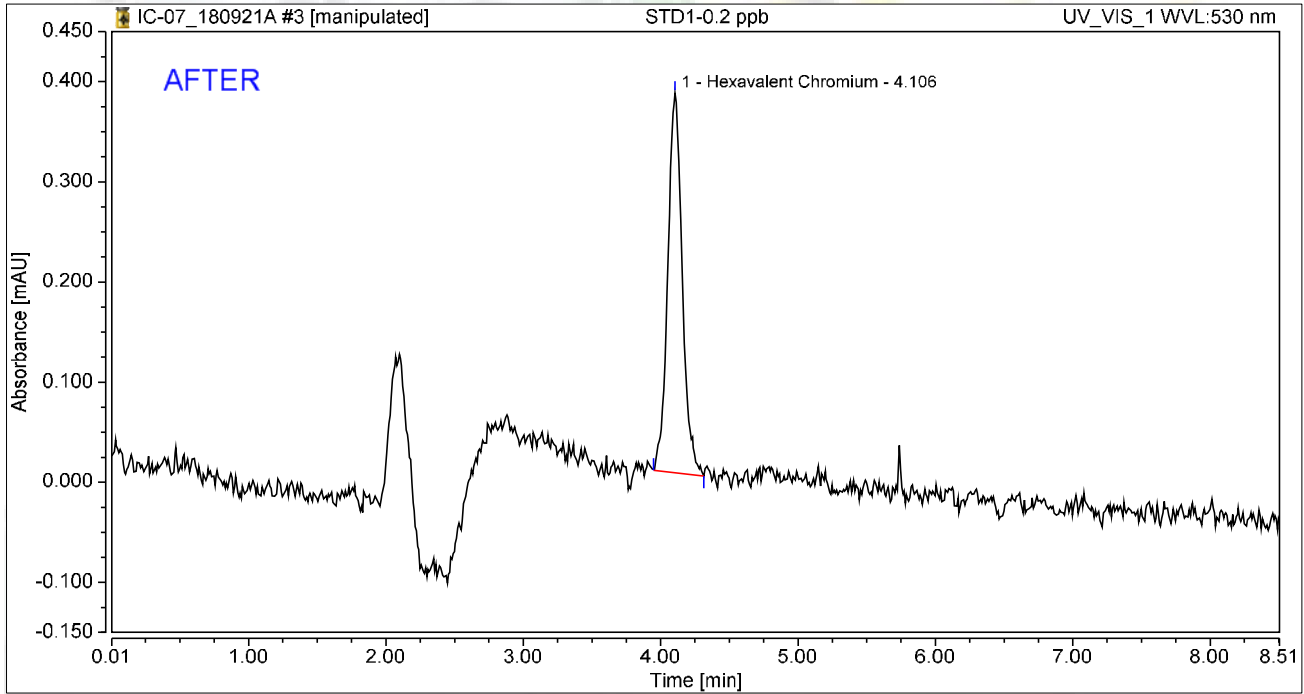
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.046	0.379	100.00	100.00	0.1830
<b>Total:</b>			<b>0.046</b>	<b>0.379</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

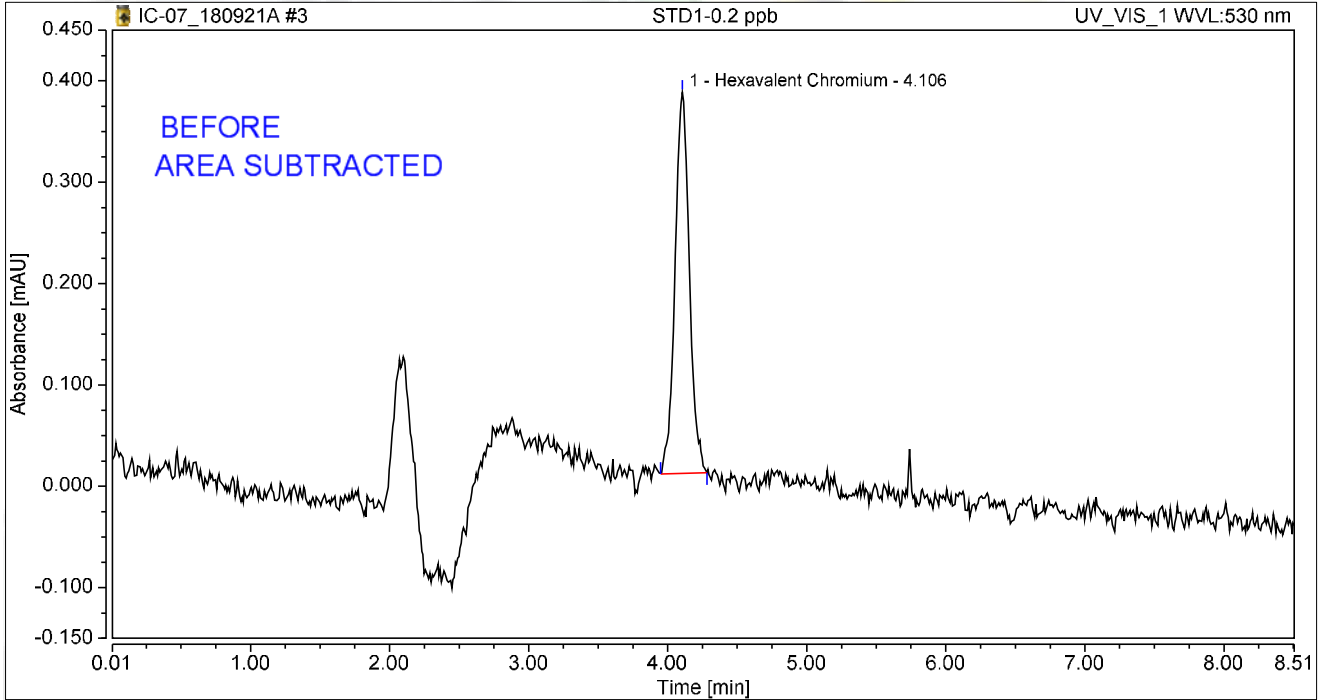
Reviewed by:  
*Murray* 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD1-0.2 ppb	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	01	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:38	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.045	0.376	100.00	100.00	0.1723
<b>Total:</b>			<b>0.045</b>	<b>0.376</b>	<b>100.00</b>	<b>100.00</b>	

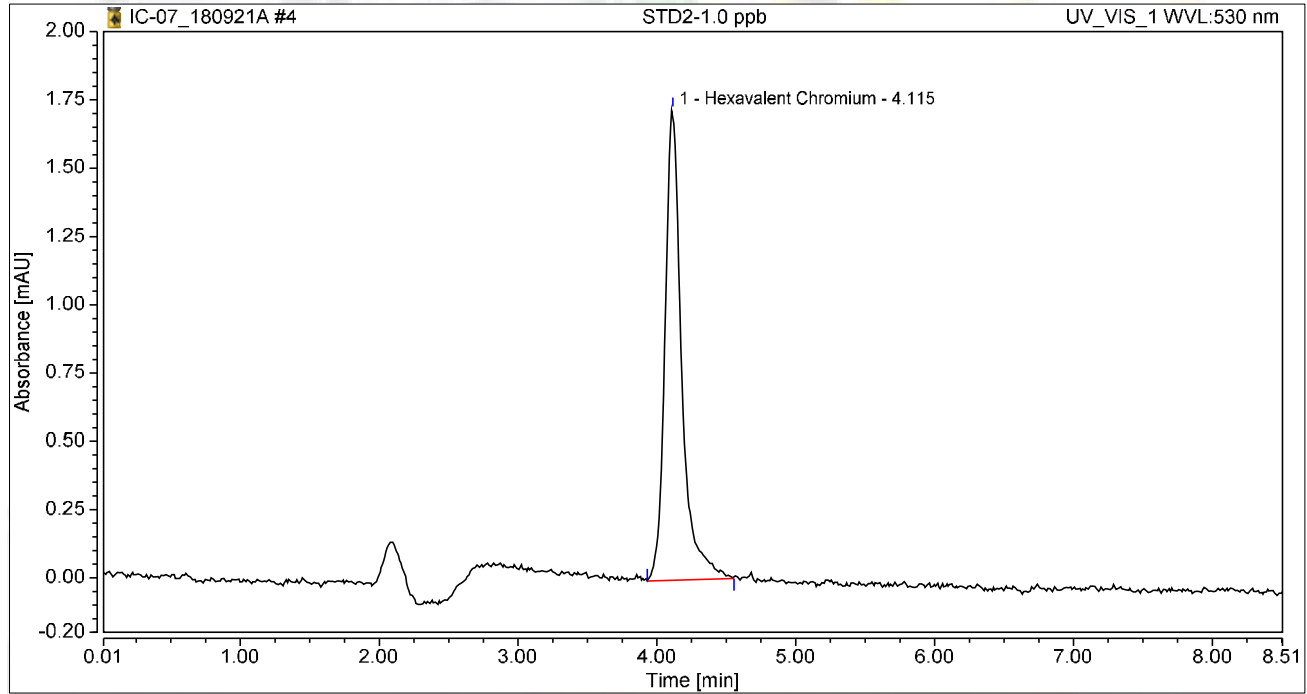
*rba* 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD2-1.0 ppb	Run Time (min):	8.49
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	02	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:47	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

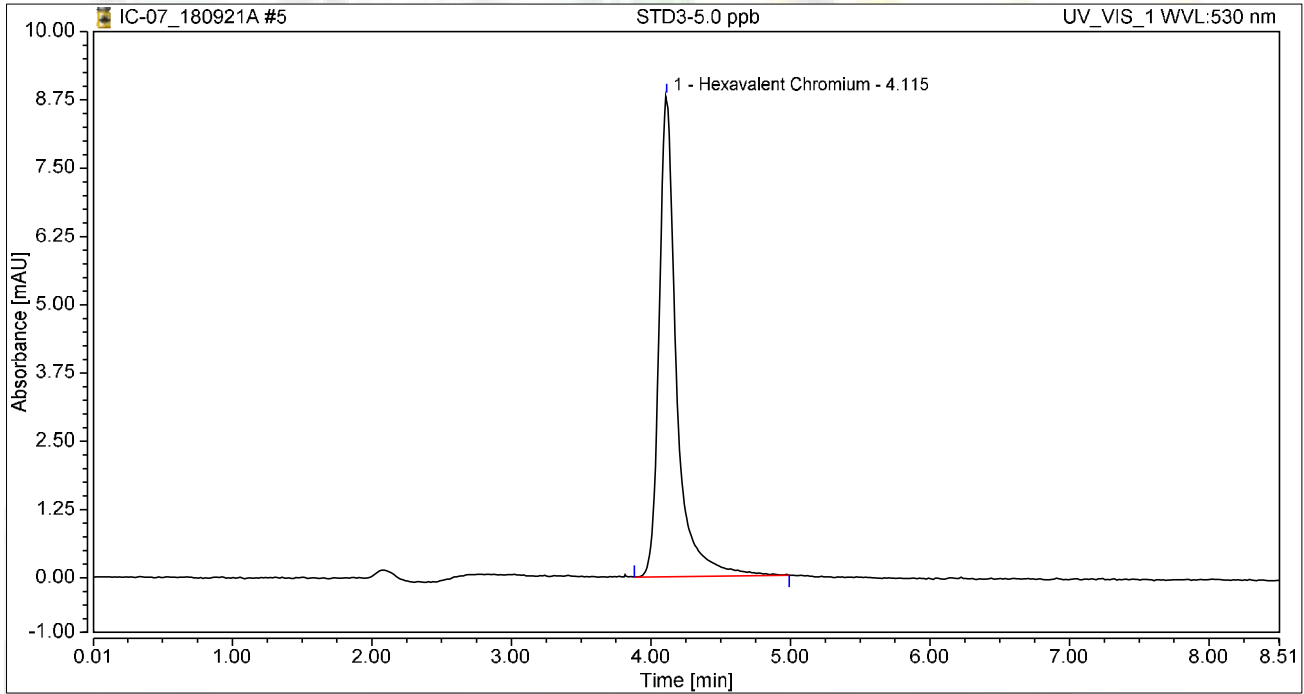
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.240	1.724	100.00	100.00	0.9494
<b>Total:</b>			<b>0.240</b>	<b>1.724</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	STD3-5.0 ppb	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	03	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 14:57	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.276	8.809	100.00	100.00	5.0487
<b>Total:</b>			<b>1.276</b>	<b>8.809</b>	<b>100.00</b>	<b>100.00</b>	

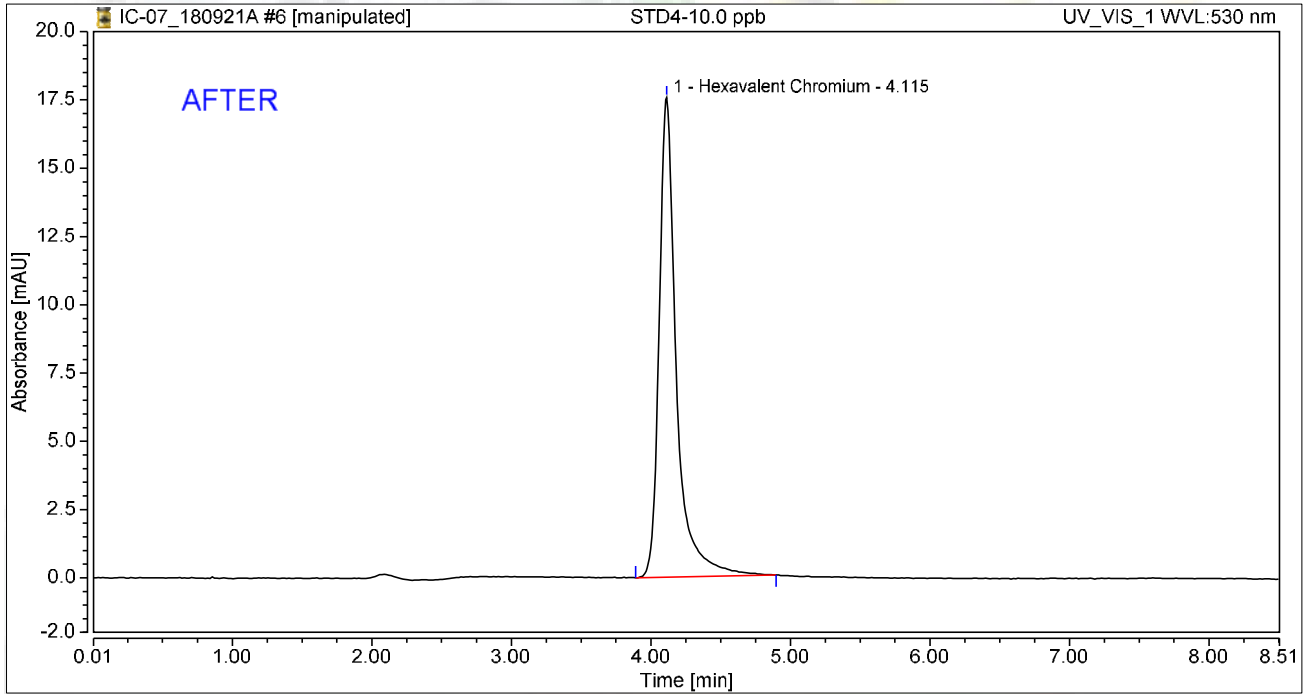


### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.525	17.564	100.00	100.00	9.9908
<b>Total:</b>			<b>2.525</b>	<b>17.564</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Reviewed by:

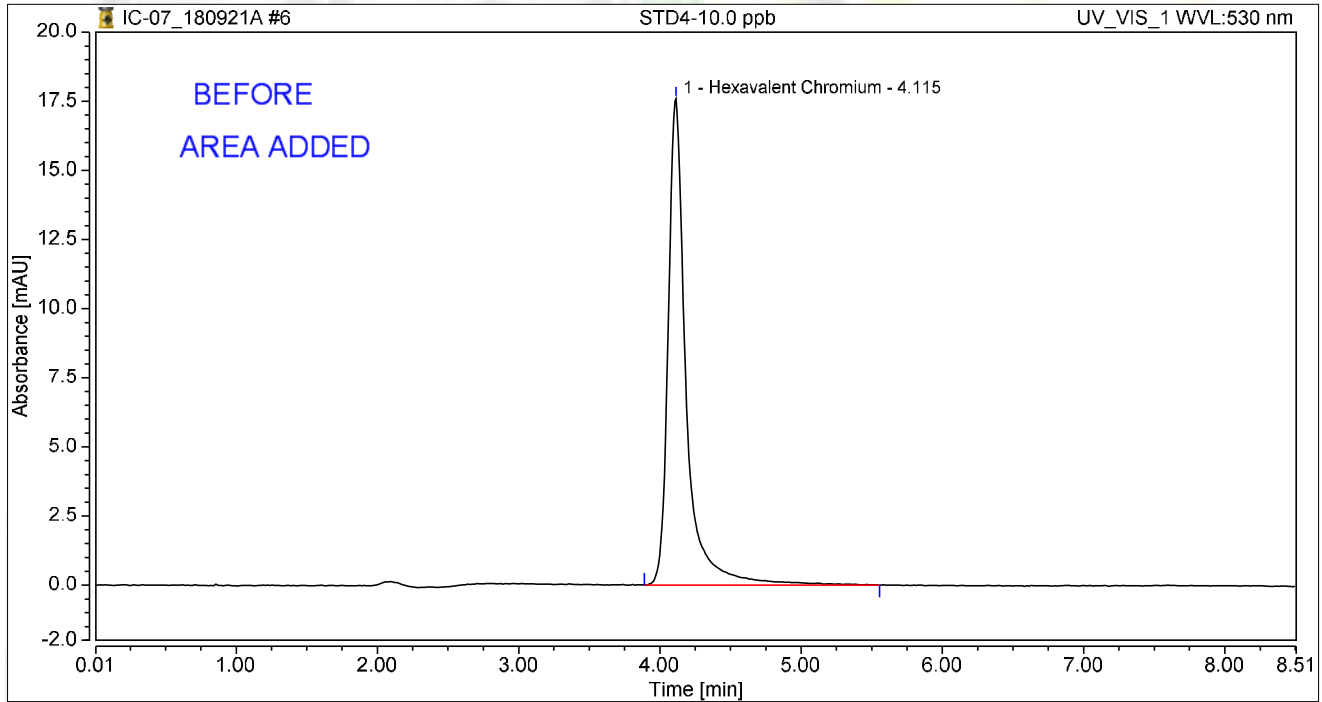
My first report integration  
Mony 10/8/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD4-10.0 ppb	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	04	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:06	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	2.611	17.589	100.00	100.00	10.0182
<b>Total:</b>			<b>2.611</b>	<b>17.589</b>	<b>100.00</b>	<b>100.00</b>	

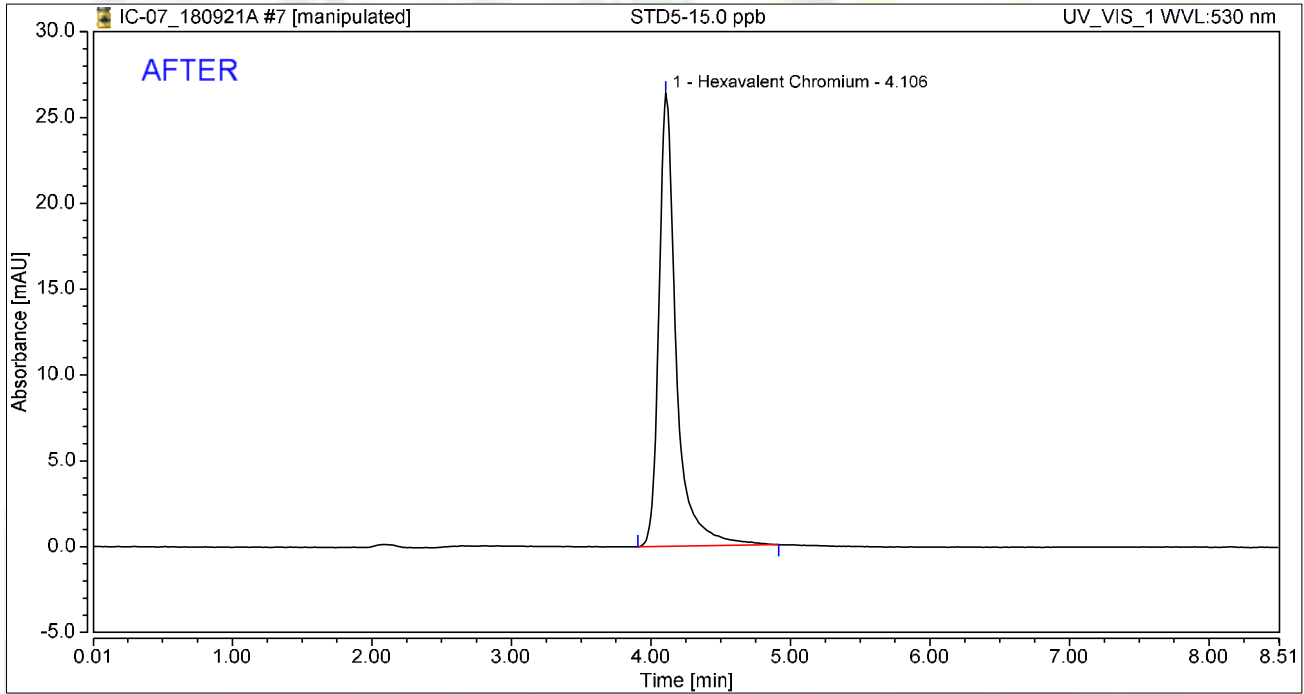
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	3.802	26.404	100.00	100.00	15.0421
<b>Total:</b>			<b>3.802</b>	<b>26.404</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

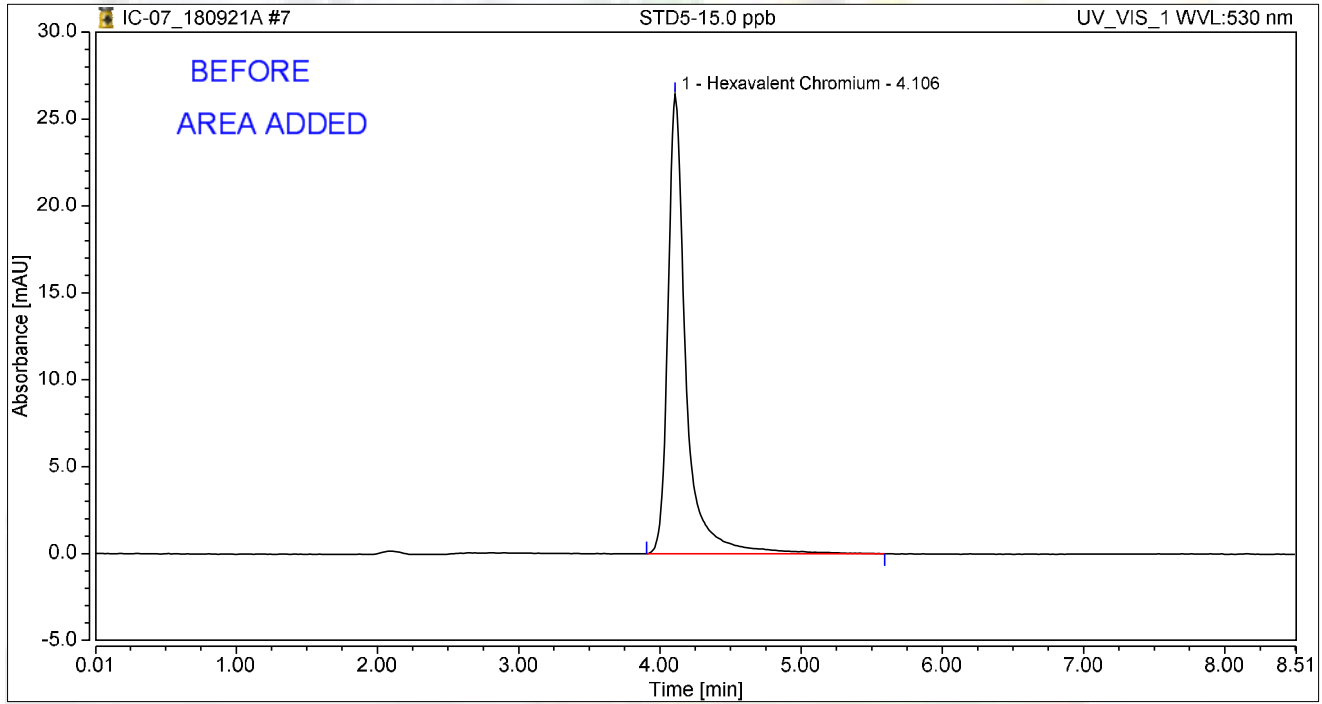
Reviewed by:  
Money 10/8/2018  
 My first report/integration

### Chromatogram and Results

**Injection Details**

Injection Name:	STD5-15.0 ppb	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	05	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:16	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	3.918	26.433	100.00	100.00	15.0352
<b>Total:</b>			<b>3.918</b>	<b>26.433</b>	<b>100.00</b>	<b>100.00</b>	

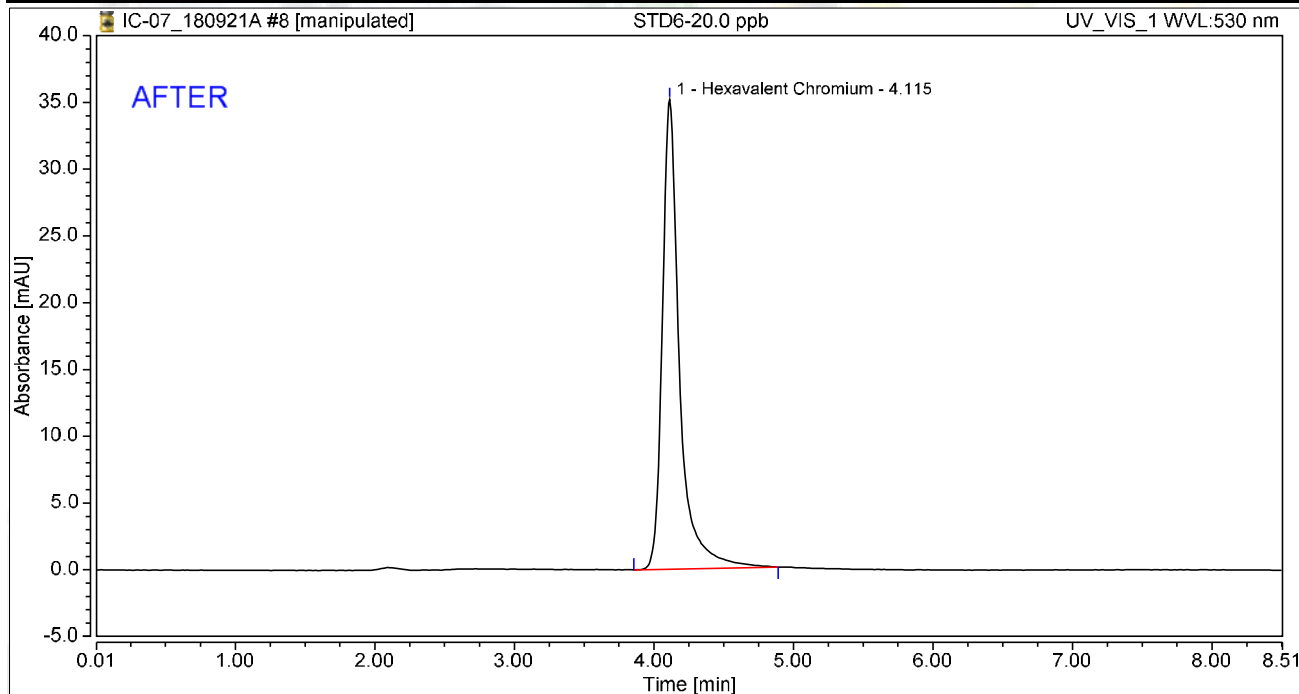
rba 9/30/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:25	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	5.046	35.157	100.00	100.00	19.9635
<b>Total:</b>			<b>5.046</b>	<b>35.157</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Reviewed by:  
*Arney* 10/8/2018

My first report/Integration

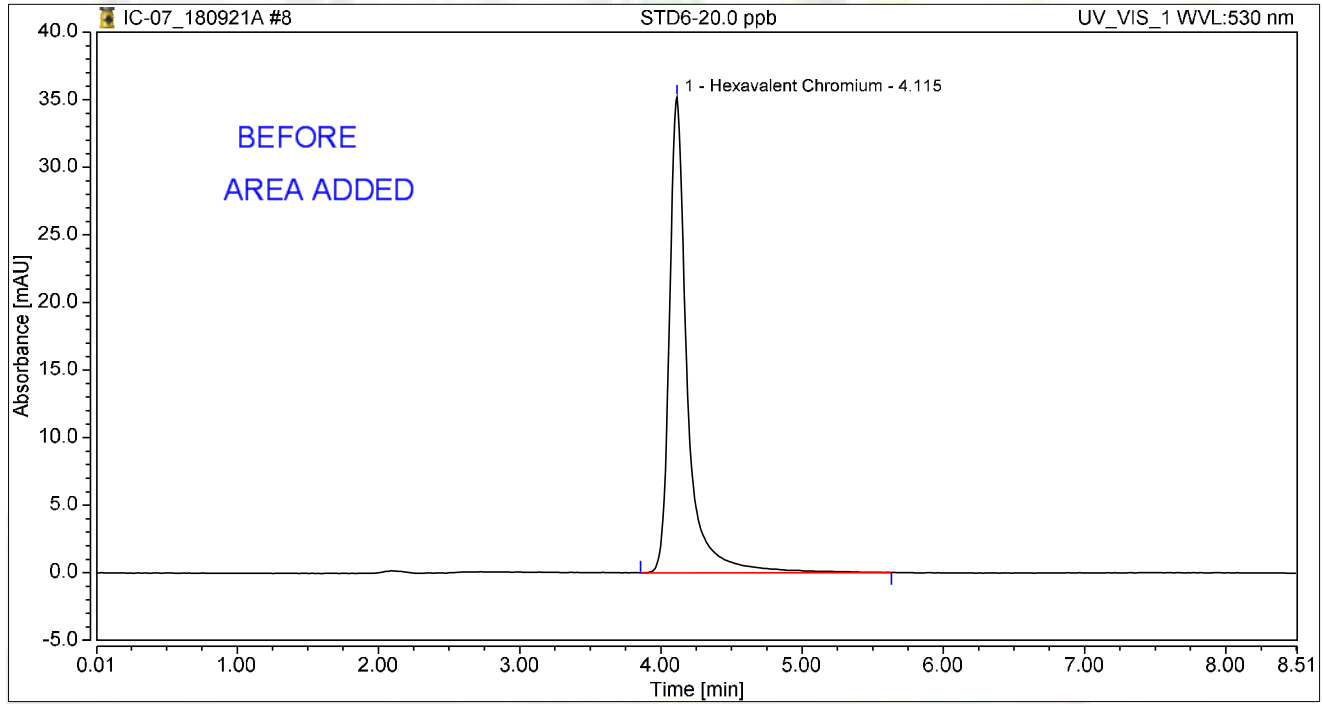
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	STD6-20.0 ppb	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Calibration Standard	Channel:	UV_VIS_1
Calibration Level:	06	Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 15:25	Sample Weight:	1.0000

**Chromatogram**

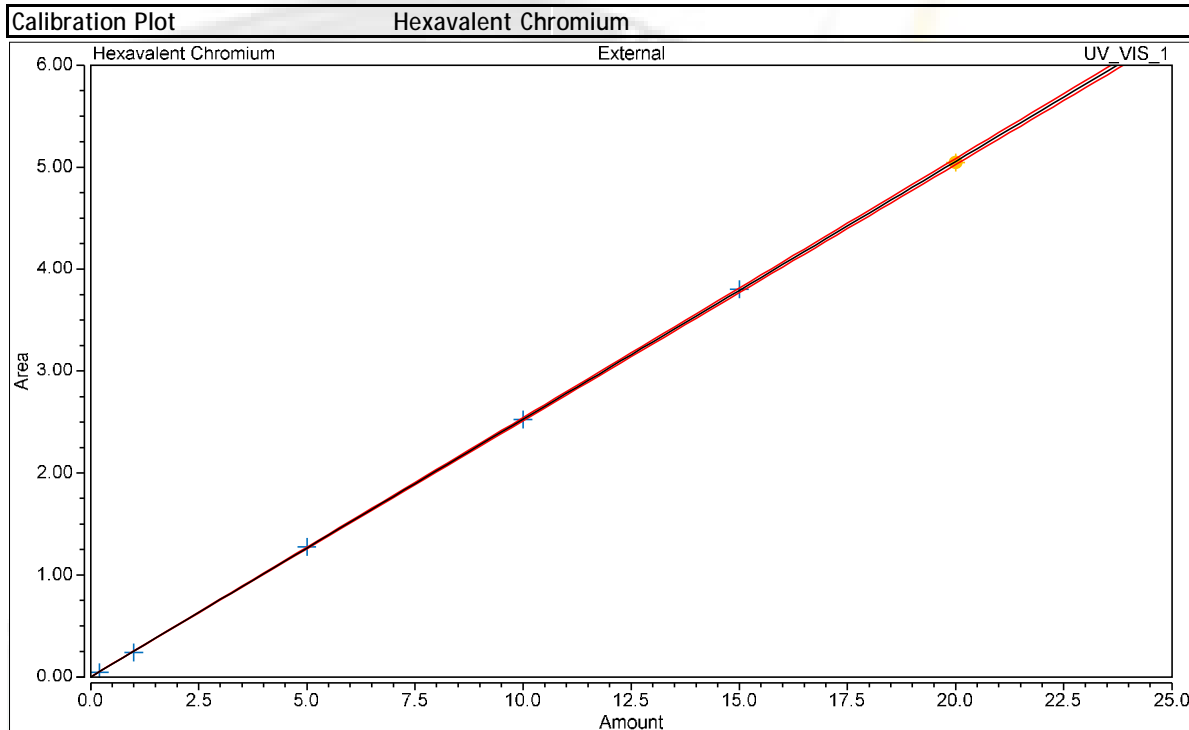


**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	5.210	35.207	100.00	100.00	19.9945
<b>Total:</b>			<b>5.210</b>	<b>35.207</b>	<b>100.00</b>	<b>100.00</b>	

rba 9/30/2018

Initial Calibration Summary			
Calibration Details		Hexavalent Chromium	
Calibration Type	Lin	Offset (C0)	0.0000
Evaluation Type	Area	Slope (C1)	0.2528
Number of Calibration Points	6	Curve (C2)	0.0000
Number of disabled Calibration Points	0	R-Square	0.99997



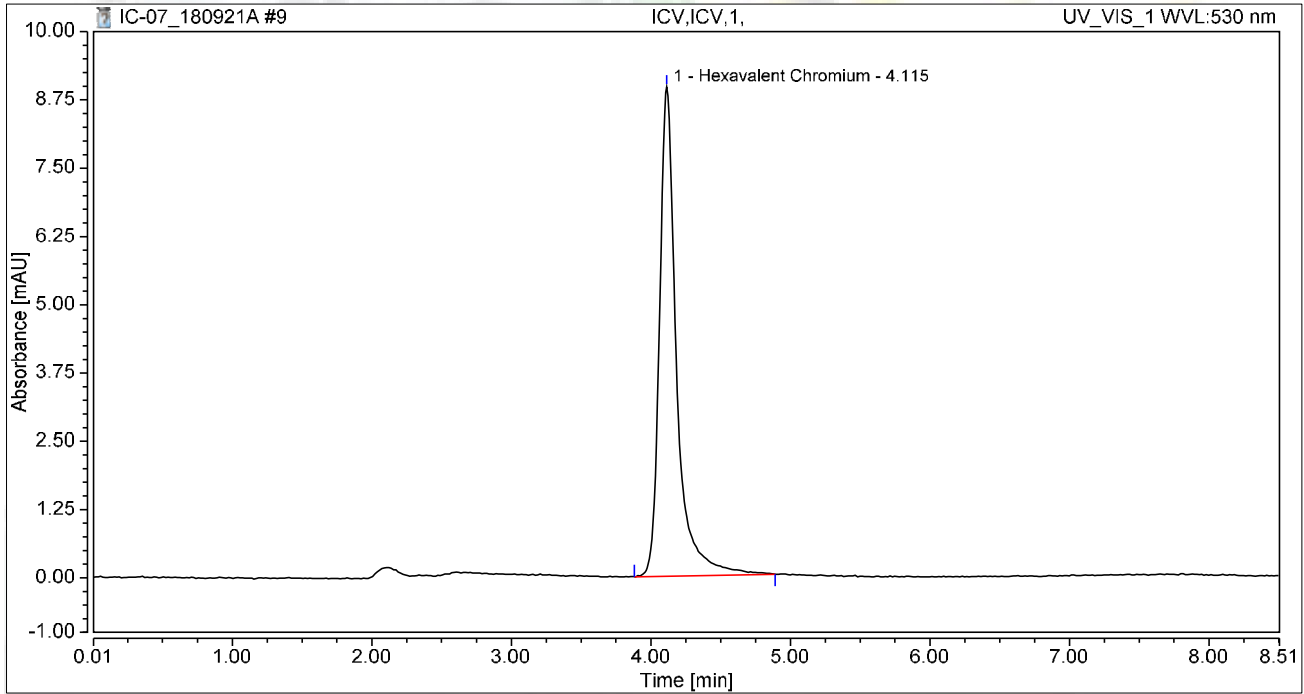
Calibration Results		Hexavalent Chromium				
No.	Injection Name	Calibration Level	X Value	Y Value	Area mAU*min	Height mAU
3	STD1-0.2 ppb	01	0.2000	0.0462	0.046	0.379
4	STD2-1.0 ppb	02	1.0000	0.2400	0.240	1.724
5	STD3-5.0 ppb	03	5.0000	1.2761	1.276	8.809
6	STD4-10.0 ppb	04	10.0000	2.5253	2.525	17.564
7	STD5-15.0 ppb	05	15.0000	3.8020	3.802	26.404
8	STD6-20.0 ppb	06	20.0000	5.0460	5.046	35.157

### Chromatogram and Results

**Injection Details**

Injection Name:	ICV,ICV,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	1.276	8.956	100.00	100.00	5.0467
<b>Total:</b>			<b>1.276</b>	<b>8.956</b>	<b>100.00</b>	<b>100.00</b>	

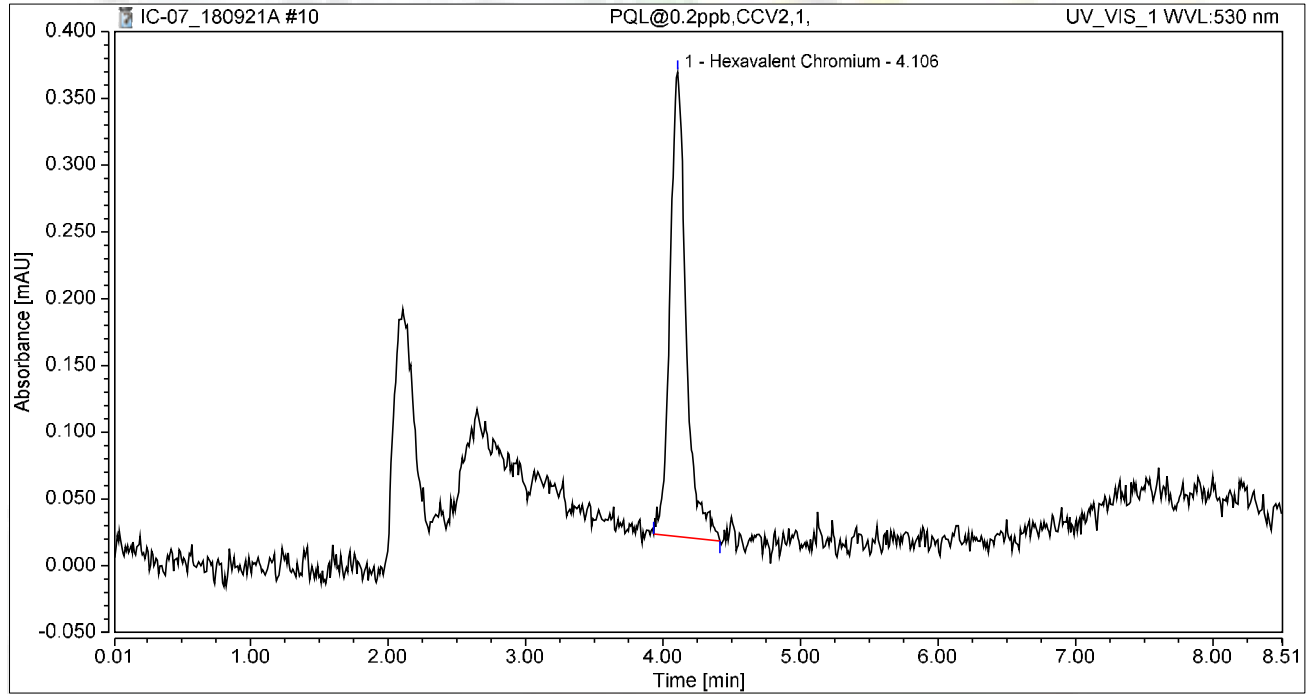


### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.49
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

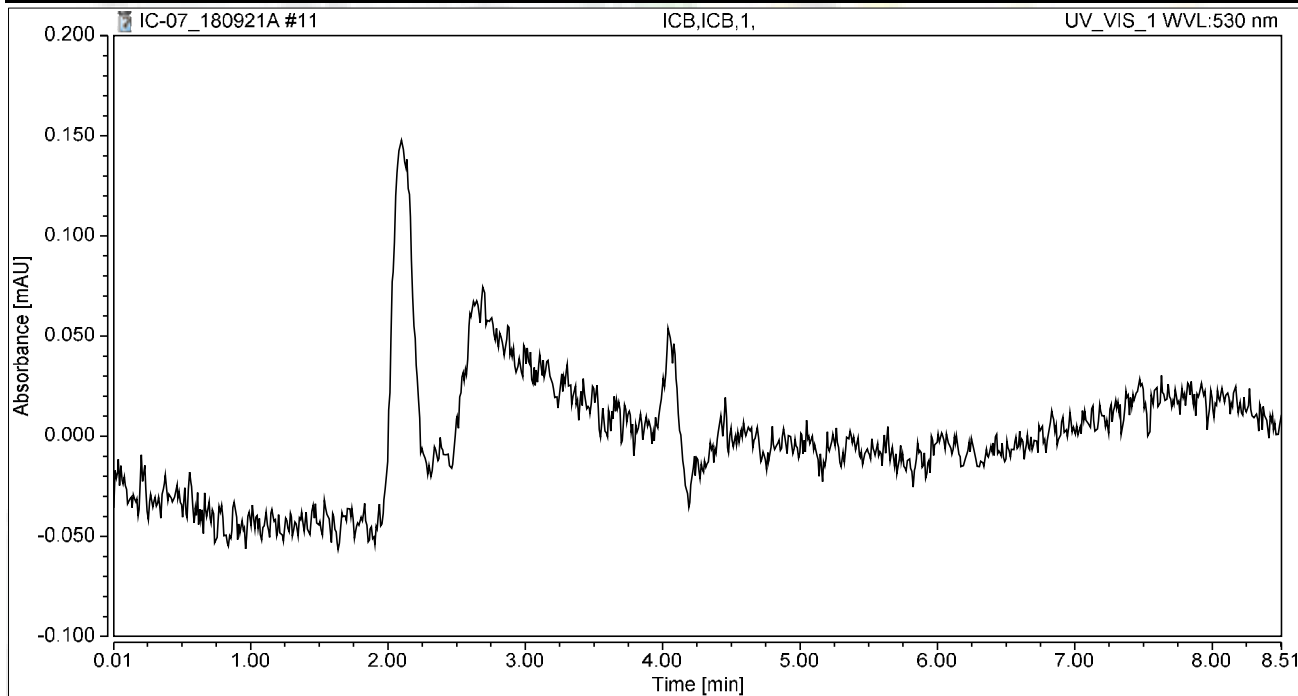
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.106	0.047	0.348	100.00	100.00	0.1865
<b>Total:</b>			<b>0.047</b>	<b>0.348</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	ICB,ICB,1,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	21/Sep/18 16:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

# RAW DATA



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691



**“Serving Clients with Passion and Professionalism”**

**INJECTION LOG: 181003A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
1	BLANK	BLANK	1	Hexavalent Chromium	09/21/18 2:18 PM	Not Reported
2	iBLANK	iBLANK	1	Hexavalent Chromium	09/21/18 2:28 PM	Reported
3	STD-0.2 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:38 PM	Reported
4	STD-1.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:47 PM	Reported
5	STD-5.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 2:57 PM	Reported
6	STD-10.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:06 PM	Reported
7	STD-15.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:16 PM	Reported
8	STD-20.0 ppb	ICAL	1	Hexavalent Chromium	09/21/18 3:25 PM	Reported
9	BLANK	BLANK	1	Hexavalent Chromium	10/03/18 8:51 AM	Not Reported
10	BLANK	BLANK	1	Hexavalent Chromium	10/03/18 9:02 AM	Not Reported
11	CCV-1	CCV	1	Hexavalent Chromium	10/03/18 9:11 AM	Reported
12	PQL@0.2ppb	CCV2	1	Hexavalent Chromium	10/03/18 9:21 AM	Reported
13	CCB-1	CCB	1	Hexavalent Chromium	10/03/18 9:30 AM	Reported
14	MB-R129017	MBLK	1	Hexavalent Chromium	10/03/18 9:40 AM	Reported
15	LCS-R129017	LCS	1	Hexavalent Chromium	10/03/18 9:49 AM	Reported
16	N032317-001A	SAMP	1	Hexavalent Chromium	10/03/18 10:13 AM	Reported
17	N032317-003A	SAMP	1	Hexavalent Chromium	10/03/18 10:25 AM	Reported
18	N032317-002A	SAMP	50	Hexavalent Chromium	10/03/18 10:34 AM	Reported
19	N032317-004A	SAMP	20	Hexavalent Chromium	10/03/18 10:43 AM	Not Reported
20	N032317-005A	SAMP	100	Hexavalent Chromium	10/03/18 10:53 AM	Reported
21	N032317-006A	SAMP	100	Hexavalent Chromium	10/03/18 11:02 AM	Reported
22	N032317-007A	SAMP	50	Hexavalent Chromium	10/03/18 11:12 AM	Reported
23	N032317-008A	SAMP	20	Hexavalent Chromium	10/03/18 11:21 AM	Reported
24	CCV-2	CCV	1	Hexavalent Chromium	10/03/18 11:31 AM	Reported
25	CCB-2	CCB	1	Hexavalent Chromium	10/03/18 11:40 AM	Reported
26	N032317-009A	SAMP	100	Hexavalent Chromium	10/03/18 11:50 AM	Reported
27	N032317-010A	SAMP	50	Hexavalent Chromium	10/03/18 11:59 AM	Reported
28	N032317-011A	SAMP	1	Hexavalent Chromium	10/03/18 12:09 PM	Not Reported
29	N032317-012A	SAMP	50	Hexavalent Chromium	10/03/18 12:18 PM	Reported
30	N032316-001A	SAMP	5	Hexavalent Chromium	10/03/18 12:28 PM	Reported
31	N032316-002A	SAMP	5	Hexavalent Chromium	10/03/18 12:37 PM	Not Reported
32	N032317-003ADUP	DUP	1	Hexavalent Chromium	10/03/18 12:46 PM	Reported
33	N032317-004A	SAMP	5	Hexavalent Chromium	10/03/18 12:56 PM	Reported
34	N032317-004AMS	MS	5	Hexavalent Chromium	10/03/18 1:05 PM	Reported
35	N032317-004AMSD	MSD	5	Hexavalent Chromium	10/03/18 1:15 PM	Reported
36	CCV-3	CCV	1	Hexavalent Chromium	10/03/18 1:24 PM	Reported
37	CCB-3	CCB	1	Hexavalent Chromium	10/03/18 1:34 PM	Reported
38	N032319-001A	SAMP	1	Hexavalent Chromium	10/03/18 1:43 PM	Reported
39	N032319-002A	SAMP	1	Hexavalent Chromium	10/03/18 1:53 PM	Reported
40	N032319-003A	SAMP	1	Hexavalent Chromium	10/03/18 2:02 PM	Reported
41	N032319-004A	SAMP	1	Hexavalent Chromium	10/03/18 2:12 PM	Reported
42	N032316-002A	SAMP	1	Hexavalent Chromium	10/03/18 2:21 PM	Reported

**INJECTION LOG: 181003A**

**Instrument ID: IC-07**

Sample No	Sample Name	Type	DF	Peak Name	Injection Date/Time	Comments
43	N032317-011A	SAMP	50	Hexavalent Chromium	10/03/18 2:31 PM	Reported
44	N032317-011AMS	SMS	50	Hexavalent Chromium	10/03/18 2:40 PM	Reported
45	CCV-4	CCV	1	Hexavalent Chromium	10/03/18 2:49 PM	Reported
46	CCB-4	CCB	1	Hexavalent Chromium	10/03/18 2:59 PM	Reported
47	N032329-001A	SAMP	1	Hexavalent Chromium	10/03/18 3:08 PM	Reported
48	N032329-001AMS	MS	1	Hexavalent Chromium	10/03/18 3:18 PM	Not Reported
49	N032329-002A	SAMP	100	Hexavalent Chromium	10/03/18 3:27 PM	Reported
50	N032329-002AMS	MS	100	Hexavalent Chromium	10/03/18 3:37 PM	Reported
51	N032329-001AMS	MS	1	Hexavalent Chromium	10/03/18 3:46 PM	Reported
52	LCS-R129018	LCS	1	Hexavalent Chromium	10/03/18 3:56 PM	Reported
53	MB-R129018	MBLK	1	Hexavalent Chromium	10/03/18 4:05 PM	Reported
54	N032318-008A	SAMP	100	Hexavalent Chromium	10/03/18 4:43 PM	Reported
55	N032318-008AMS	MS	100	Hexavalent Chromium	10/03/18 4:54 PM	Reported
56	N032318-008AMSD	MSD	100	Hexavalent Chromium	10/03/18 5:03 PM	Reported
57	CCV-5	CCV	1	Hexavalent Chromium	10/03/18 5:13 PM	Reported
58	CCB-5	CCB	1	Hexavalent Chromium	10/03/18 5:22 PM	Reported
59	N032318-002A	SAMP	5	Hexavalent Chromium	10/03/18 5:31 PM	Reported
60	N032318-002AMS	MS	5	Hexavalent Chromium	10/03/18 5:41 PM	Reported
61	N032320-002A	SAMP	1	Hexavalent Chromium	10/03/18 5:50 PM	Reported
62	N032320-002ADUP	DUP	1	Hexavalent Chromium	10/03/18 6:00 PM	Reported
63	N032318-001A	SAMP	20	Hexavalent Chromium	10/03/18 6:09 PM	Reported
64	N032318-003A	SAMP	5	Hexavalent Chromium	10/03/18 6:19 PM	Reported
65	N032318-004A	SAMP	1	Hexavalent Chromium	10/03/18 6:28 PM	Reported
66	N032318-007A	SAMP	20	Hexavalent Chromium	10/03/18 6:37 PM	Reported
67	N032318-009A	SAMP	100	Hexavalent Chromium	10/03/18 6:47 PM	Reported
68	N032318-010A	SAMP	1	Hexavalent Chromium	10/03/18 6:56 PM	Reported
69	CCV-6	CCV	1	Hexavalent Chromium	10/03/18 7:06 PM	Reported
70	CCB-6	CCB	1	Hexavalent Chromium	10/03/18 7:15 PM	Reported
71	N032318-011A	SAMP	20	Hexavalent Chromium	10/03/18 7:25 PM	Reported
72	N032318-012A	SAMP	20	Hexavalent Chromium	10/03/18 7:34 PM	Reported
73	N032318-013A	SAMP	1	Hexavalent Chromium	10/03/18 7:44 PM	Reported
74	N032318-014A	SAMP	1	Hexavalent Chromium	10/03/18 7:53 PM	Reported
75	N032318-015A	SAMP	1	Hexavalent Chromium	10/03/18 8:03 PM	Reported
76	N032320-001A	SAMP	1	Hexavalent Chromium	10/03/18 8:12 PM	Reported
77	N032320-003A	SAMP	1	Hexavalent Chromium	10/03/18 8:22 PM	Reported
78	N032320-004A	SAMP	1	Hexavalent Chromium	10/03/18 8:31 PM	Reported
79	CCV-7	CCV	1	Hexavalent Chromium	10/03/18 8:40 PM	Reported
80	CCB-7	CCB	1	Hexavalent Chromium	10/03/18 8:50 PM	Reported

## Injection Log Summary

## Sequence Details

Name:	IC-07_181003A	Created On:	24/Jul/12 17:17:21
Directory:	Instrument Data\IC-7\2018	Created By:	ics 5000
Data Vault:	ChromeleonLocal2	Updated On:	04/Oct/18 18:39:55
No. of Injections:	83	Updated By:	ics 5000

## Injection Details

No.	Injection Name	Position	Volume µL	Type	Level	Inject Time	Status	Comment
1	BLANK	1	1000	Unknown		09/21/2018 14:18	Finished	BLANK
2	iBLANK	2	1000	Unknown		09/21/2018 14:28	Finished	INSTRUMENT BLANK
3	STD1-0.2 ppb	3	1000	Calibration Standard	01	09/21/2018 14:38	Finished	0.2 ppb, IWST-180622A
4	STD2-1.0 ppb	4	1000	Calibration Standard	02	09/21/2018 14:47	Finished	1.0 ppb, IWST-180622A
5	STD3-5.0 ppb	5	1000	Calibration Standard	03	09/21/2018 14:57	Finished	5.0 ppb, IWST-180622A
6	STD4-10.0 ppb	6	1000	Calibration Standard	04	09/21/2018 15:06	Finished	10 ppb, IWST-180622A
7	STD5-15.0 ppb	7	1000	Calibration Standard	05	09/21/2018 15:16	Finished	15 ppb, IWST-180622A
8	STD6-20.0 ppb	8	1000	Calibration Standard	06	09/21/2018 15:25	Finished	20 ppb, IWST-180622A
9	BLANK	1	1000	Unknown		10/03/2018 08:51	Finished	BLANK
10	BLANK	2	1000	Unknown		10/03/2018 09:02	Finished	BLANK
11	CCV-1,CCV,1,	3	1000	Unknown		10/03/2018 09:11	Finished	CCV @5ppb, IWST-180622A
12	PQL@0.2ppb,CCV2,	4	1000	Unknown		10/03/2018 09:21	Finished	PQL @ 0.2ppb
13	CCB-1,CCB,1,	5	1000	Unknown		10/03/2018 09:30	Finished	CCB R180919A
14	MB-H2O,MBLK,1,	6	1000	Unknown		10/03/2018 09:40	Finished	MB R180919A
15	LCS-H2O,LCS,1,	7	1000	Unknown		10/03/2018 09:49	Finished	LCS @5ppb, IWST-180622B
16	N032317-001A,SAMF	1	1000	Unknown		10/03/2018 10:13	Finished	SAMP,10mL
17	N032317-003A,SAMF	2	1000	Unknown		10/03/2018 10:25	Finished	SAMP,10mL
18	N032317-002A,SAMF	3	1000	Unknown		10/03/2018 10:34	Finished	SAMP,0.2>10mL
19	N032317-004A,SAMF	4	1000	Unknown		10/03/2018 10:43	Finished	SAMP,0.5>10mL
20	N032317-005A,SAMF	5	1000	Unknown		10/03/2018 10:53	Finished	SAMP,0.1>10mL
21	N032317-006A,SAMF	6	1000	Unknown		10/03/2018 11:02	Finished	SAMP,0.1>10mL
22	N032317-007A,SAMF	7	1000	Unknown		10/03/2018 11:12	Finished	SAMP,0.2>10mL
23	N032317-008A,SAMF	8	1000	Unknown		10/03/2018 11:21	Finished	SAMP,0.5>10mL
24	CCV-2,CCV1,1,	9	1000	Unknown		10/03/2018 11:31	Finished	CCV @10ppb, IWST-180622A
25	CCB-2,CCB,1,	10	1000	Unknown		10/03/2018 11:40	Finished	CCB R180919A
26	N032317-009A,SAMF	11	1000	Unknown		10/03/2018 11:50	Finished	SAMP,0.1>10mL
27	N032317-010A,SAMF	12	1000	Unknown		10/03/2018 11:59	Finished	SAMP,0.2>10mL
28	N032317-011A,SAMF	13	1000	Unknown		10/03/2018 12:09	Finished	SAMP,10mL
29	N032317-012A,SAMF	14	1000	Unknown		10/03/2018 12:18	Finished	SAMP,0.2>10mL
30	N032316-001A,SAMF	15	1000	Unknown		10/03/2018 12:28	Finished	SAMP,2>10mL
31	N032316-002A,SAMF	16	1000	Unknown		10/03/2018 12:37	Finished	SAMP,2>10mL
32	N032317-003ADUP, D	17	1000	Unknown		10/03/2018 12:46	Finished	DUP,2>10mL
33	N032317-004A,SAMF	18	1000	Unknown		10/03/2018 12:56	Finished	SAMP,2>10mL
34	N032317-004AMS,MS	19	1000	Unknown		10/03/2018 13:05	Finished	MS (5ppb), IWST-180622B,2>1
35	N032317-004AMSD,N	20	1000	Unknown		10/03/2018 13:15	Finished	MSD (5ppb), IWST-180622B,2>
36	CCV-3,CCV,1,	21	1000	Unknown		10/03/2018 13:24	Finished	CCV @5ppb, IWST-180622A
37	CCB-3,CCB,1,	22	1000	Unknown		10/03/2018 13:34	Finished	CCB R180919A
38	N032319-001A,SAMF	23	1000	Unknown		10/03/2018 13:43	Finished	SAMP,10mL
39	N032319-002A,SAMF	24	1000	Unknown		10/03/2018 13:53	Finished	SAMP,10mL
40	N032319-003A,SAMF	25	1000	Unknown		10/03/2018 14:02	Finished	SAMP,10mL
41	N032319-004A,SAMF	26	1000	Unknown		10/03/2018 14:12	Finished	SAMP,10mL
42	N032316-002A,SAMF	27	1000	Unknown		10/03/2018 14:21	Finished	DUP,10mL
43	N032317-011A,SAMF	28	1000	Unknown		10/03/2018 14:31	Finished	SAMP,0.2>10mL
44	N032317-011AMS,SN	29	1000	Unknown		10/03/2018 14:40	Finished	MS (5ppb), IWST-180622B,0.2
45	CCV-4,CCV1,1,	30	1000	Unknown		10/03/2018 14:49	Finished	CCV @10ppb, IWST-180622A
46	CCB-4,CCB,1,	31	1000	Unknown		10/03/2018 14:59	Finished	CCB R180919A
47	N032329-001A,SAMF	32	1000	Unknown		10/03/2018 15:08	Finished	SAMP,10mL
48	N032329-001AMS,MS	33	1000	Unknown		10/03/2018 15:18	Finished	MS (1ppb), IWST-180622B,10
49	N032329-002A,SAMF	34	1000	Unknown		10/03/2018 15:27	Finished	SAMP,0.1>10mL
50	N032329-002AMS,MS	35	1000	Unknown		10/03/2018 15:37	Finished	MS (5ppb), IWST-180622B,0.1
51	N032329-001AMS,MS	36	1000	Unknown		10/03/2018 15:46	Finished	MS (5ppb), IWST-180622B,10
52	LCS-2,LCS,1,	37	1000	Unknown		10/03/2018 15:56	Finished	LCS @5ppb, IWST-180622B
53	MB-2,MBLK,1,	38	1000	Unknown		10/03/2018 16:05	Finished	MB R180919A
54	N032318-008A,SAMF	1	1000	Unknown		10/03/2018 16:43	Finished	SAMP,0.1>10mL
55	N032318-008AMS,MS	2	1000	Unknown		10/03/2018 16:54	Finished	MS (5ppb), IWST-180622B,0.1
56	N032318-008AMSD,N	3	1000	Unknown		10/03/2018 17:03	Finished	MSD (5ppb), IWST-180622B,0
57	CCV-5,CCV,1,	4	1000	Unknown		10/03/2018 17:13	Finished	CCV @5ppb, IWST-180622A
58	CCB-5,CCB,1,	5	1000	Unknown		10/03/2018 17:22	Finished	CCB R180919A
59	N032318-002A,SAMF	6	1000	Unknown		10/03/2018 17:31	Finished	SAMP,2>10mL
60	N032318-002AMS,MS	7	1000	Unknown		10/03/2018 17:41	Finished	MS (5ppb), IWST-180622B,2>

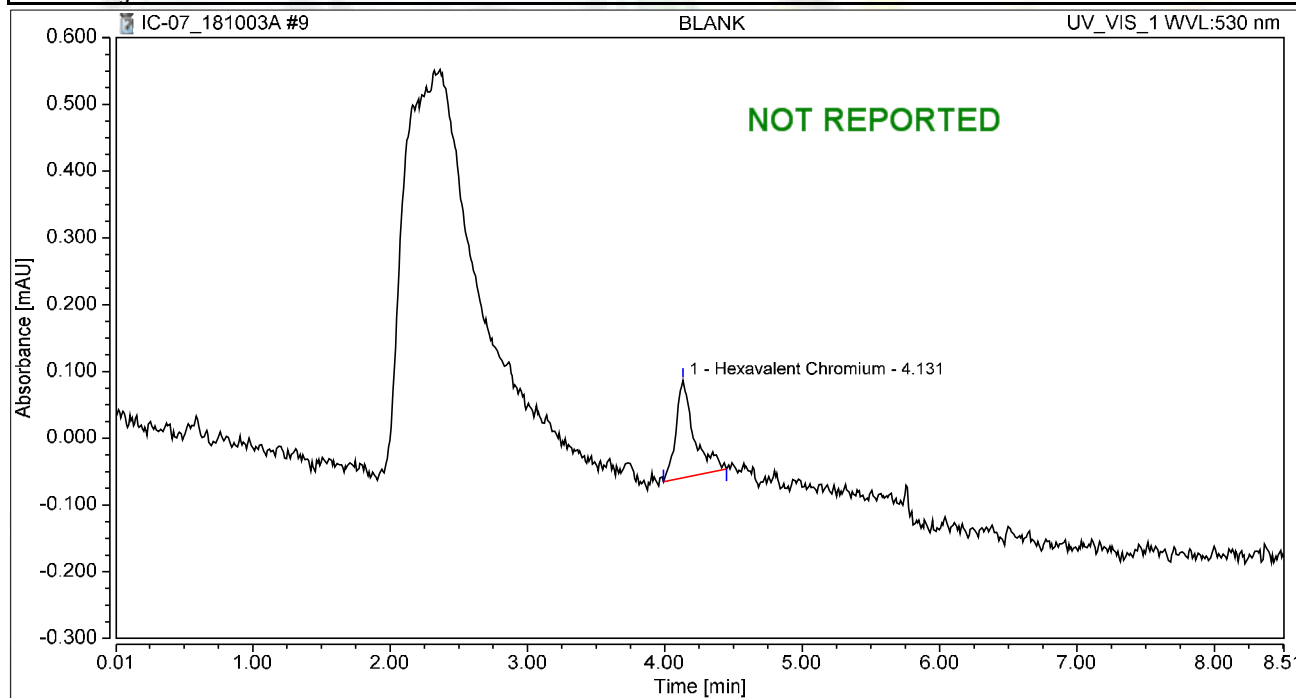
61	N032320-002A,SAMF	8	1000	Unknown	10/03/2018 17:50	Finished	SAMP,10mL
62	N032320-002ADUP,C	9	1000	Unknown	10/03/2018 18:00	Finished	DUP,10mL
63	N032318-001A,SAMF	10	1000	Unknown	10/03/2018 18:09	Finished	SAMP,0.5>10mL
64	N032318-003A,SAMF	11	1000	Unknown	10/03/2018 18:19	Finished	SAMP,2>10mL
65	N032318-004A,SAMF	12	1000	Unknown	10/03/2018 18:28	Finished	SAMP,10mL
66	N032318-007A,SAMF	13	1000	Unknown	10/03/2018 18:37	Finished	SAMP,0.5>10mL
67	N032318-009A,SAMF	14	1000	Unknown	10/03/2018 18:47	Finished	SAMP,0.1>10mL
68	N032318-010A,SAMF	15	1000	Unknown	10/03/2018 18:56	Finished	SAMP,10mL
69	CCV-6,CCV1,1,	16	1000	Unknown	10/03/2018 19:06	Finished	CCV @10ppb, IWST-180622A
70	CCB-6,CCB,1,	17	1000	Unknown	10/03/2018 19:15	Finished	CCB R180919A
71	N032318-011A,SAMF	18	1000	Unknown	10/03/2018 19:25	Finished	SAMP,0.5>10mL
72	N032318-012A,SAMF	19	1000	Unknown	10/03/2018 19:34	Finished	SAMP,0.5>10mL
73	N032318-013A,SAMF	20	1000	Unknown	10/03/2018 19:44	Finished	SAMP,10mL
74	N032318-014A,SAMF	21	1000	Unknown	10/03/2018 19:53	Finished	SAMP,10mL
75	N032318-015A,SAMF	22	1000	Unknown	10/03/2018 20:03	Finished	SAMP,10mL
76	N032320-001A,SAMF	23	1000	Unknown	10/03/2018 20:12	Finished	SAMP,10mL
77	N032320-003A,SAMF	24	1000	Unknown	10/03/2018 20:22	Finished	SAMP,10mL
78	N032320-004A,SAMF	25	1000	Unknown	10/03/2018 20:31	Finished	SAMP,10mL
79	CCV-7,CCV,1,	26	1000	Unknown	10/03/2018 20:40	Finished	CCV @5ppb, IWST-180622A
80	CCB-7,CCB,1,	27	1000	Unknown	10/03/2018 20:50	Finished	CCB R180919A
81	SHUTDOWN	28	1000	Unknown	10/03/2018 20:59	Finished	
82	Eluent: R181003D	29	1000	Unknown	n.a.	Finished	Eluent
83	PCR: R181003E	30	1000	Unknown	n.a.	Finished	Post-Column Reagent

### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 08:51	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.023	0.146	100.00	100.00	0.0893
<b>Total:</b>			<b>0.023</b>	<b>0.146</b>	<b>100.00</b>	<b>100.00</b>	

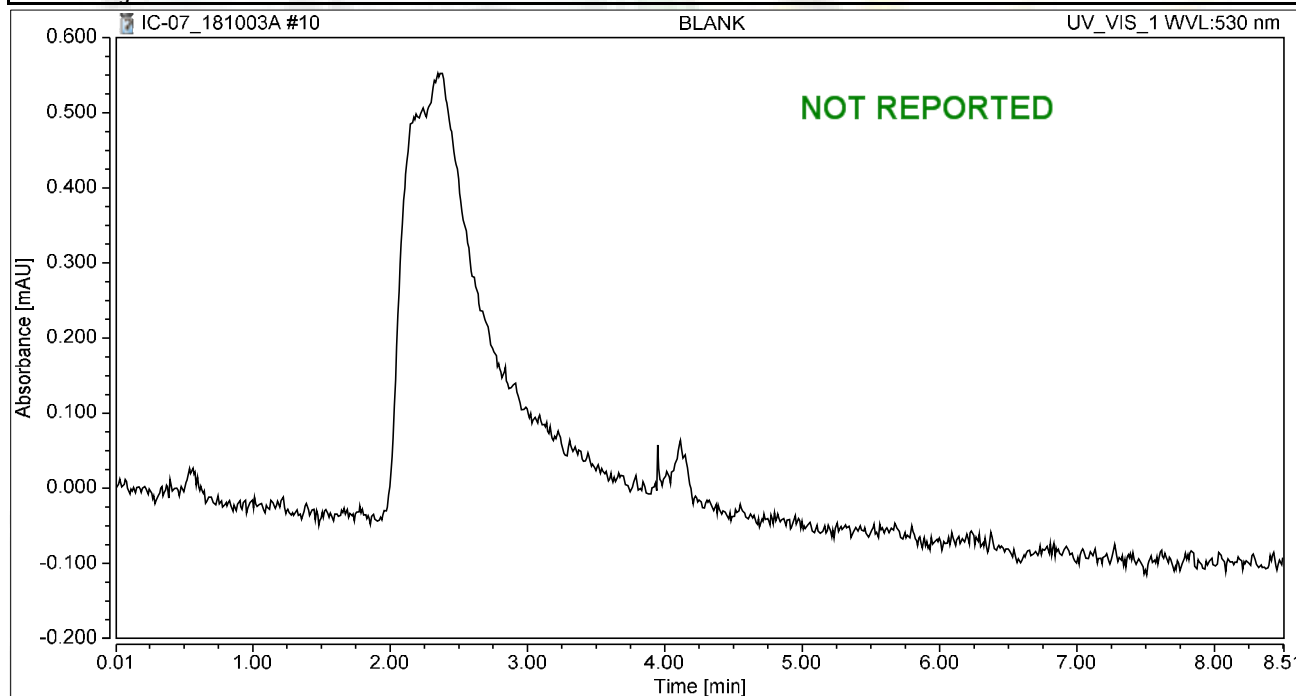


### Chromatogram and Results

**Injection Details**

Injection Name:	BLANK	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 09:02	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

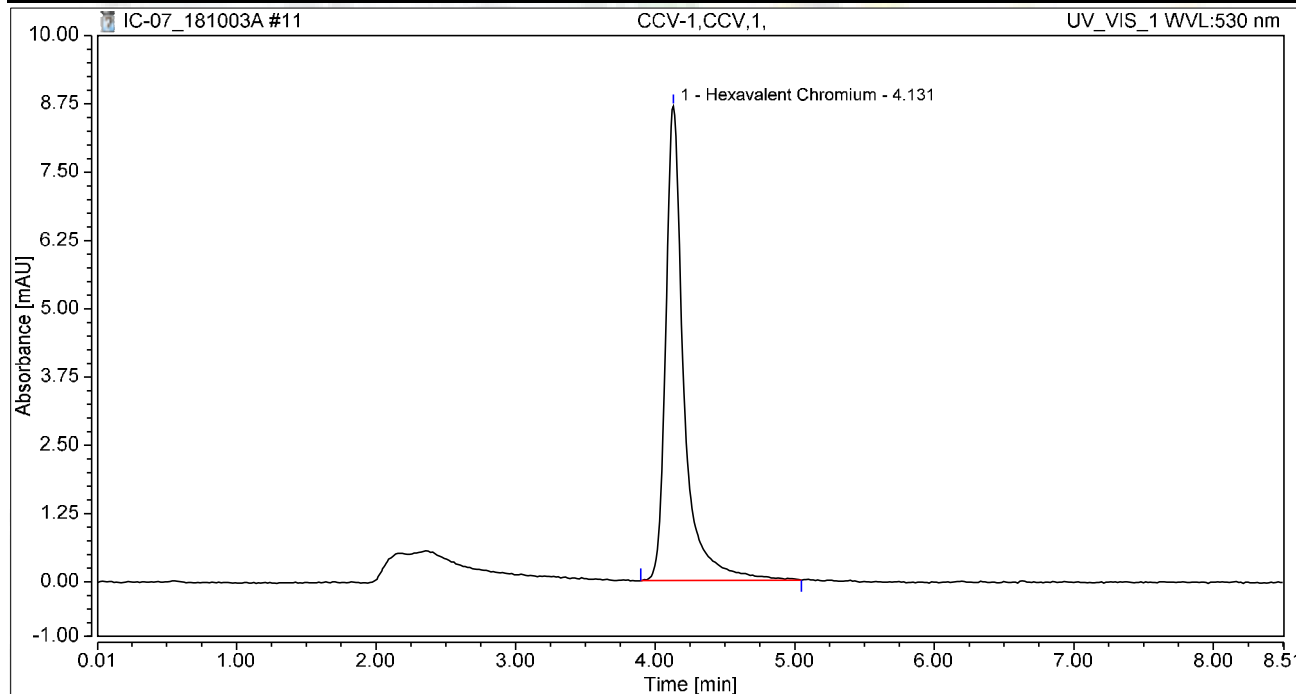
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-1,CCV,1,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 09:11	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

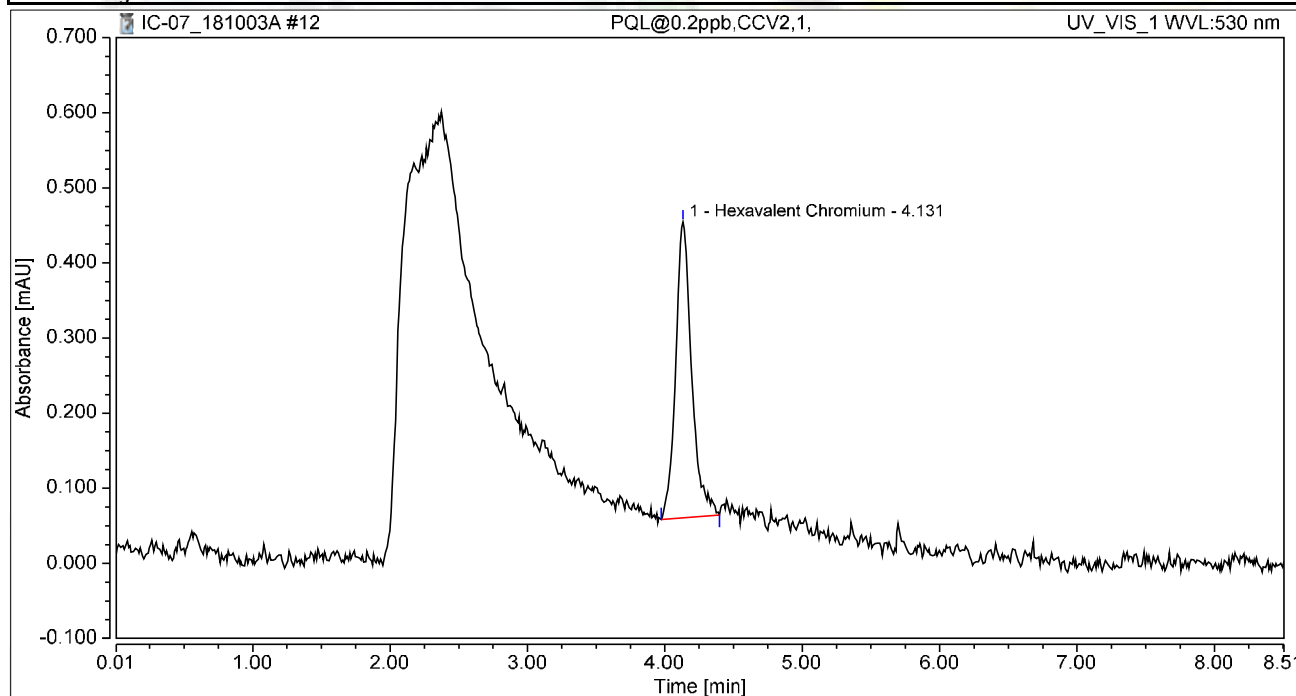
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.310	8.682	100.00	100.00	5.1823
<b>Total:</b>			<b>1.310</b>	<b>8.682</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	PQL@0.2ppb,CCV2,1,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 09:21	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

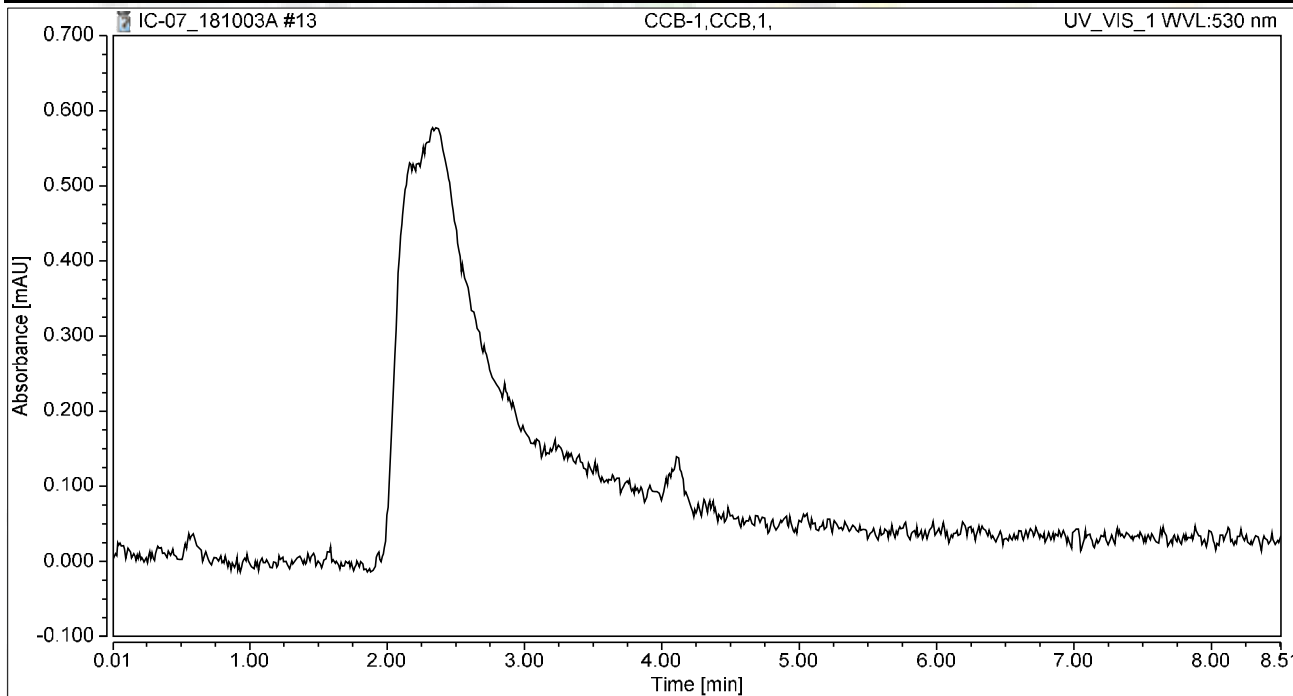
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.053	0.394	100.00	100.00	0.2102
<b>Total:</b>			<b>0.053</b>	<b>0.394</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-1,CCB,1,	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 09:30	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

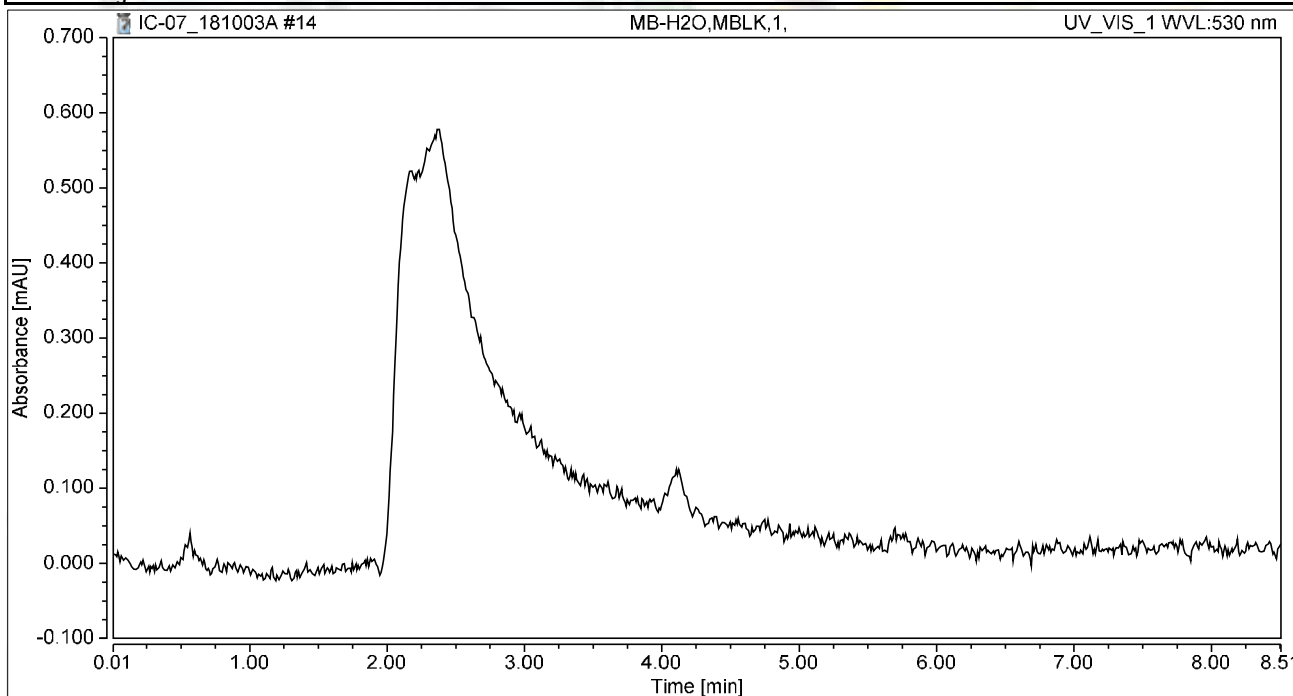
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	MB-H2O,MBLK,1,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 09:40	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

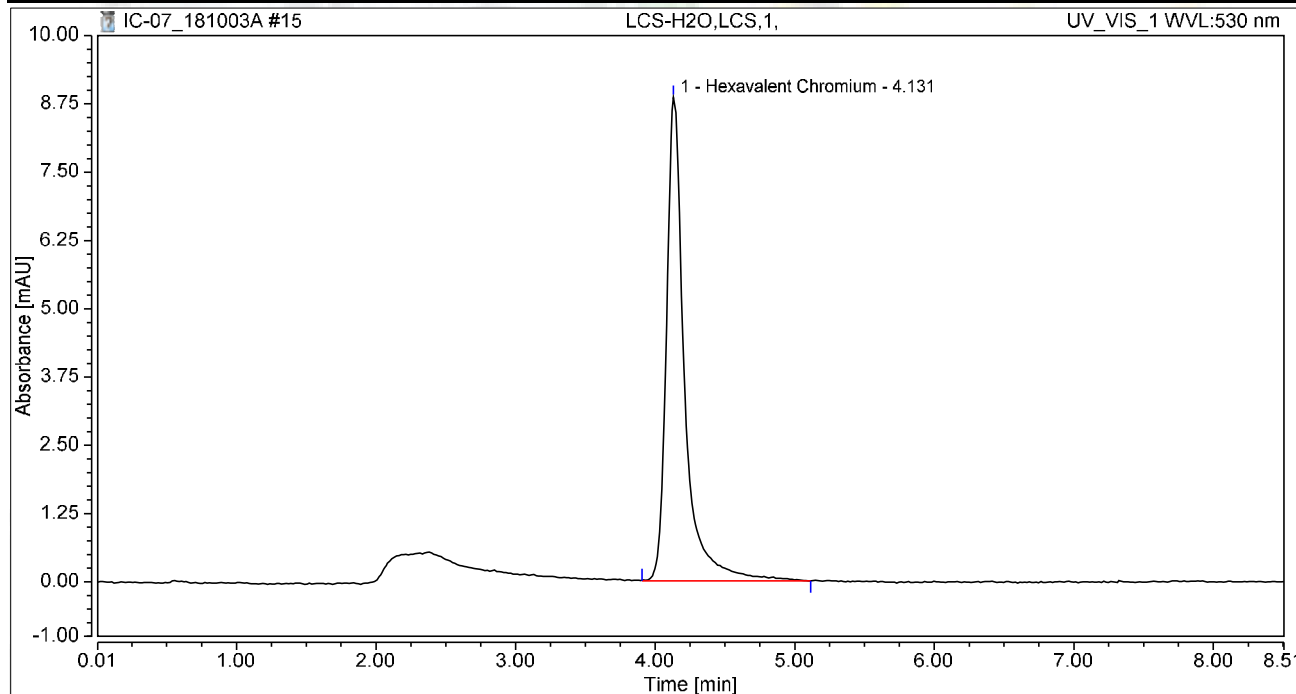
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total:			0.000	0.000	0.00	0.00	

### Chromatogram and Results

**Injection Details**

Injection Name:	LCS-H2O,LCS,1,	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 09:49	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

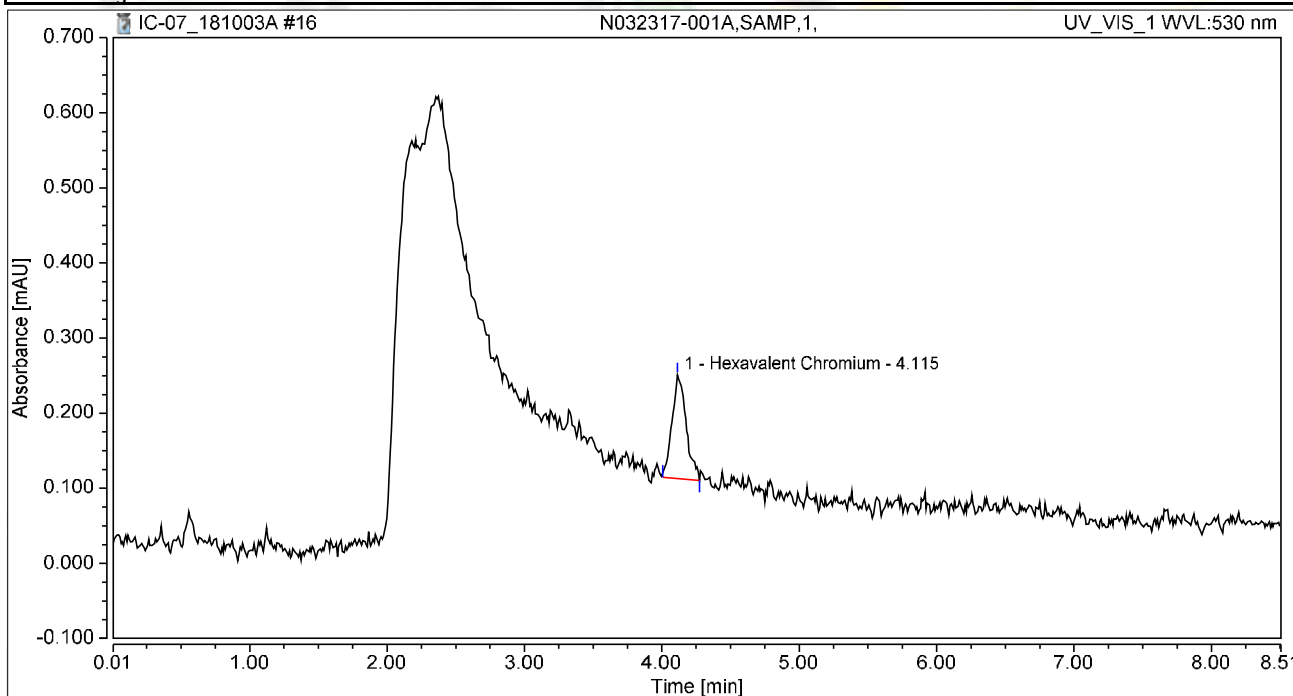
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.331	8.847	100.00	100.00	5.2669
<b>Total:</b>			<b>1.331</b>	<b>8.847</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	1	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 10:13	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

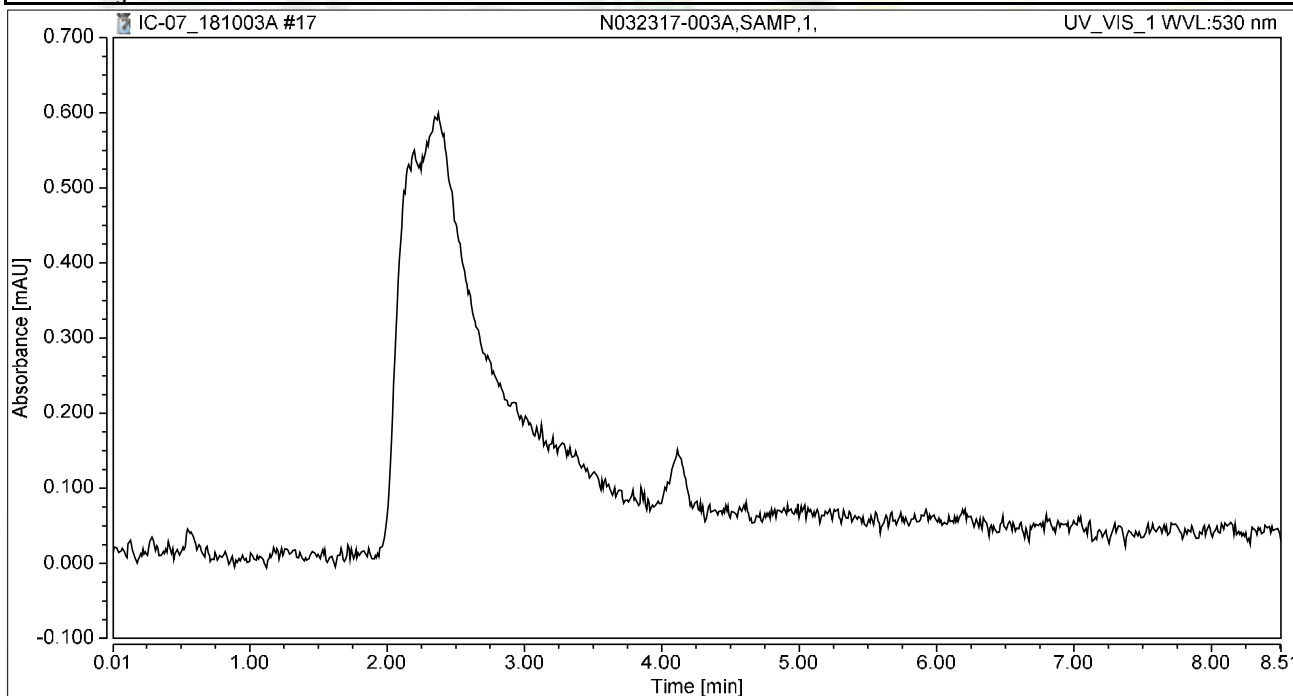
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.115	0.016	0.138	100.00	100.00	0.0647
<b>Total:</b>			<b>0.016</b>	<b>0.138</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-003A,SAMP,1,	Run Time (min):	8.50
Vial Number:	2	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 10:25	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

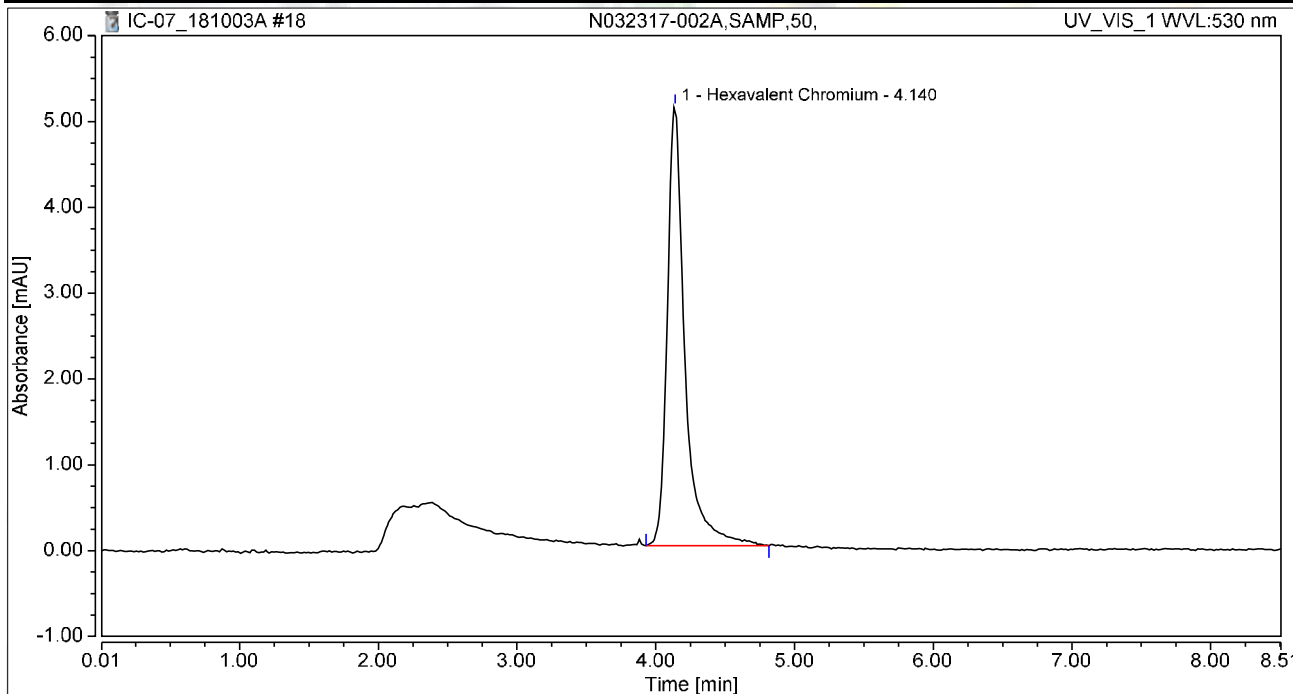


### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-002A,SAMP,50,	Run Time (min):	8.50
Vial Number:	3	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 10:34	Sample Weight:	1.0000

**Chromatogram**



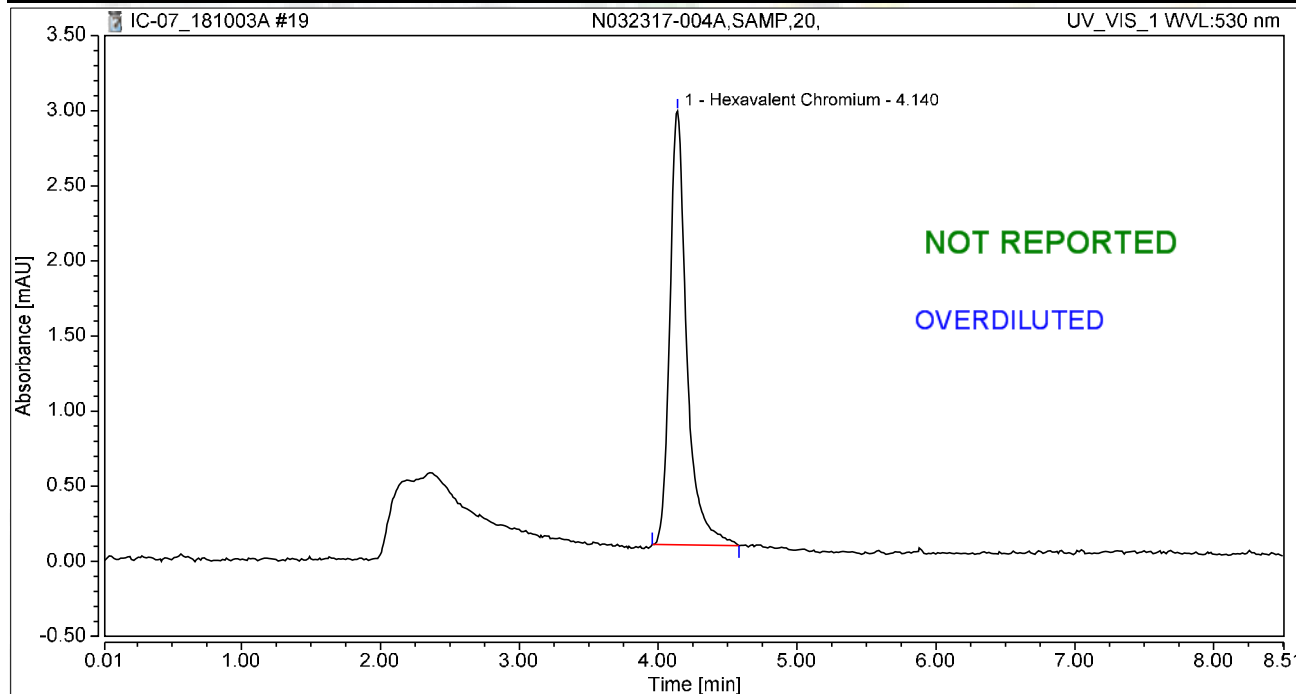
**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	0.759	5.120	100.00	100.00	3.0026
<b>Total:</b>			<b>0.759</b>	<b>5.120</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

Injection Details		
Injection Name:	N032317-004A,SAMP,20,	Run Time (min): 8.49
Vial Number:	4	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	03/Oct/18 10:43	Sample Weight: 1.0000

#### Chromatogram



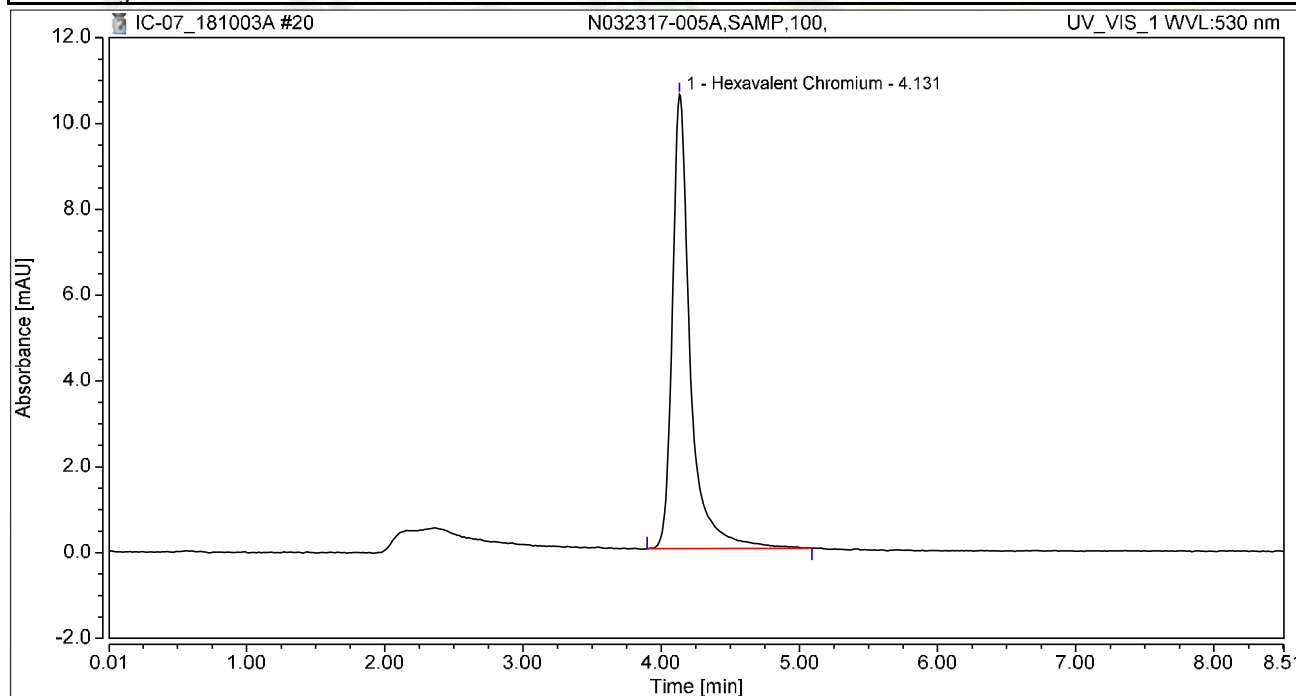
Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	0.408	2.888	100.00	100.00	1.6146
<b>Total:</b>			<b>0.408</b>	<b>2.888</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-005A,SAMP,100,	Run Time (min):	8.50
Vial Number:	5	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 10:53	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

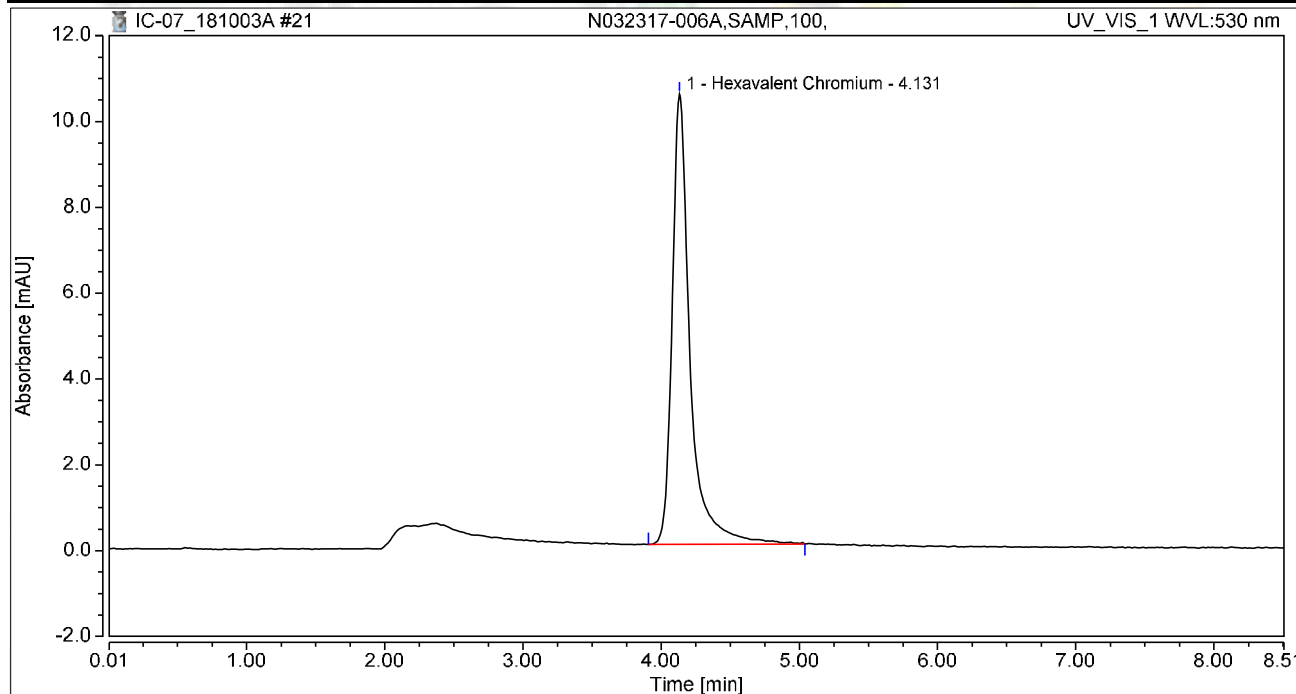
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.594	10.578	100.00	100.00	6.3052
<b>Total:</b>			<b>1.594</b>	<b>10.578</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-006A,SAMP,100,	Run Time (min):	8.50
Vial Number:	6	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 11:02	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

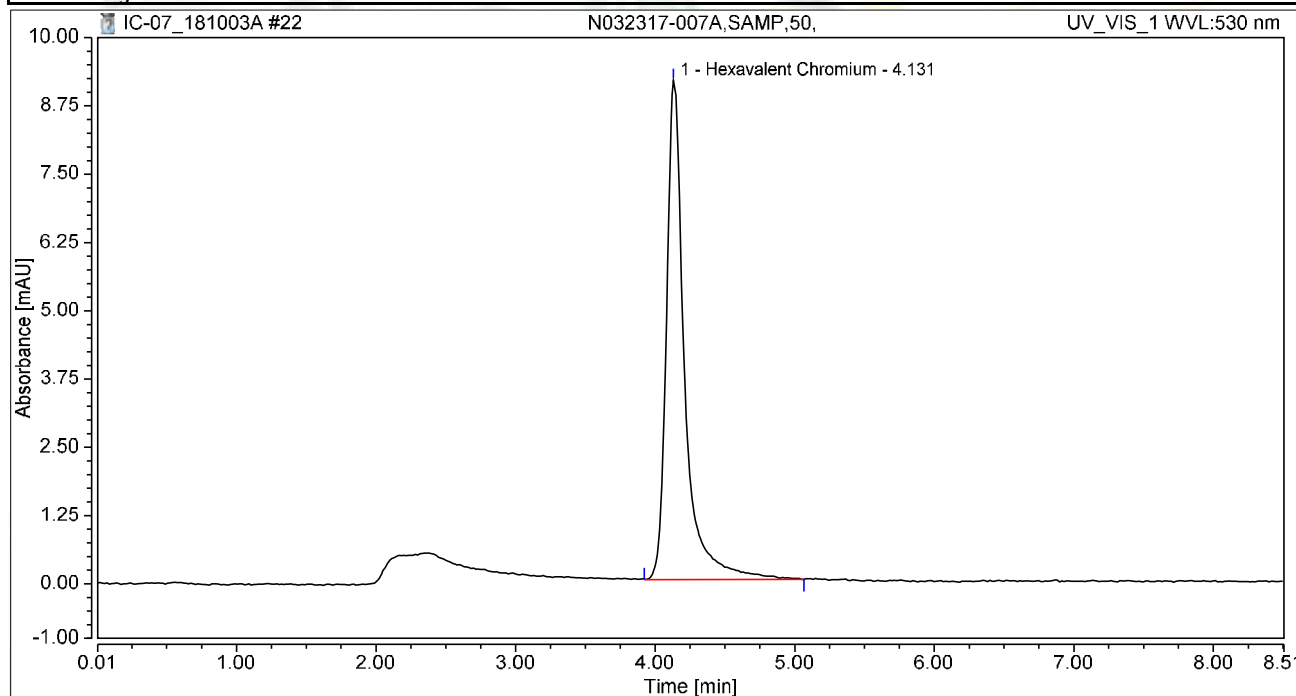
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.573	10.490	100.00	100.00	6.2248
<b>Total:</b>			<b>1.573</b>	<b>10.490</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-007A,SAMP,50,	Run Time (min):	8.50
Vial Number:	7	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 11:12	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

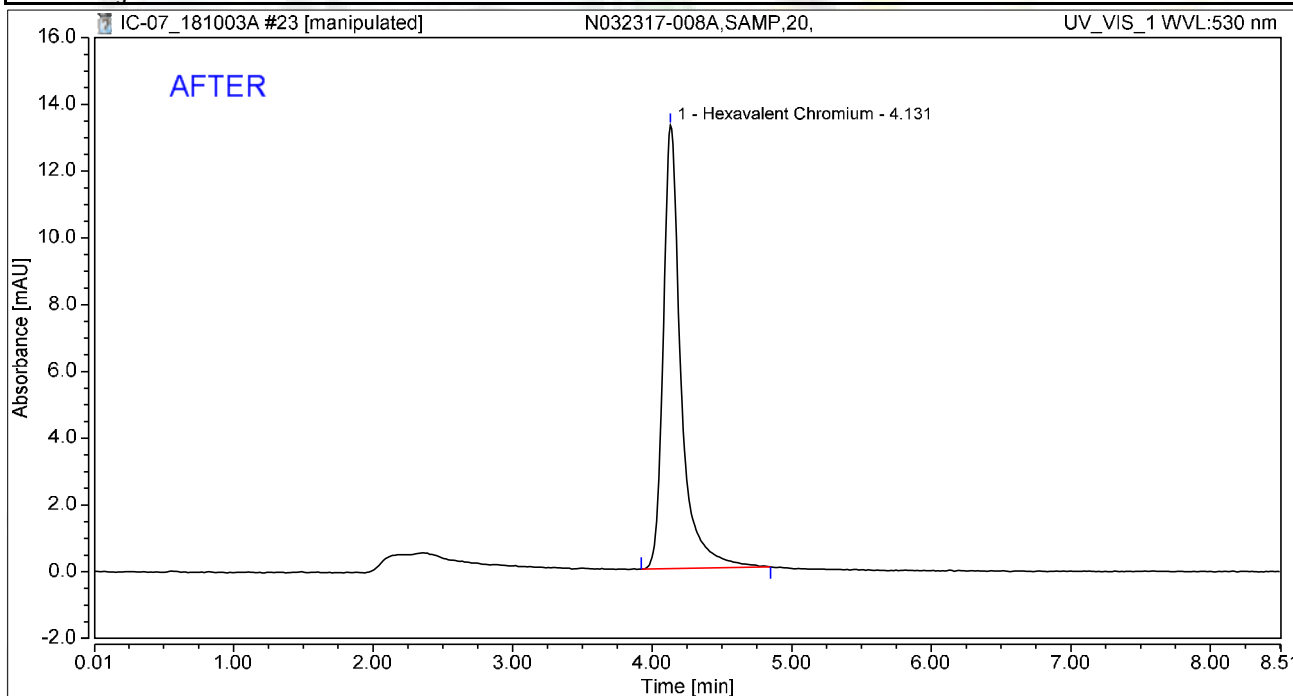
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.385	9.140	100.00	100.00	5.4780
<b>Total:</b>			<b>1.385</b>	<b>9.140</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-008A,SAMP,20,	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 11:21	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.961	13.280	100.00	100.00	7.7586
<b>Total:</b>			<b>1.961</b>	<b>13.280</b>	<b>100.00</b>	<b>100.00</b>	

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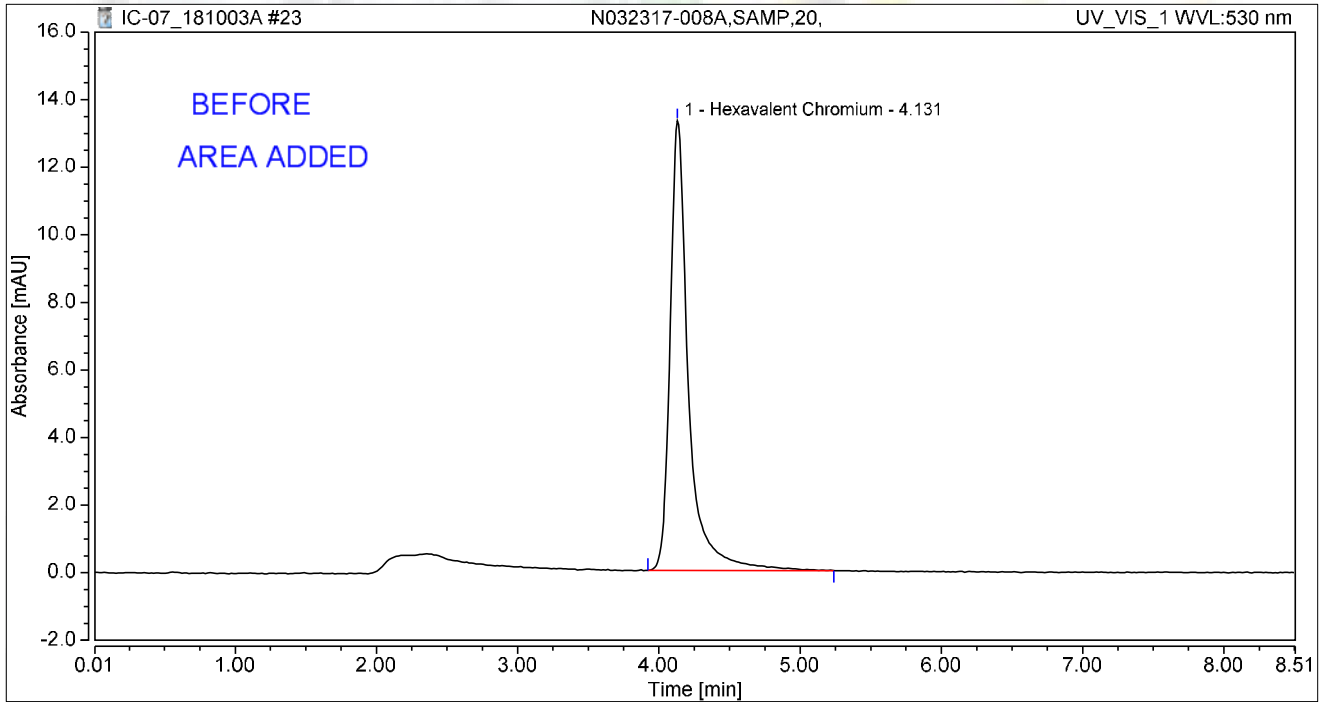
Reviewed by:  
*Monney* 10/17/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-008A,SAMP,20,	Run Time (min):	8.50
Vial Number:	8	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 11:21	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.011	13.298	100.00	100.00	7.9572
<b>Total:</b>			<b>2.011</b>	<b>13.298</b>	<b>100.00</b>	<b>100.00</b>	

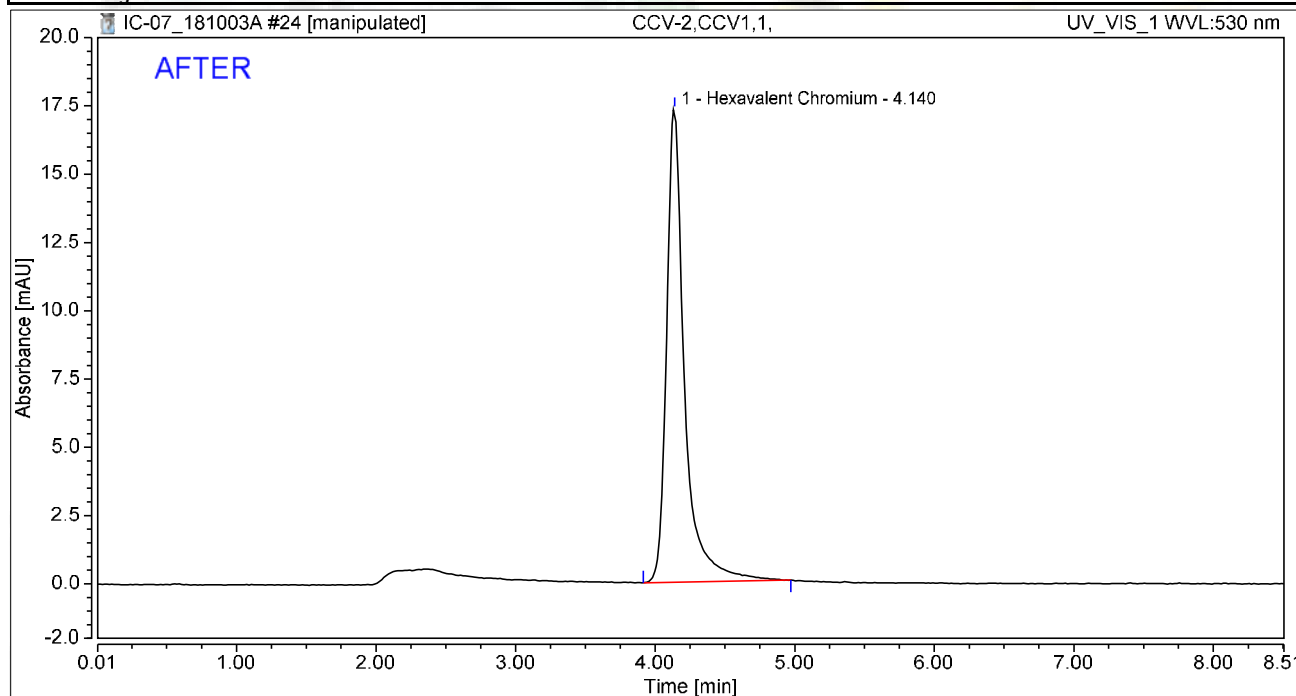
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### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-2,CCV1,1,	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 11:31	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	2.586	17.309	100.00	100.00	10.2311
<b>Total:</b>			<b>2.586</b>	<b>17.309</b>	<b>100.00</b>	<b>100.00</b>	

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*Henry* 10/17/2018

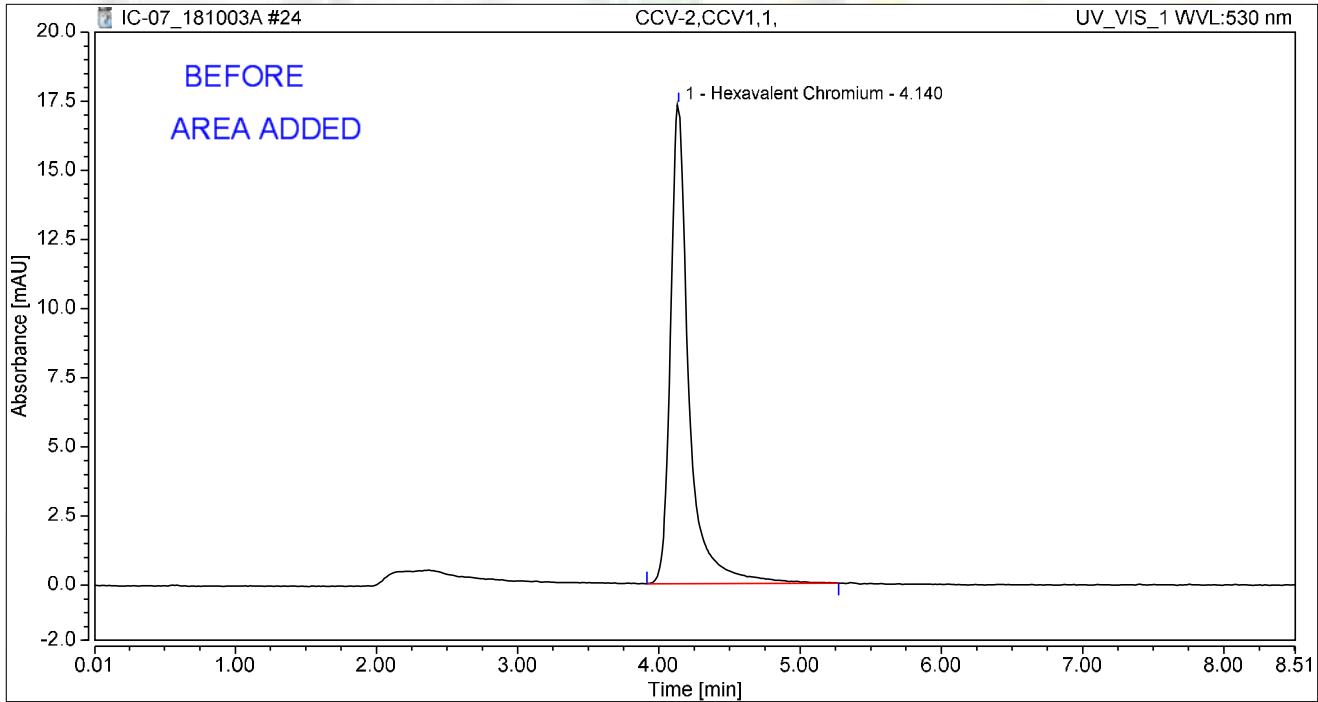


### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-2,CCV1,1,	Run Time (min):	8.50
Vial Number:	9	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 11:31	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	2.635	17.324	100.00	100.00	10.4256
<b>Total:</b>			<b>2.635</b>	<b>17.324</b>	<b>100.00</b>	<b>100.00</b>	

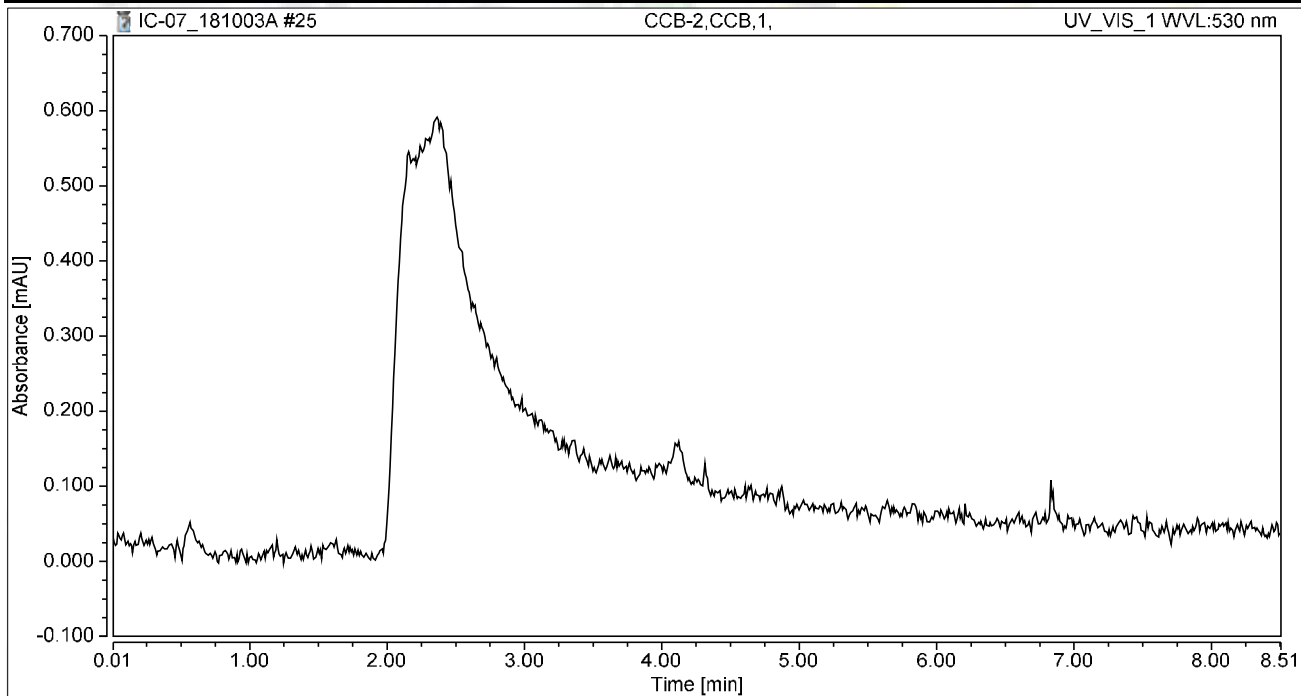
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### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-2,CCB,1,	Run Time (min):	8.50
Vial Number:	10	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 11:40	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

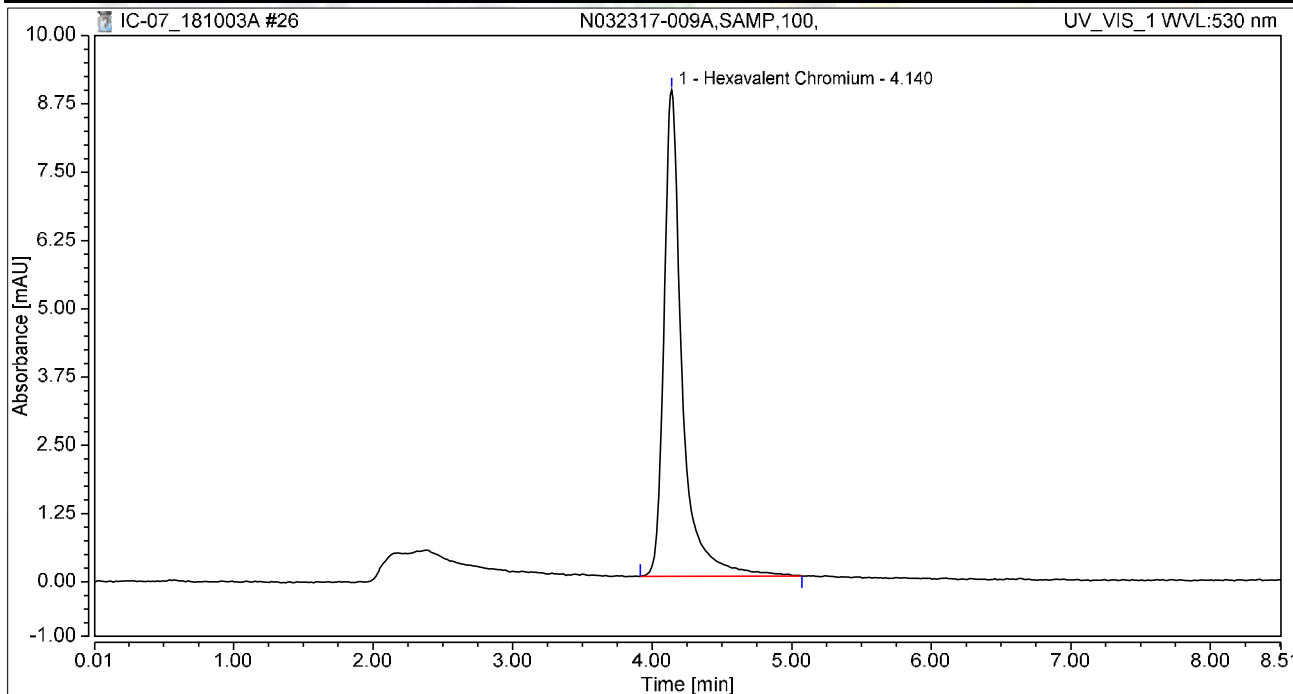
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-009A,SAMP,100,	Run Time (min):	8.50
Vial Number:	11	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 11:50	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

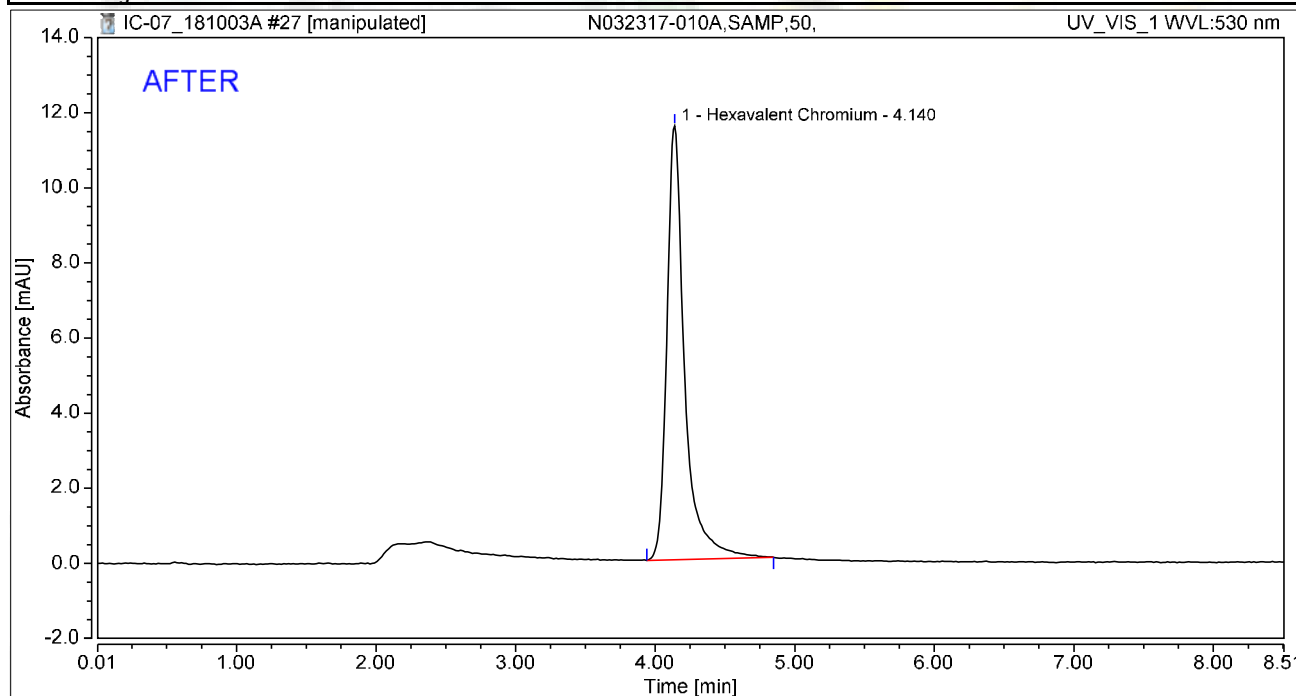
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.339	8.903	100.00	100.00	5.2984
<b>Total:</b>			<b>1.339</b>	<b>8.903</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-010A,SAMP,50,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 11:59	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.710	11.555	100.00	100.00	6.7660
<b>Total:</b>			<b>1.710</b>	<b>11.555</b>	<b>100.00</b>	<b>100.00</b>	

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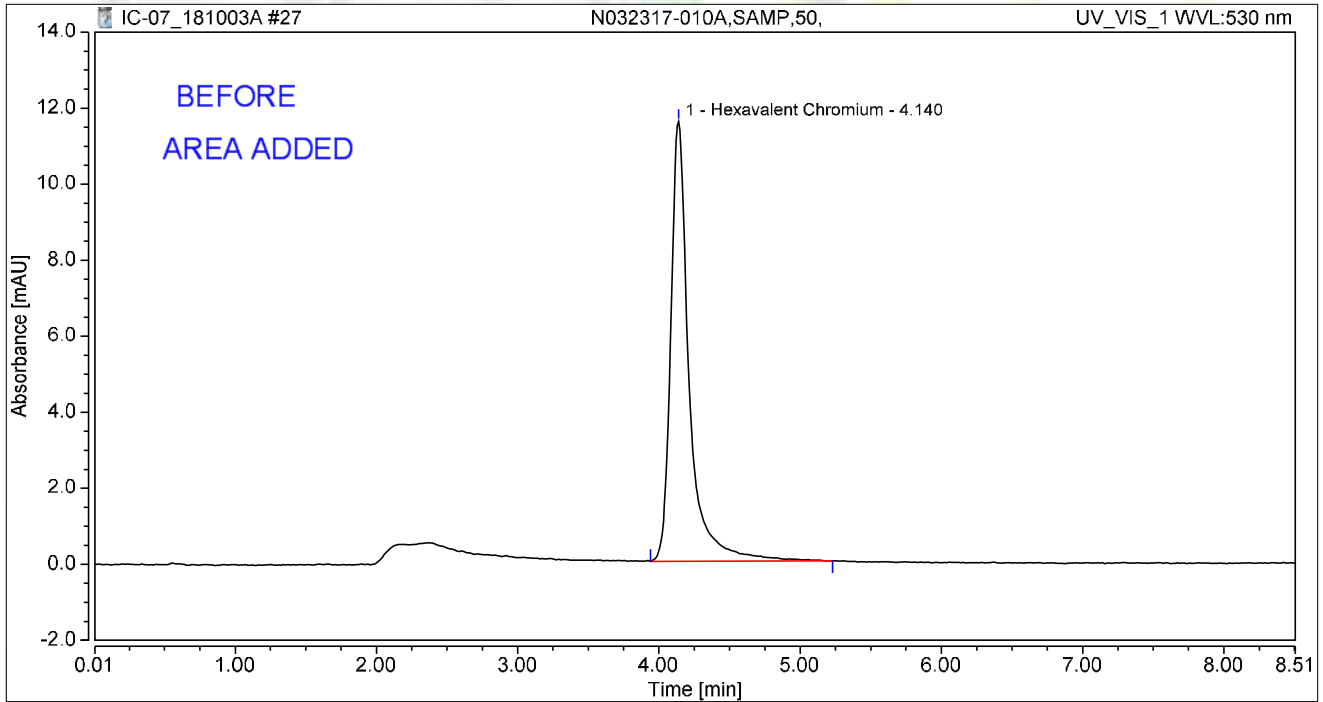
Reviewed by:  
*Money* 10/17/2018  
 My first report/Integration

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-010A,SAMP,50,	Run Time (min):	8.50
Vial Number:	12	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 11:59	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.755	11.570	100.00	100.00	6.9448
<b>Total:</b>			<b>1.755</b>	<b>11.570</b>	<b>100.00</b>	<b>100.00</b>	

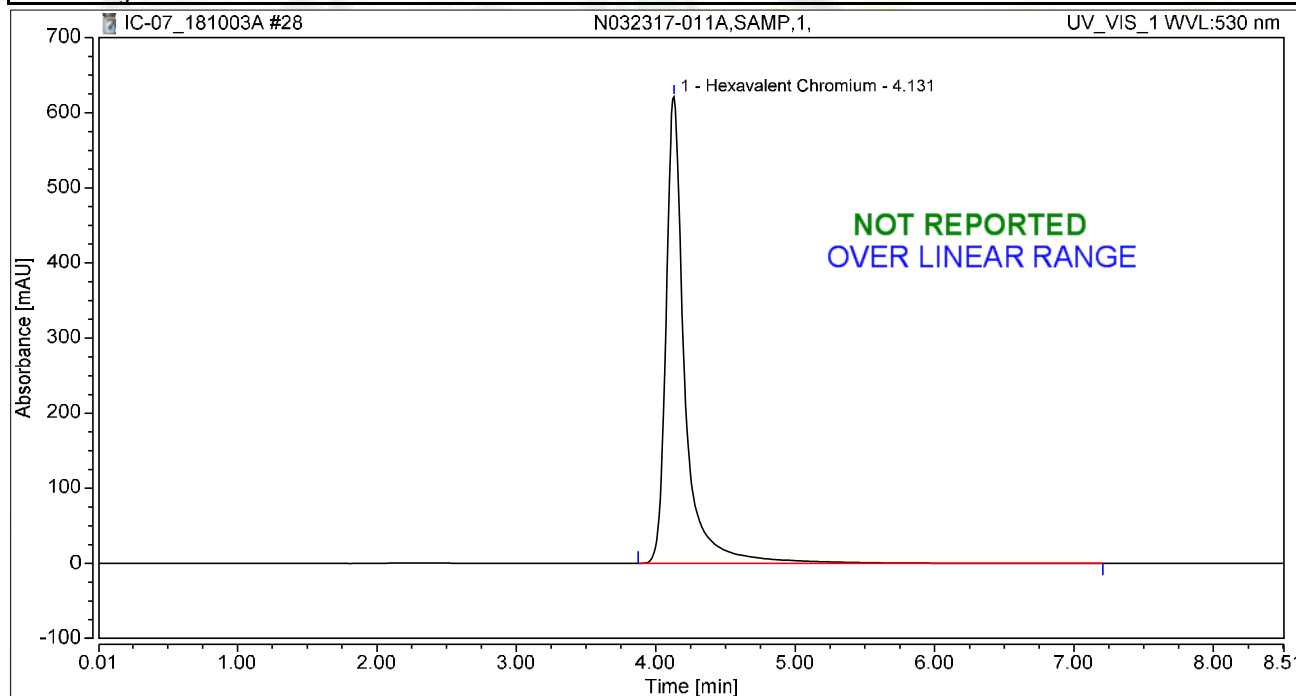
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### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-011A,SAMP,1,	Run Time (min):	8.50
Vial Number:	13	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 12:09	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

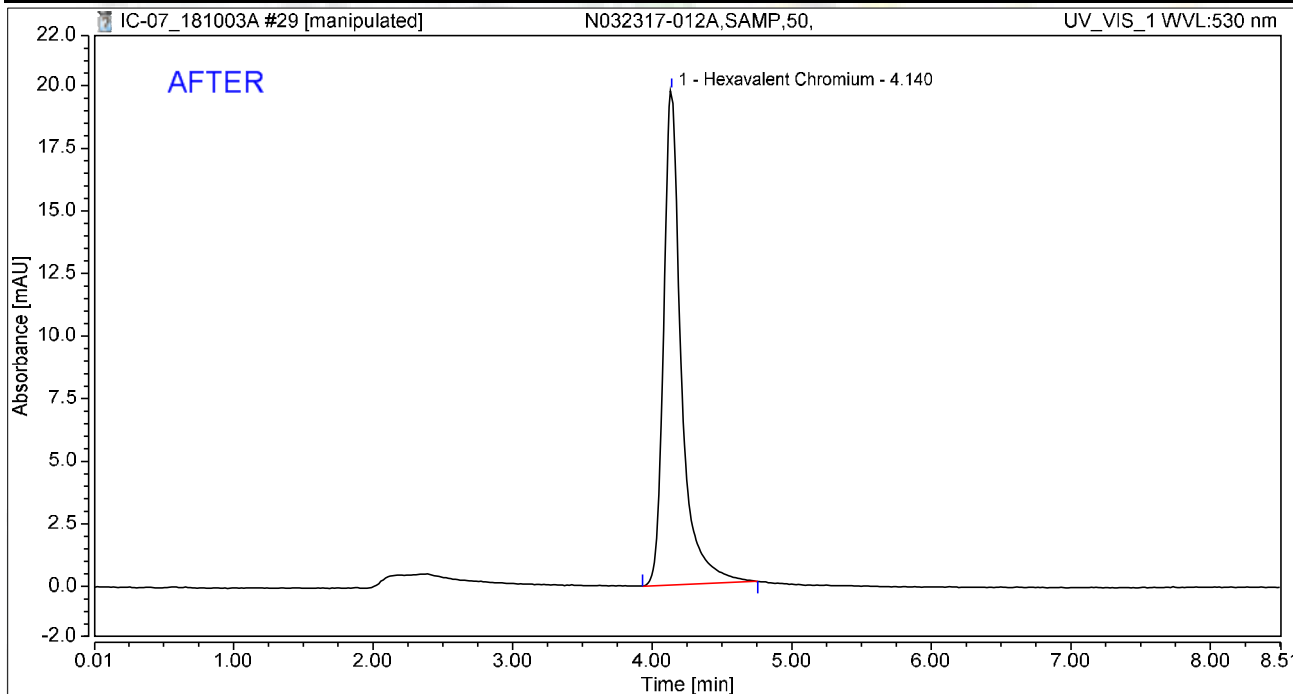
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	97.332	620.950	100.00	100.00	385.0790
<b>Total:</b>			<b>97.332</b>	<b>620.950</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-012A,SAMP,50,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 12:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	2.910	19.764	100.00	100.00	11.5125
<b>Total:</b>			<b>2.910</b>	<b>19.764</b>	<b>100.00</b>	<b>100.00</b>	

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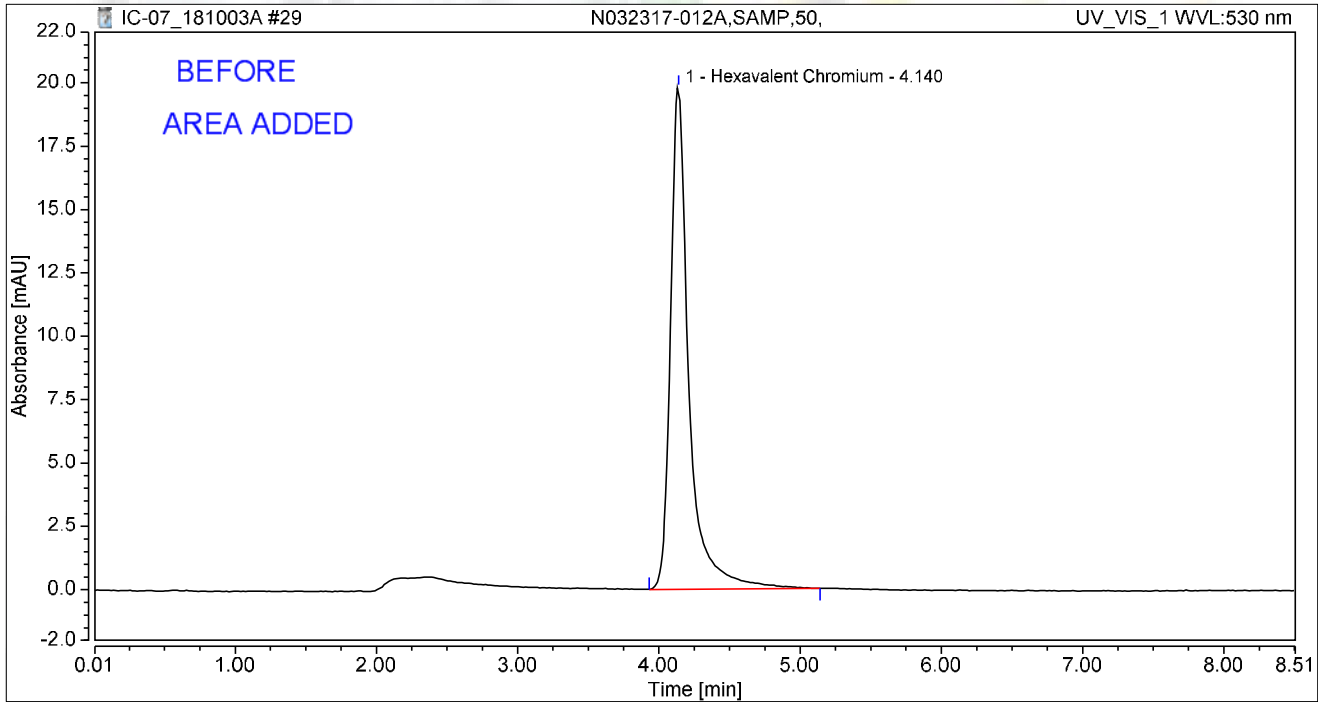
Reviewed by:  
*Morrey* 10/17/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-012A,SAMP,50,	Run Time (min):	8.50
Vial Number:	14	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 12:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	3.004	19.805	100.00	100.00	11.8864
<b>Total:</b>			<b>3.004</b>	<b>19.805</b>	<b>100.00</b>	<b>100.00</b>	

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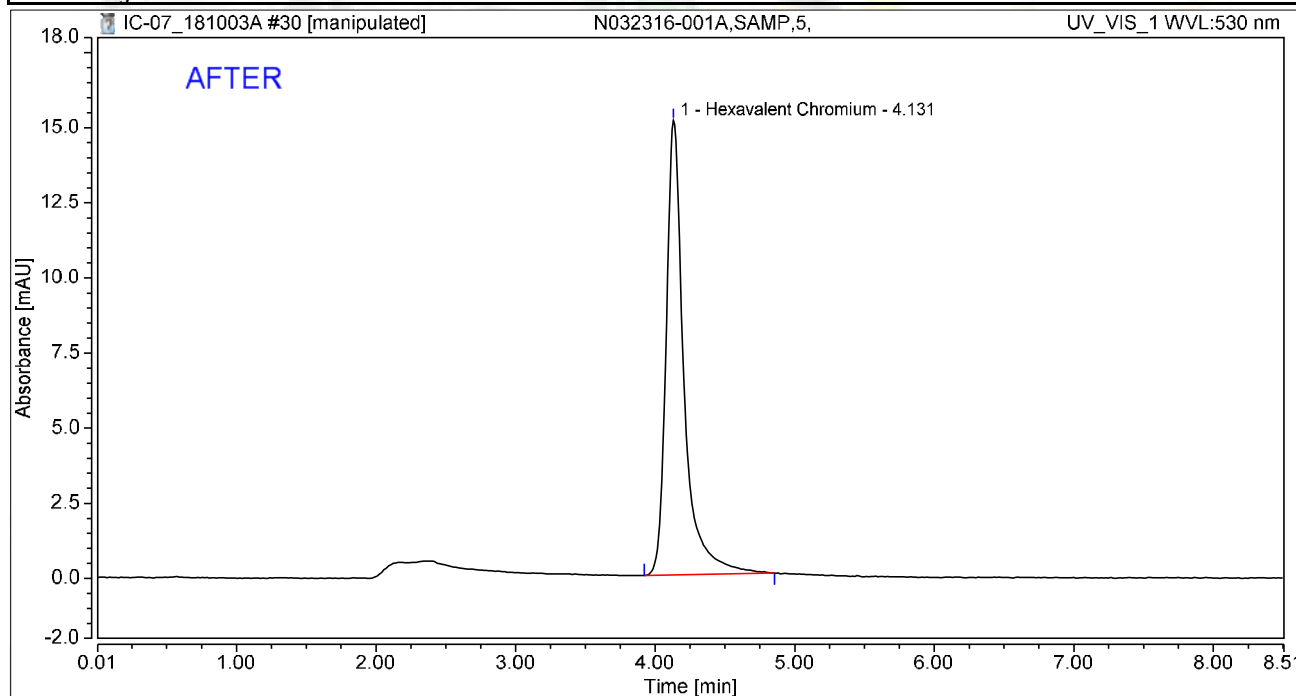


### Chromatogram and Results

**Injection Details**

Injection Name:	N032316-001A,SAMP,5,	Run Time (min):	8.50
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 12:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.243	15.131	100.00	100.00	8.8759
Total:			2.243	15.131	100.00	100.00	

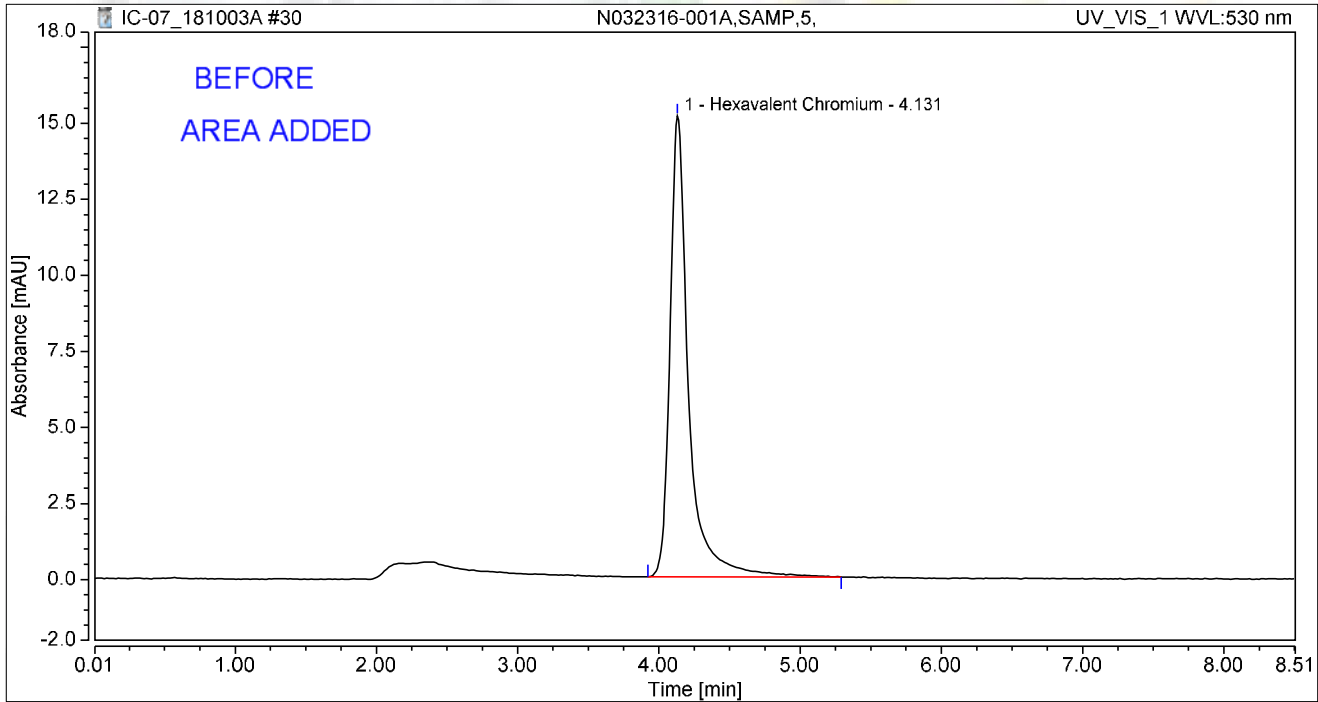
*rba* 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032316-001A,SAMP,5,	Run Time (min):	8.50
Vial Number:	15	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 12:28	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.310	15.153	100.00	100.00	9.1385
<b>Total:</b>			<b>2.310</b>	<b>15.153</b>	<b>100.00</b>	<b>100.00</b>	

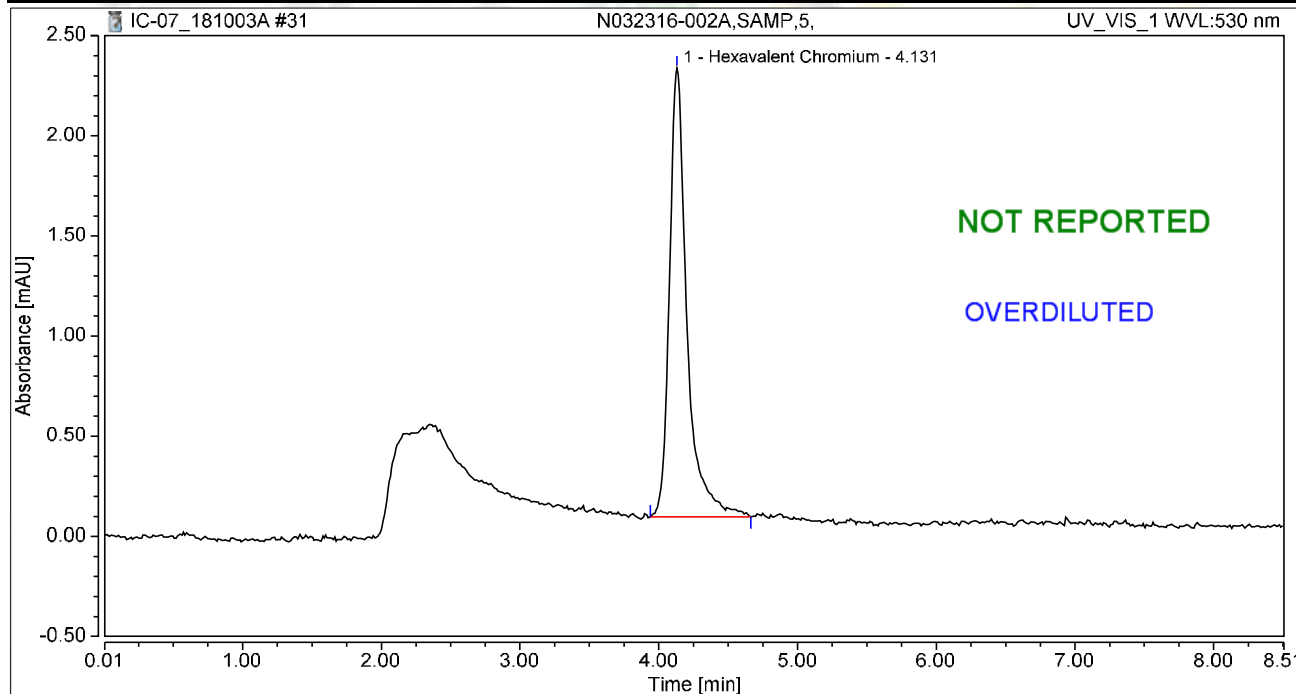
rba 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032316-002A,SAMP,5,	Run Time (min):	8.50
Vial Number:	16	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 12:37	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

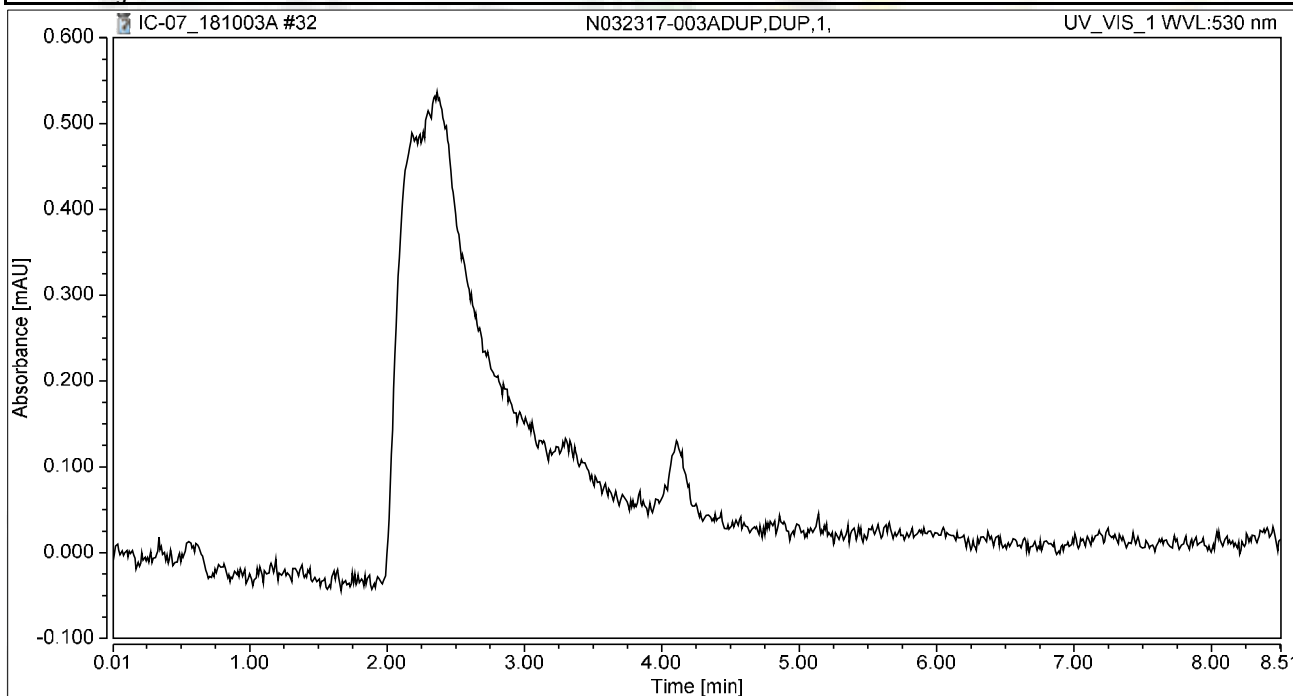
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.328	2.242	100.00	100.00	1.2995
<b>Total:</b>			<b>0.328</b>	<b>2.242</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-003ADUP,DUP,1,	Run Time (min):	8.50
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 12:46	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

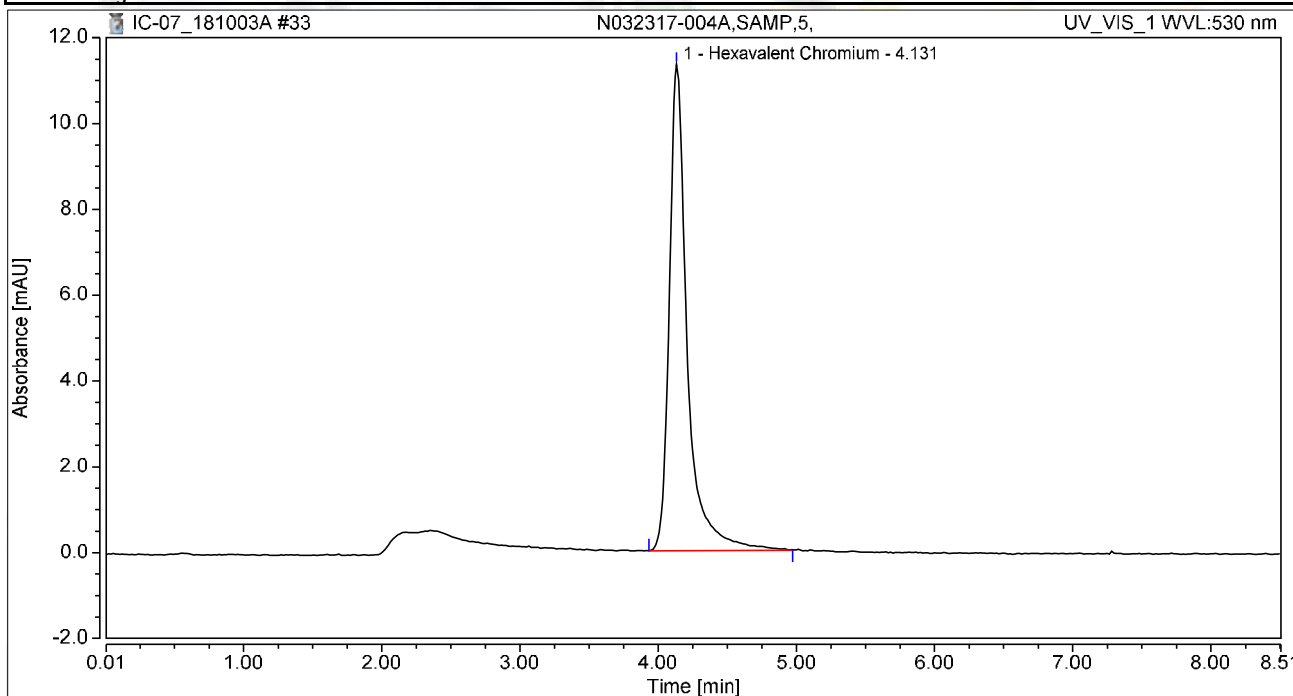
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-004A,SAMP,5,	Run Time (min):	8.50
Vial Number:	18	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 12:56	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

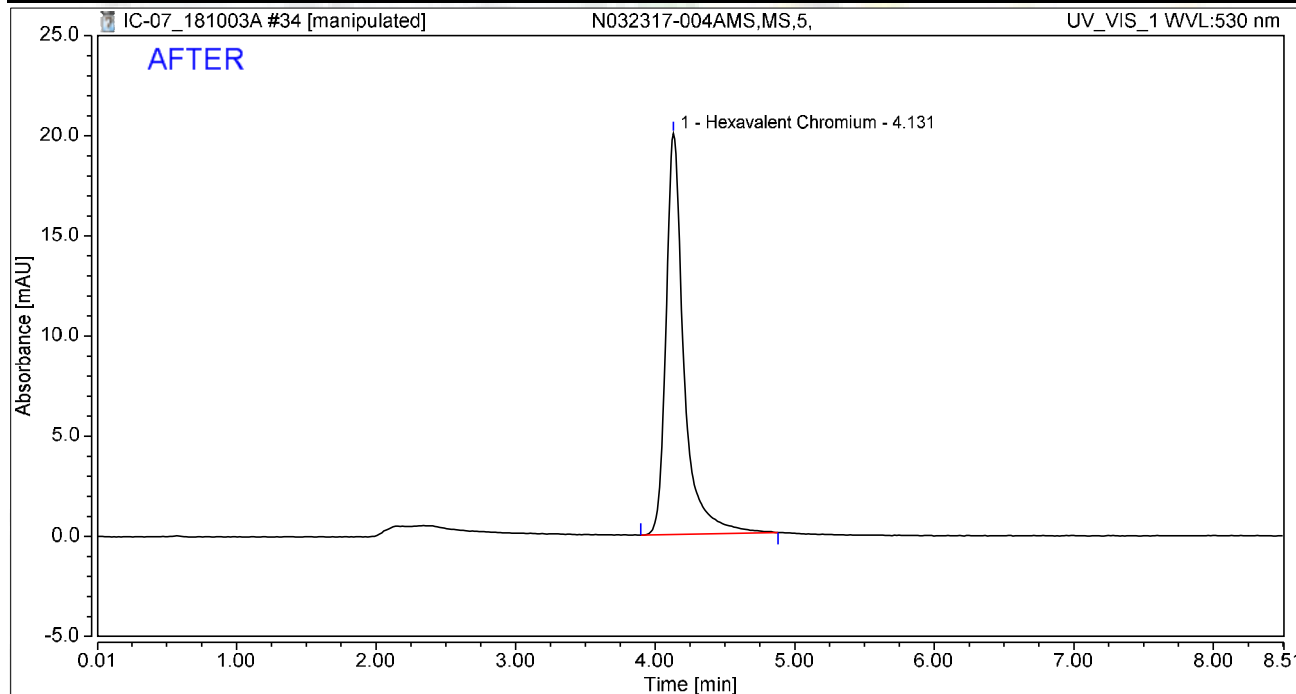
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.704	11.331	100.00	100.00	6.7412
<b>Total:</b>			<b>1.704</b>	<b>11.331</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-004AMS,MS,5,	Run Time (min):	8.50
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 13:05	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.989	20.021	100.00	100.00	11.8270
<b>Total:</b>			<b>2.989</b>	<b>20.021</b>	<b>100.00</b>	<b>100.00</b>	

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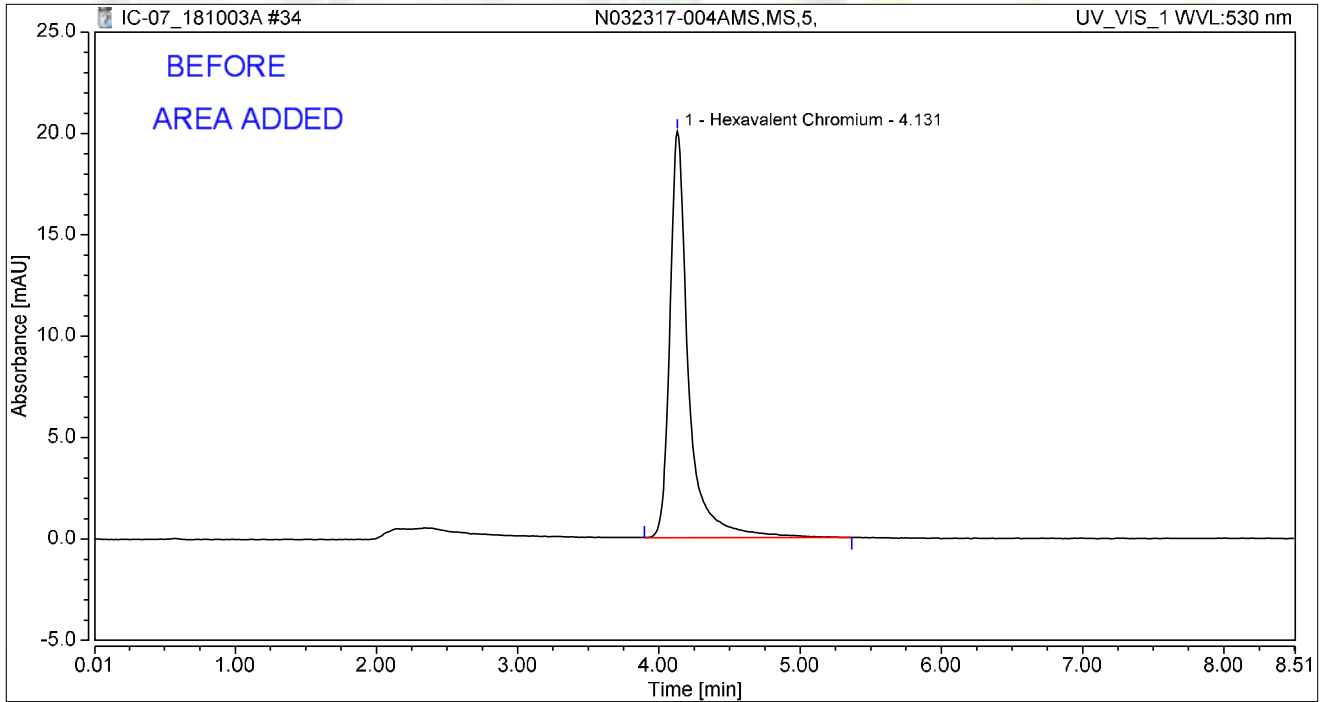
Reviewed by:  
*Sherry* 10/17/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-004AMS,MS,5,	Run Time (min):	8.50
Vial Number:	19	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 13:05	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	3.073	20.049	100.00	100.00	12.1560
<b>Total:</b>			<b>3.073</b>	<b>20.049</b>	<b>100.00</b>	<b>100.00</b>	

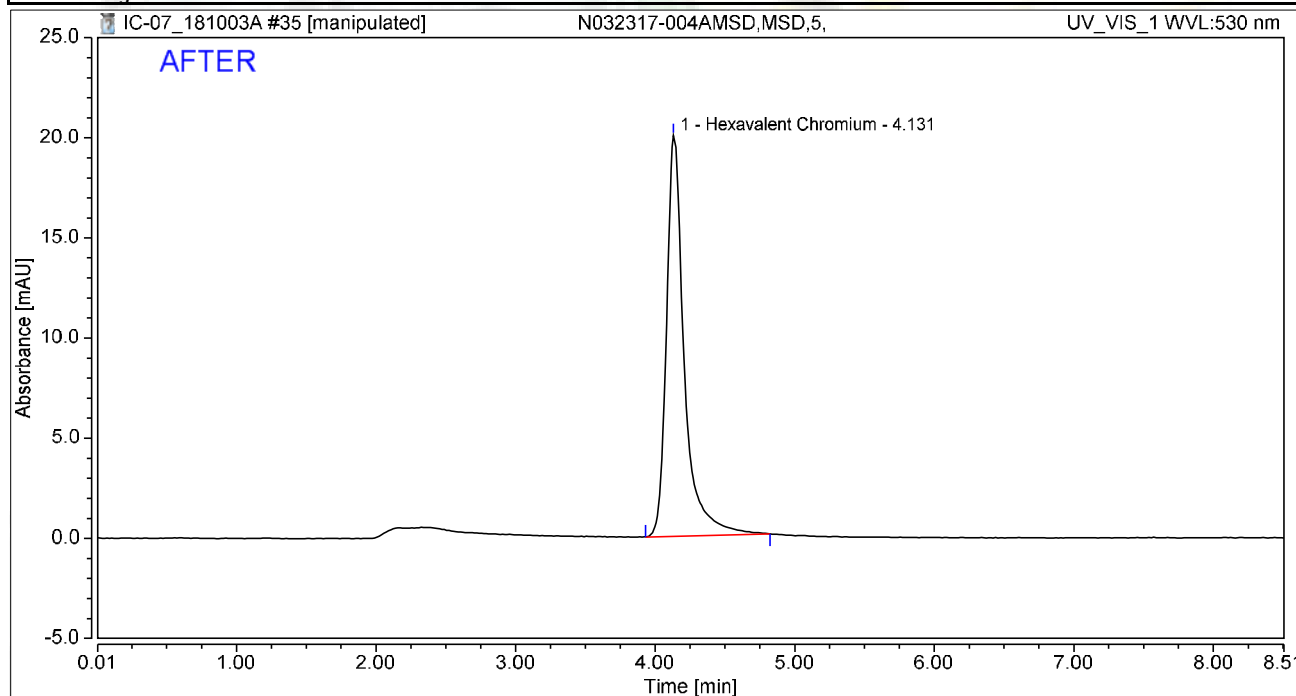
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### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-004AMSD,MSD,5,	Run Time (min):	8.50
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 13:15	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	2.967	20.002	100.00	100.00	11.7377
<b>Total:</b>			<b>2.967</b>	<b>20.002</b>	<b>100.00</b>	<b>100.00</b>	

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Reviewed by:  
*Henry* 10/17/2018

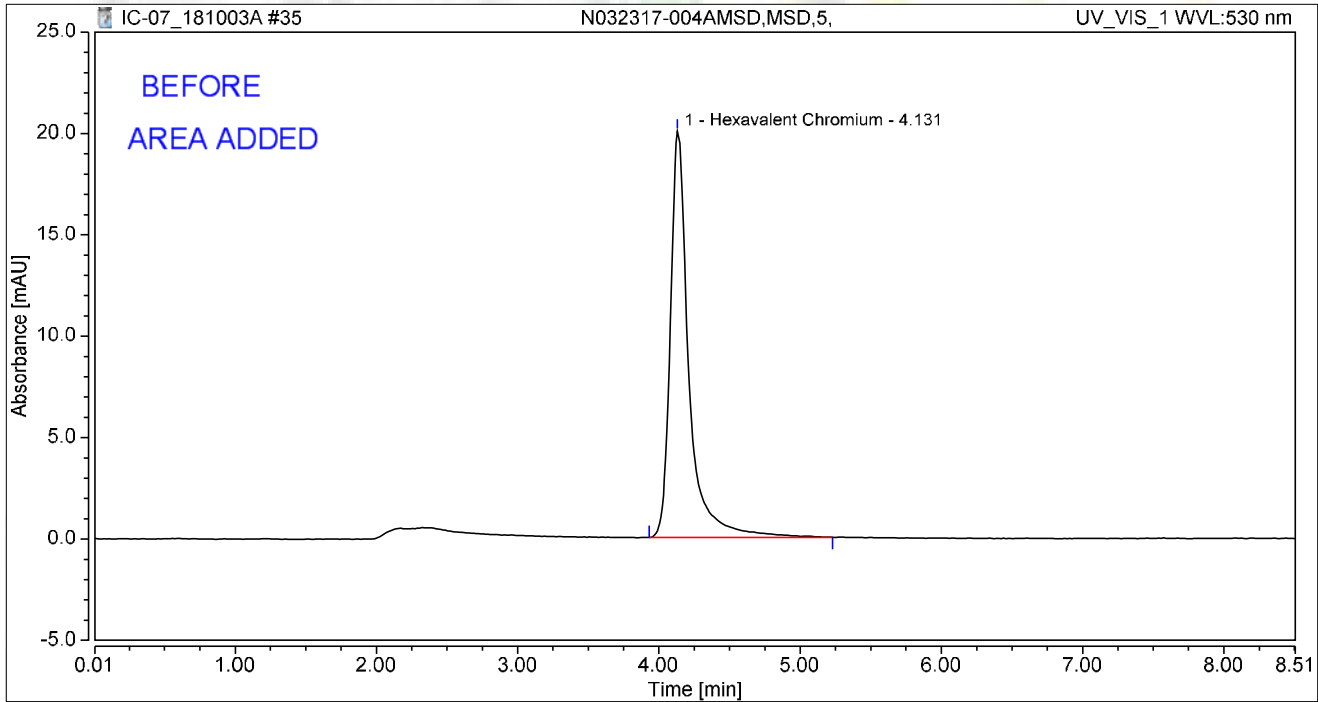


### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-004AMSD,MSD,5,	Run Time (min):	8.50
Vial Number:	20	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 13:15	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	3.049	20.031	100.00	100.00	12.0610
<b>Total:</b>			<b>3.049</b>	<b>20.031</b>	<b>100.00</b>	<b>100.00</b>	

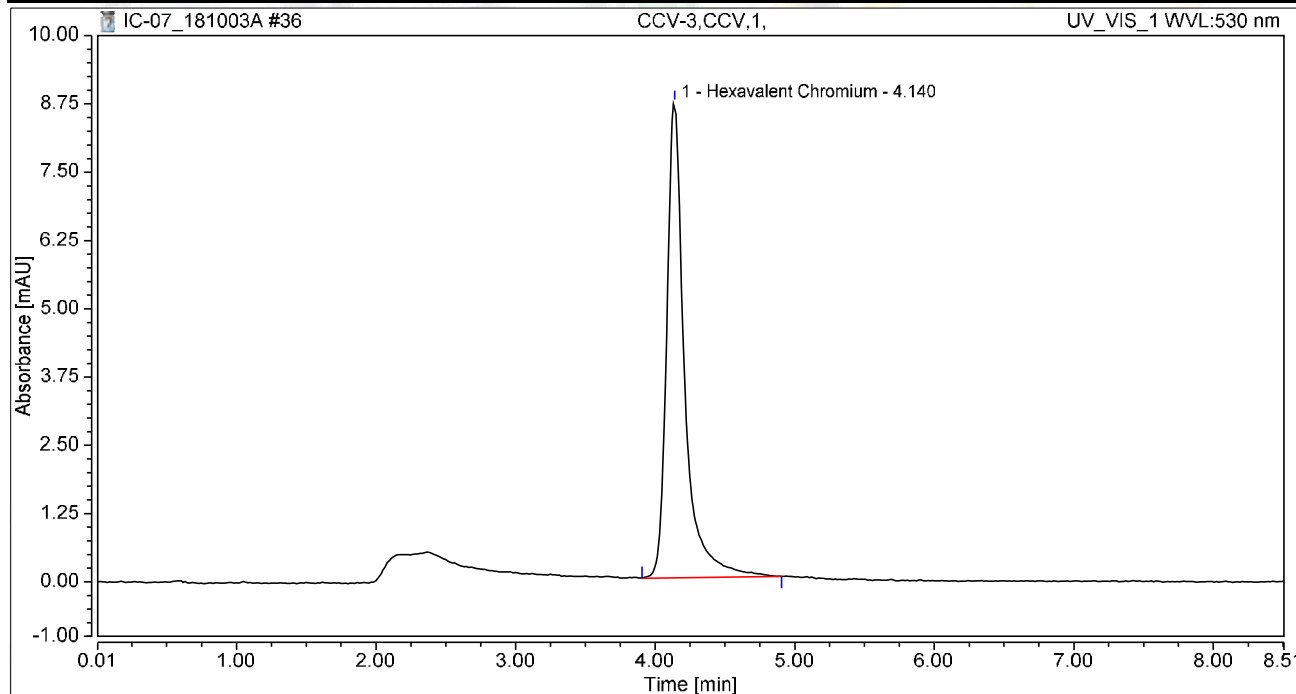
rba 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-3,CCV,1,	Run Time (min):	8.50
Vial Number:	21	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 13:24	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

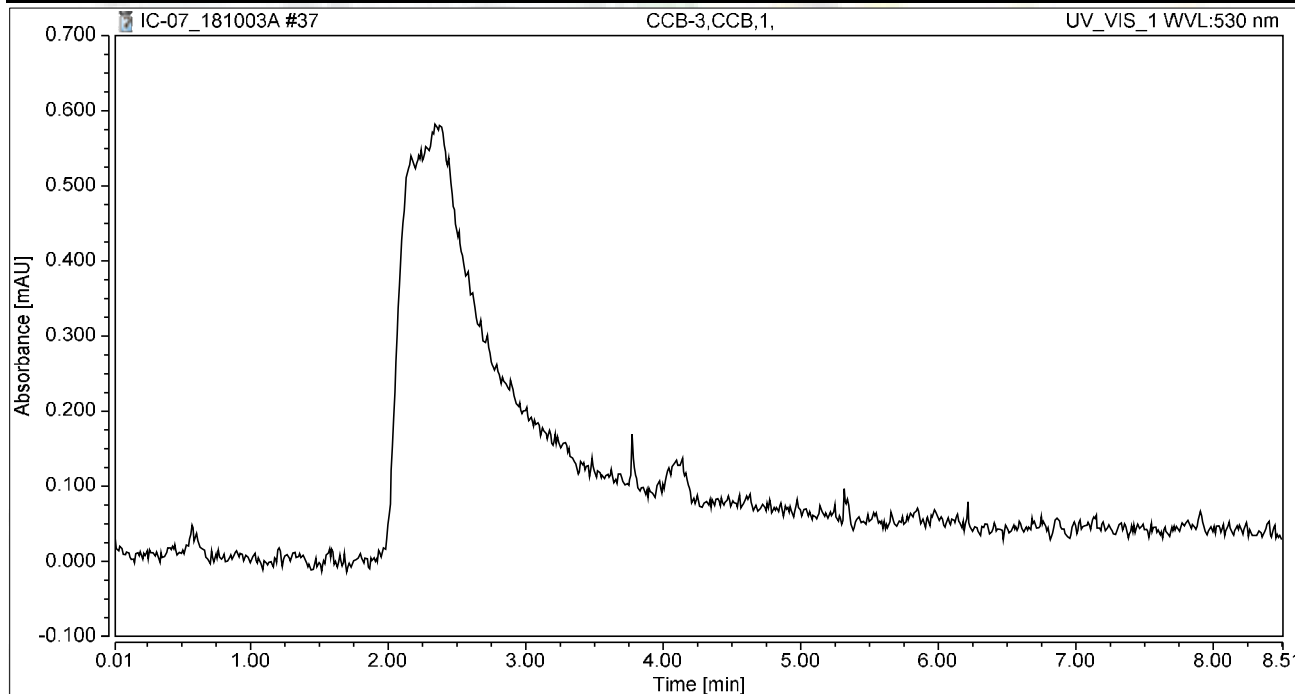
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.295	8.698	100.00	100.00	5.1233
<b>Total:</b>			<b>1.295</b>	<b>8.698</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	CCB-3,CCB,1,	Run Time (min):	8.49
Vial Number:	22	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 13:34	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

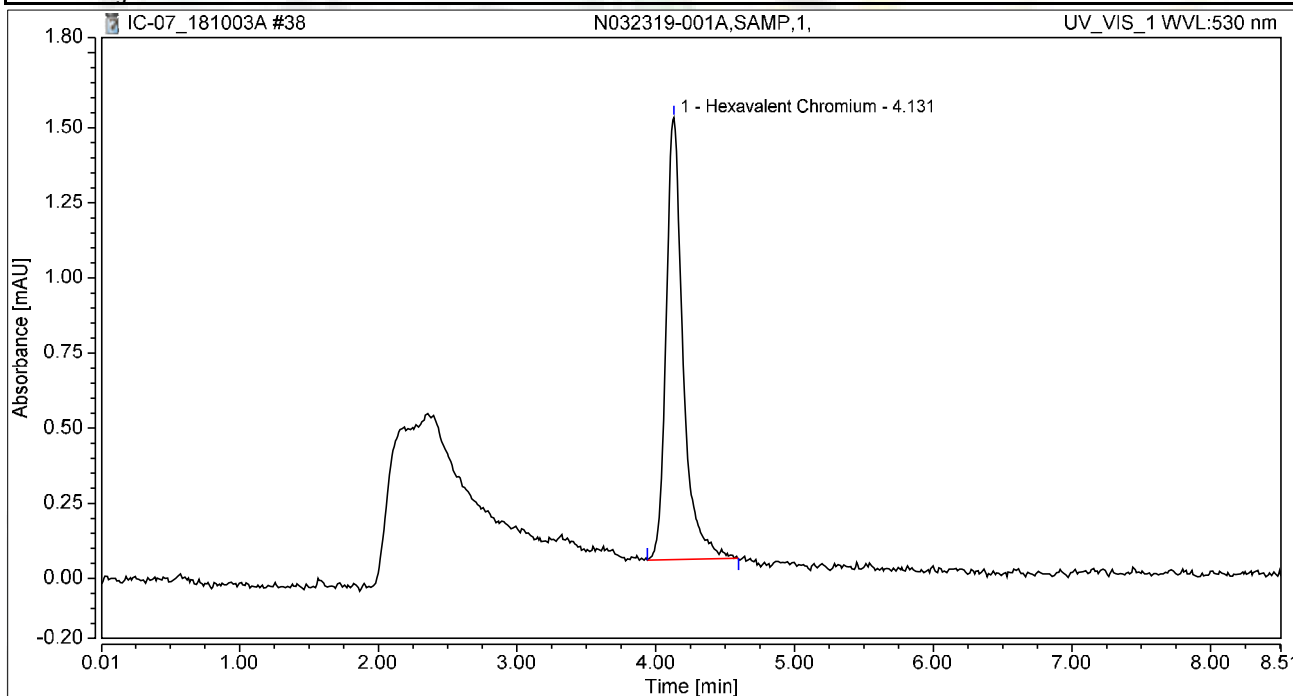
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032319-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	23	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 13:43	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

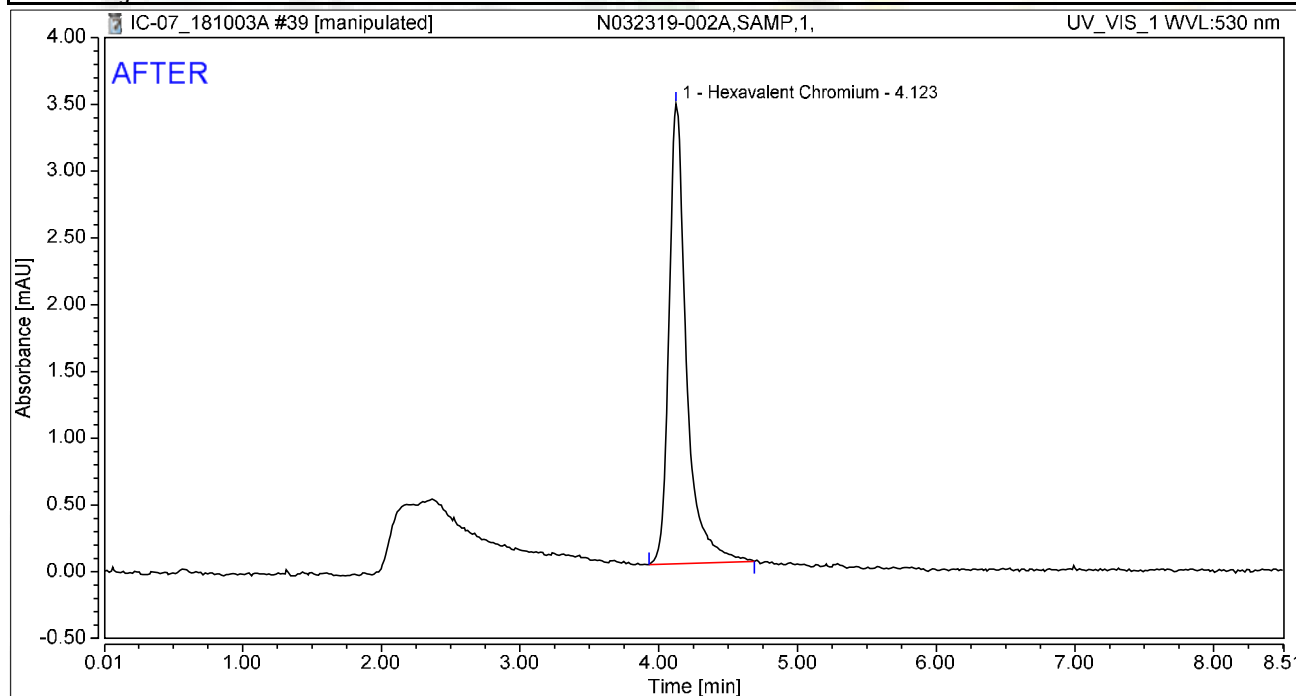
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	0.209	1.472	100.00	100.00	0.8262
<b>Total:</b>			<b>0.209</b>	<b>1.472</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

#### Injection Details

Injection Name:	N032319-002A,SAMP,1,	Run Time (min):	8.50
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 13:53	Sample Weight:	1.0000

#### Chromatogram



#### Integration Results

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.504	3.445	100.00	100.00	1.9931
<b>Total:</b>			<b>0.504</b>	<b>3.445</b>	<b>100.00</b>	<b>100.00</b>	

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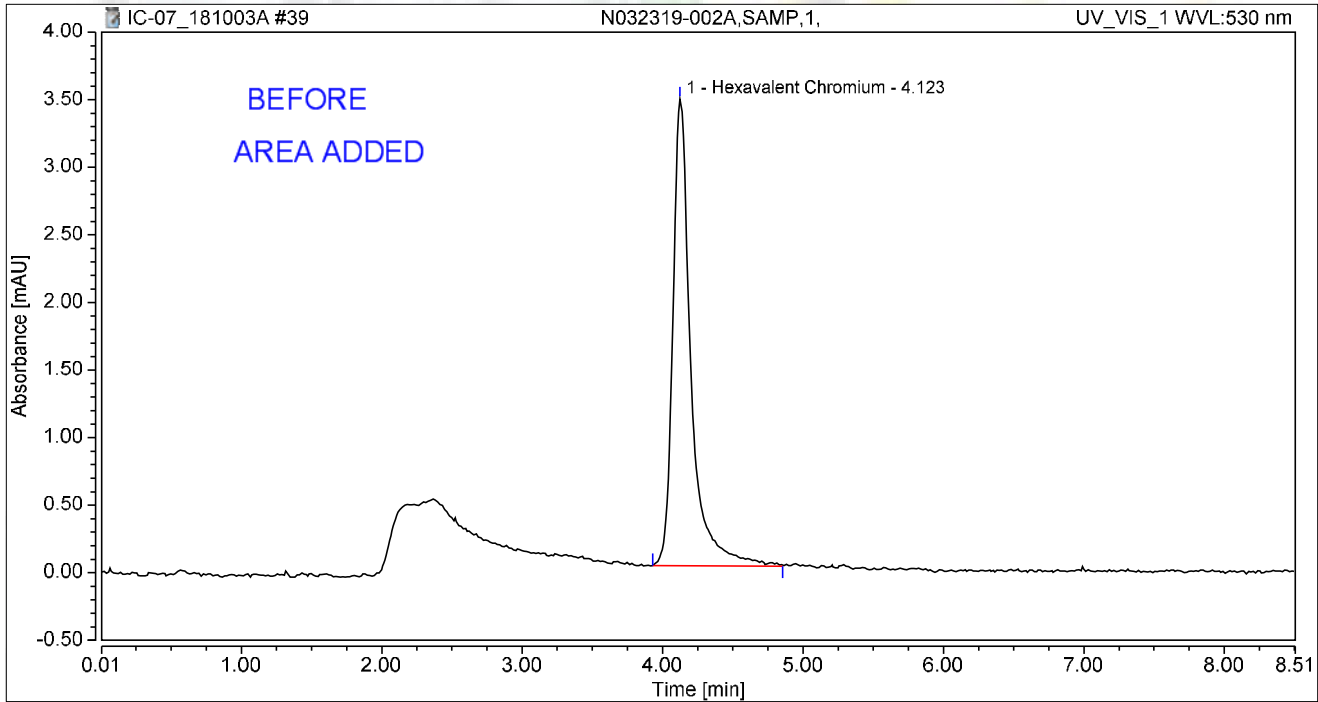
My first report/Integration  
Reviewed by:  
*Nancy* 10/17/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032319-002A,SAMP,1,	Run Time (min):	8.50
Vial Number:	24	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 13:53	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.123	0.518	3.452	100.00	100.00	2.0478
<b>Total:</b>			<b>0.518</b>	<b>3.452</b>	<b>100.00</b>	<b>100.00</b>	

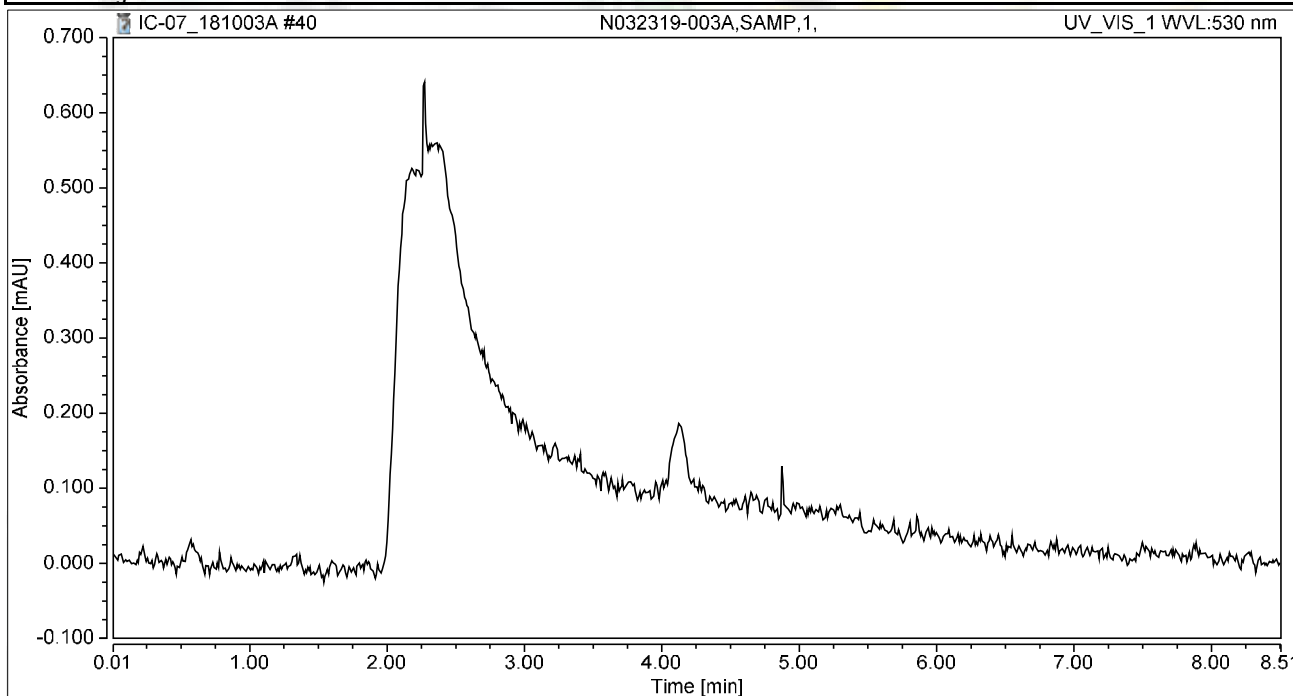
rba 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032319-003A,SAMP,1,	Run Time (min):	8.50
Vial Number:	25	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 14:02	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

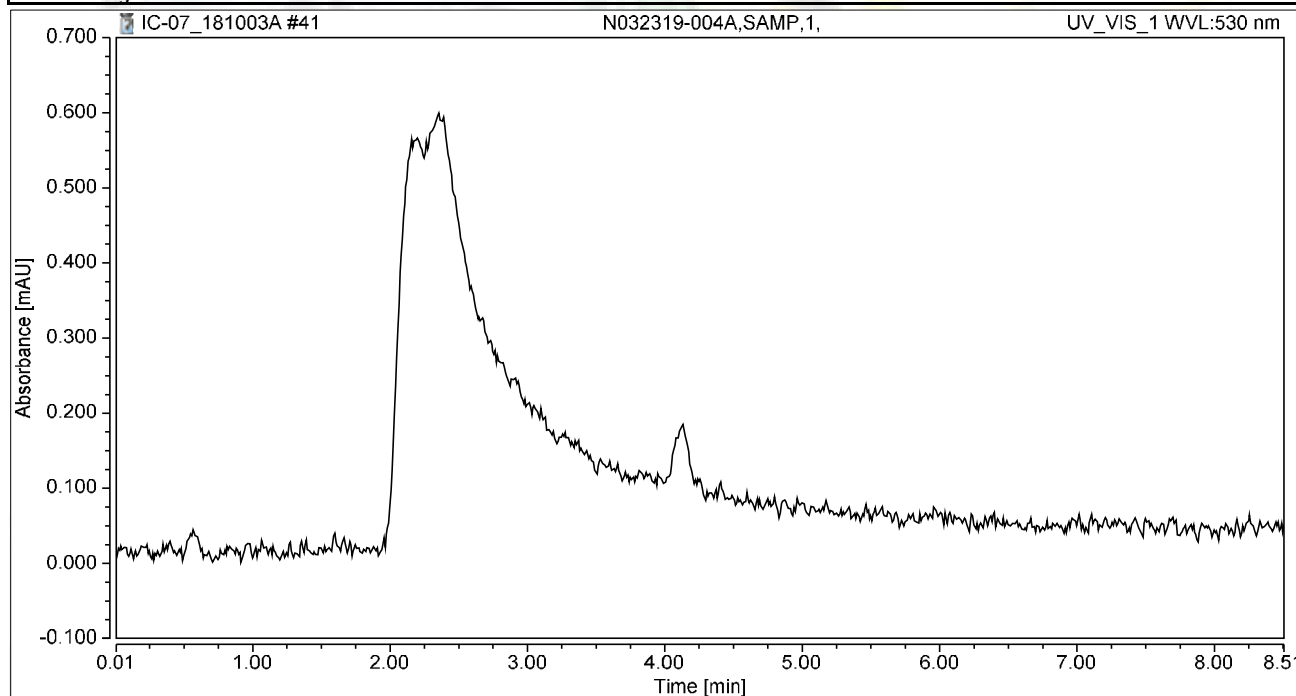
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032319-004A,SAMP,1,	Run Time (min):	8.50
Vial Number:	26	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 14:12	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
n.a.	Hexavalent Chromium	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<b>Total:</b>			<b>0.000</b>	<b>0.000</b>	<b>0.00</b>	<b>0.00</b>	

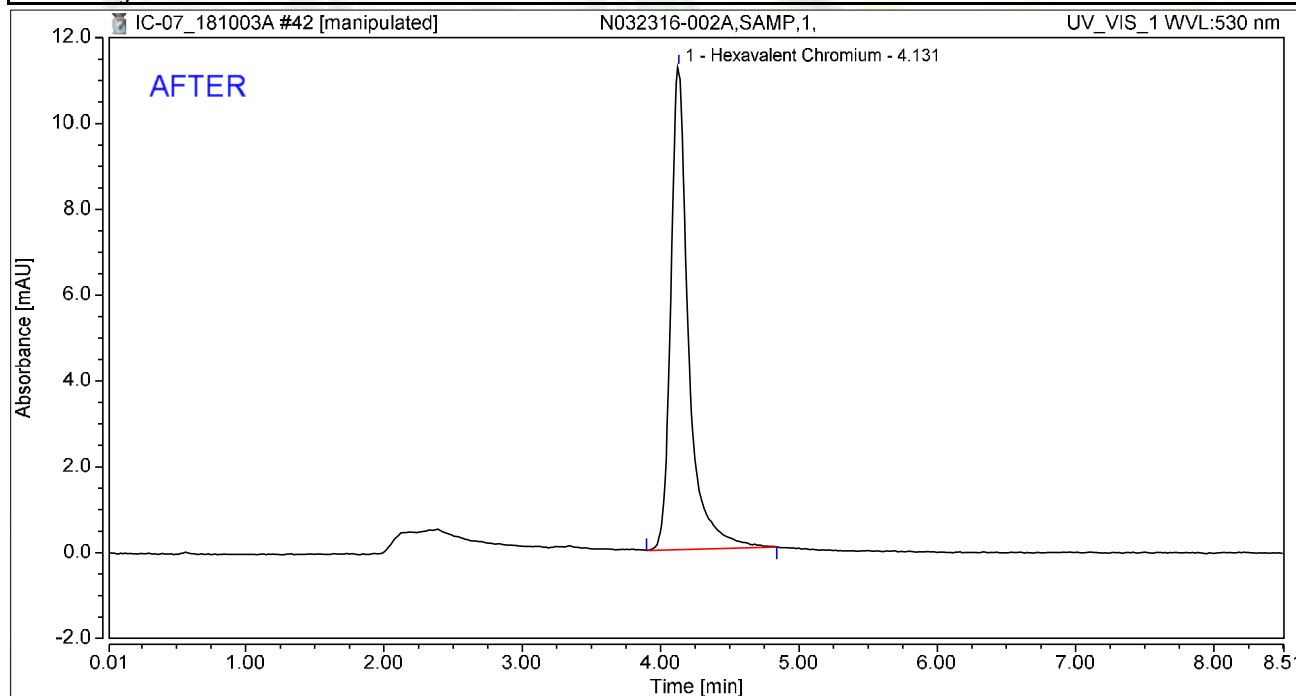


### Chromatogram and Results

**Injection Details**

Injection Name:	N032316-002A,SAMP,1,	Run Time (min):	8.49
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 14:21	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.681	11.255	100.00	100.00	6.6519
<b>Total:</b>			<b>1.681</b>	<b>11.255</b>	<b>100.00</b>	<b>100.00</b>	

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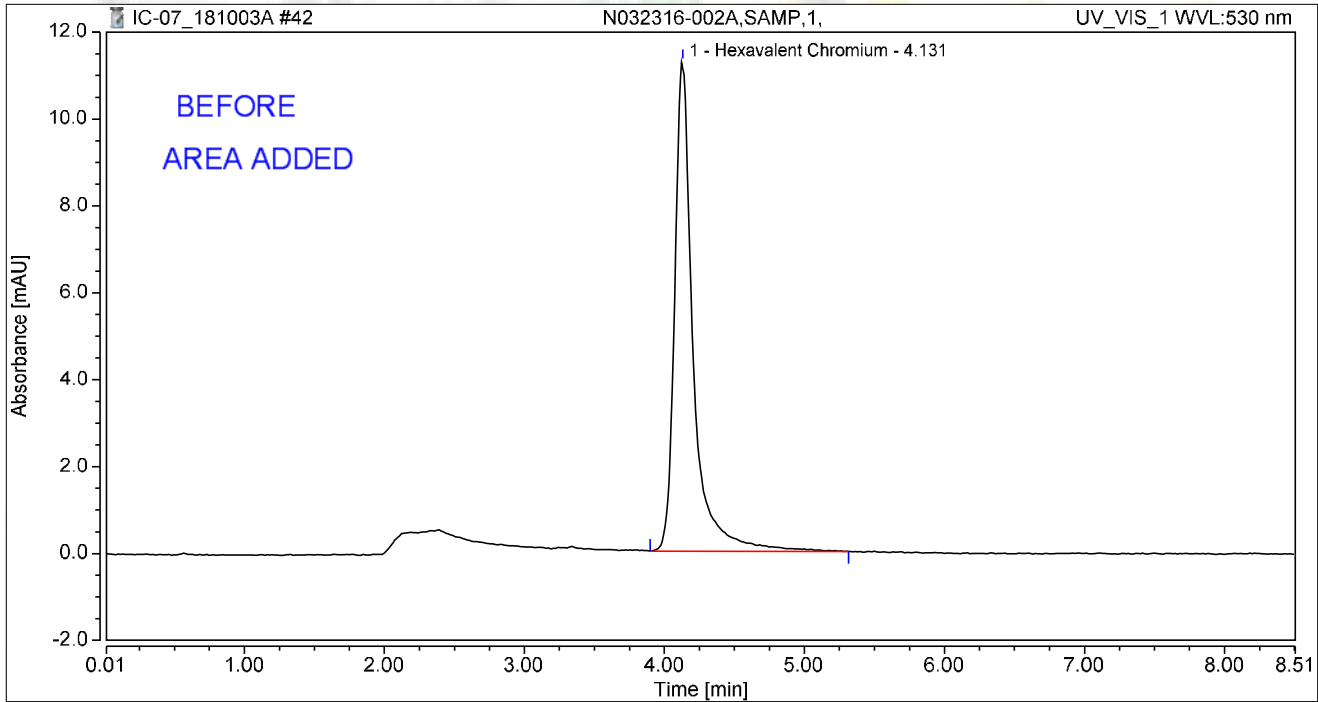
Reviewed by:  
*Money* 10/17/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032316-002A,SAMP,1,	Run Time (min):	8.49
Vial Number:	27	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 14:21	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.131	1.740	11.277	100.00	100.00	6.8850
<b>Total:</b>			<b>1.740</b>	<b>11.277</b>	<b>100.00</b>	<b>100.00</b>	

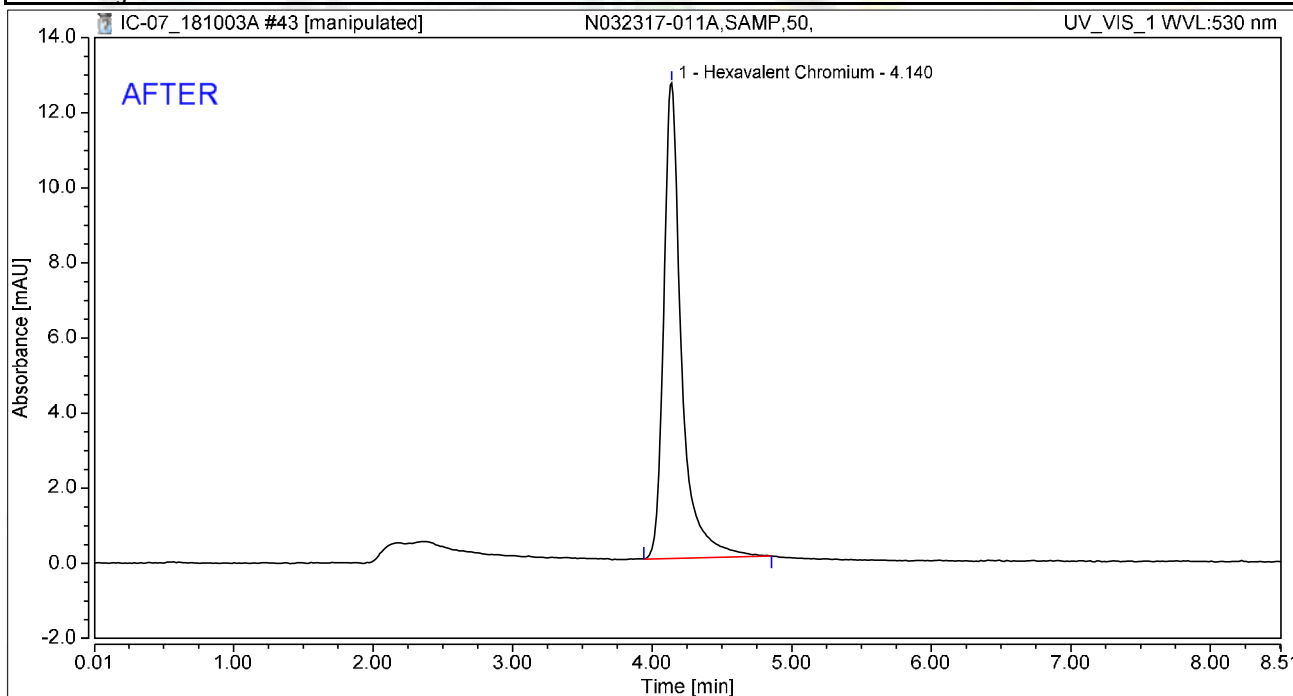
nba 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-011A,SAMP,50,	Run Time (min):	8.50
Vial Number:	28	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 14:31	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.870	12.654	100.00	100.00	7.4001
<b>Total:</b>			<b>1.870</b>	<b>12.654</b>	<b>100.00</b>	<b>100.00</b>	

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Reviewed by:

*Nancy* 10/17/2018

My first report/Integration

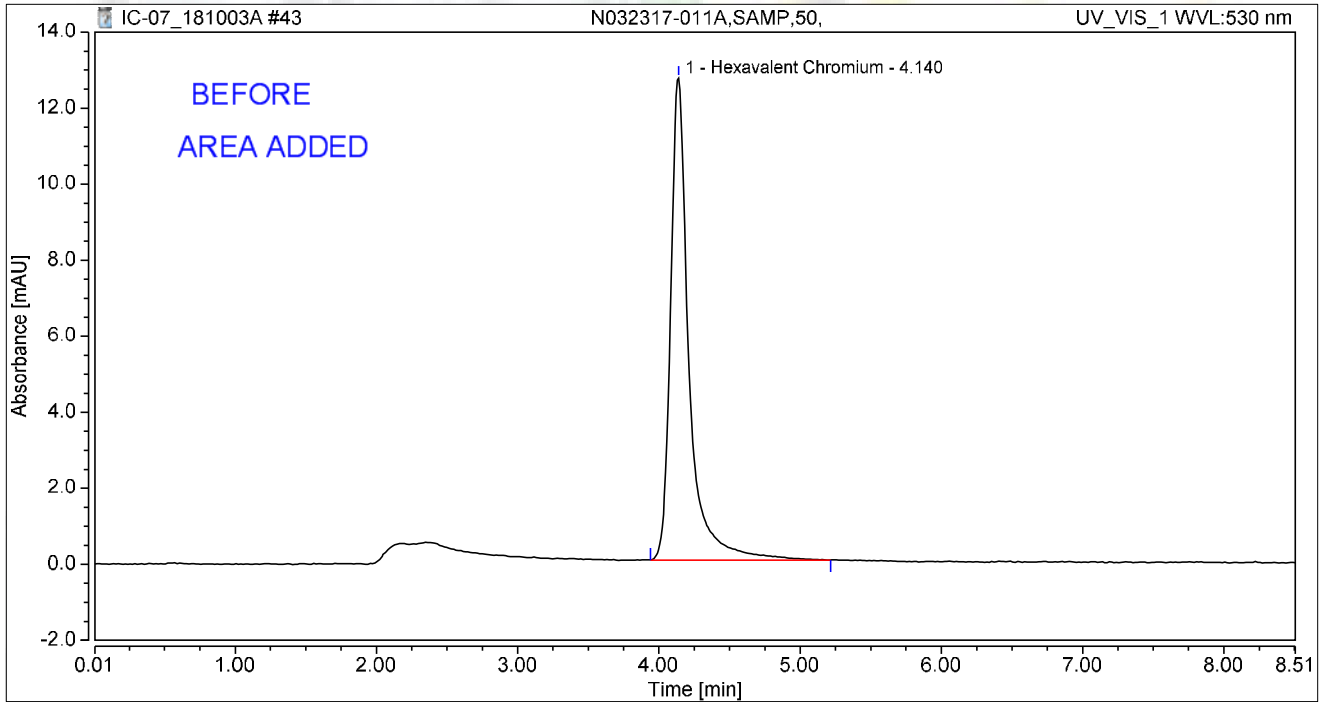
Chromeleon (c) Dionex  
Version 7.1.1.1127

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-011A,SAMP,50,	Run Time (min):	8.50
Vial Number:	28	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 14:31	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.919	12.672	100.00	100.00	7.5939
<b>Total:</b>			<b>1.919</b>	<b>12.672</b>	<b>100.00</b>	<b>100.00</b>	

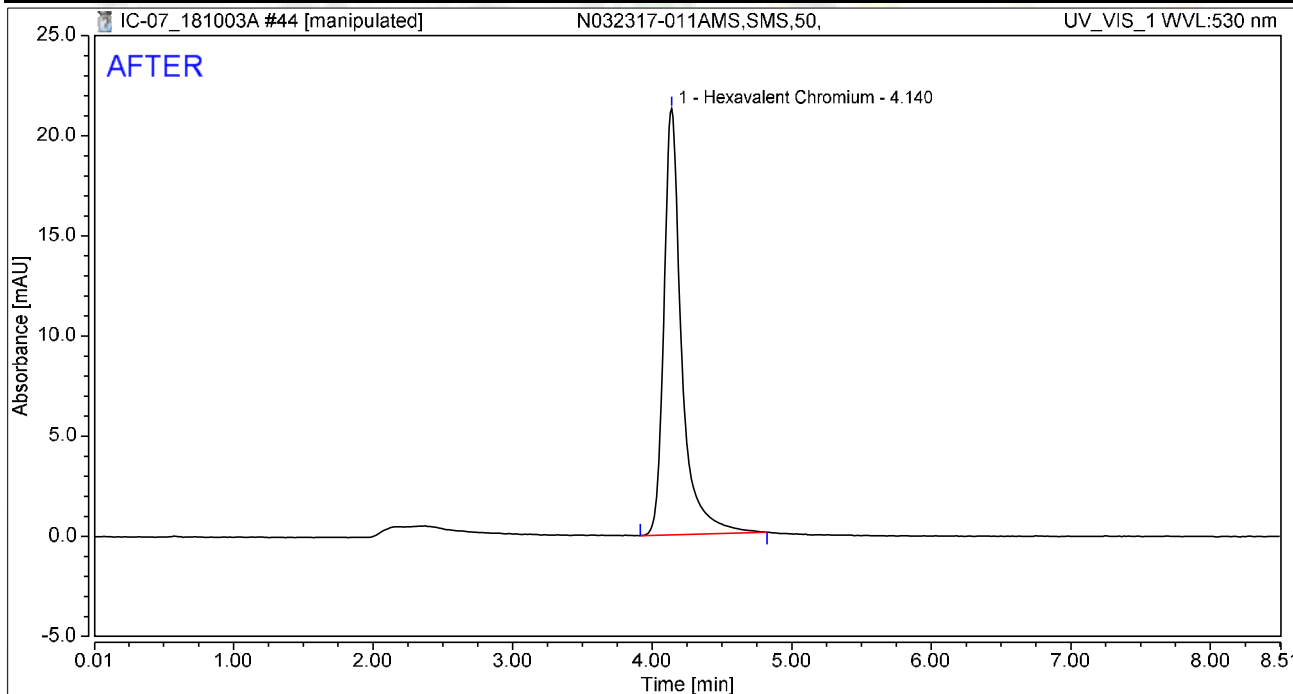
nba 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-011AMS,SMS,50,	Run Time (min):	8.50
Vial Number:	29	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 14:40	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	3.146	21.292	100.00	100.00	12.4464
<b>Total:</b>			<b>3.146</b>	<b>21.292</b>	<b>100.00</b>	<b>100.00</b>	

*nba* 10/13/2018

Reviewed by:

*Henry* 10/17/2018

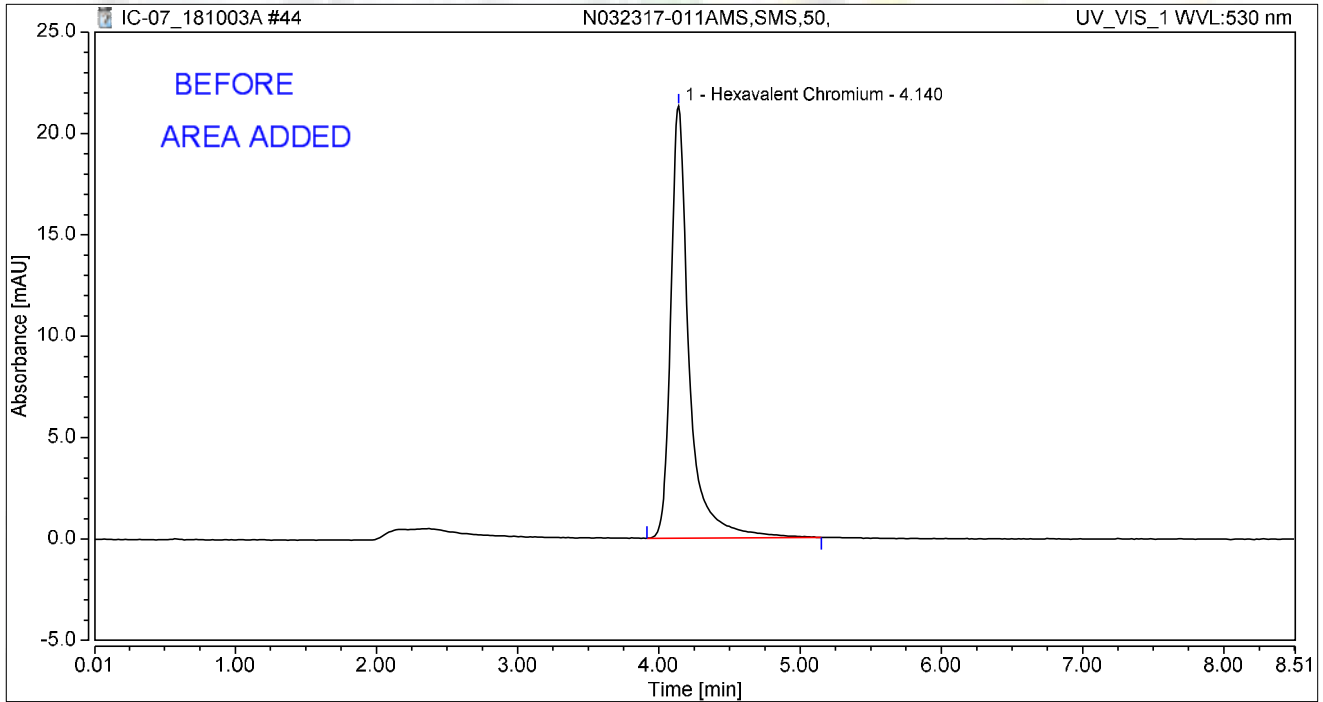
IC-07 RBA 10/8/2018 6:53:35 PM

### Chromatogram and Results

**Injection Details**

Injection Name:	N032317-011AMS,SMS,50,	Run Time (min):	8.50
Vial Number:	29	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 14:40	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	3.233	21.327	100.00	100.00	12.7920
<b>Total:</b>			<b>3.233</b>	<b>21.327</b>	<b>100.00</b>	<b>100.00</b>	

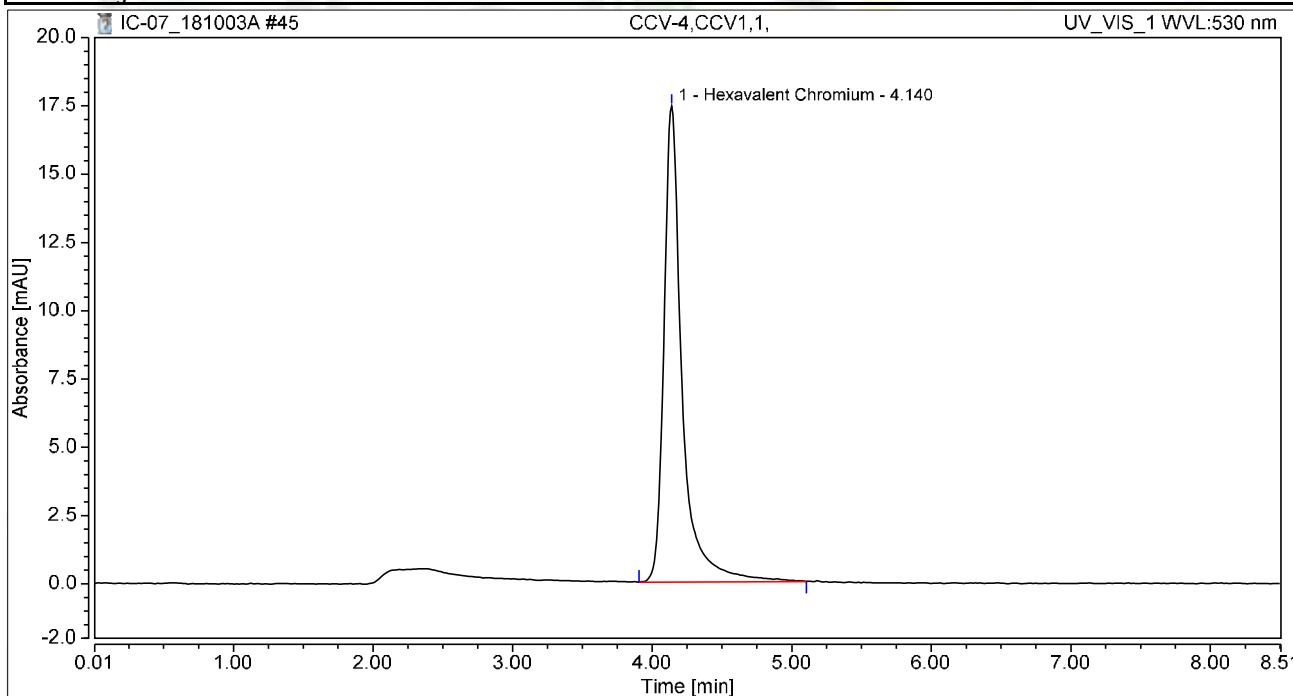
nba 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-4,CCV1,1,	Run Time (min):	8.50
Vial Number:	30	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 14:49	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	2.631	17.420	100.00	100.00	10.4108
<b>Total:</b>			<b>2.631</b>	<b>17.420</b>	<b>100.00</b>	<b>100.00</b>	



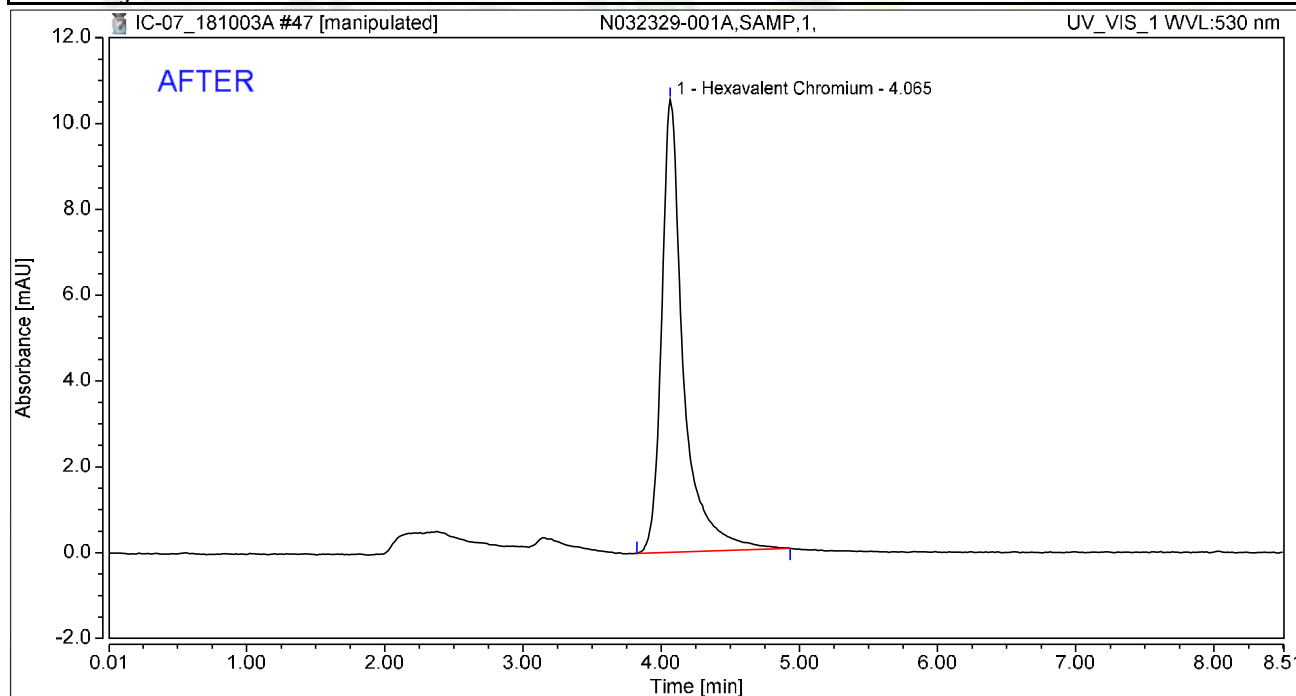


### Chromatogram and Results

**Injection Details**

Injection Name:	N032329-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	32	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 15:08	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.065	1.926	10.552	100.00	100.00	7.6202
<b>Total:</b>			<b>1.926</b>	<b>10.552</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/13/2018

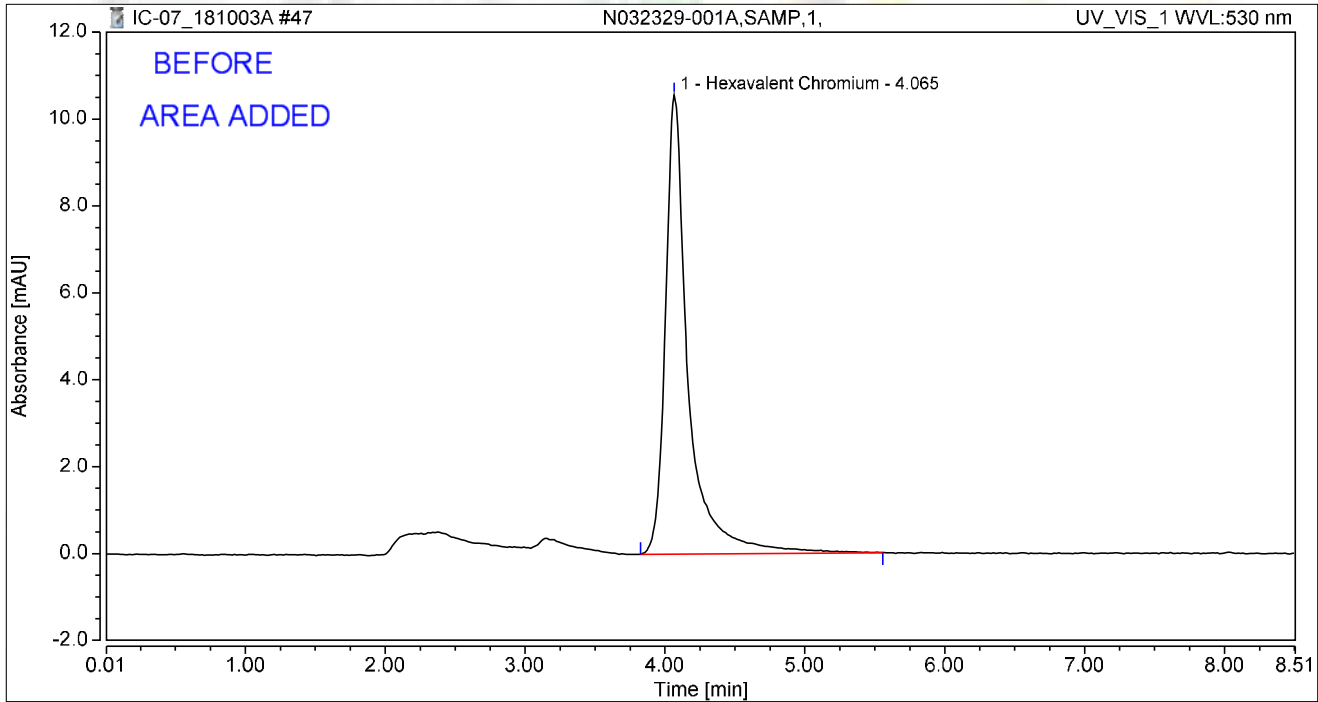
My first report  
 Reviewed by:  
*Nancy* 10/17/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032329-001A,SAMP,1,	Run Time (min):	8.50
Vial Number:	32	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 15:08	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.065	2.002	10.573	100.00	100.00	7.9206
<b>Total:</b>			<b>2.002</b>	<b>10.573</b>	<b>100.00</b>	<b>100.00</b>	

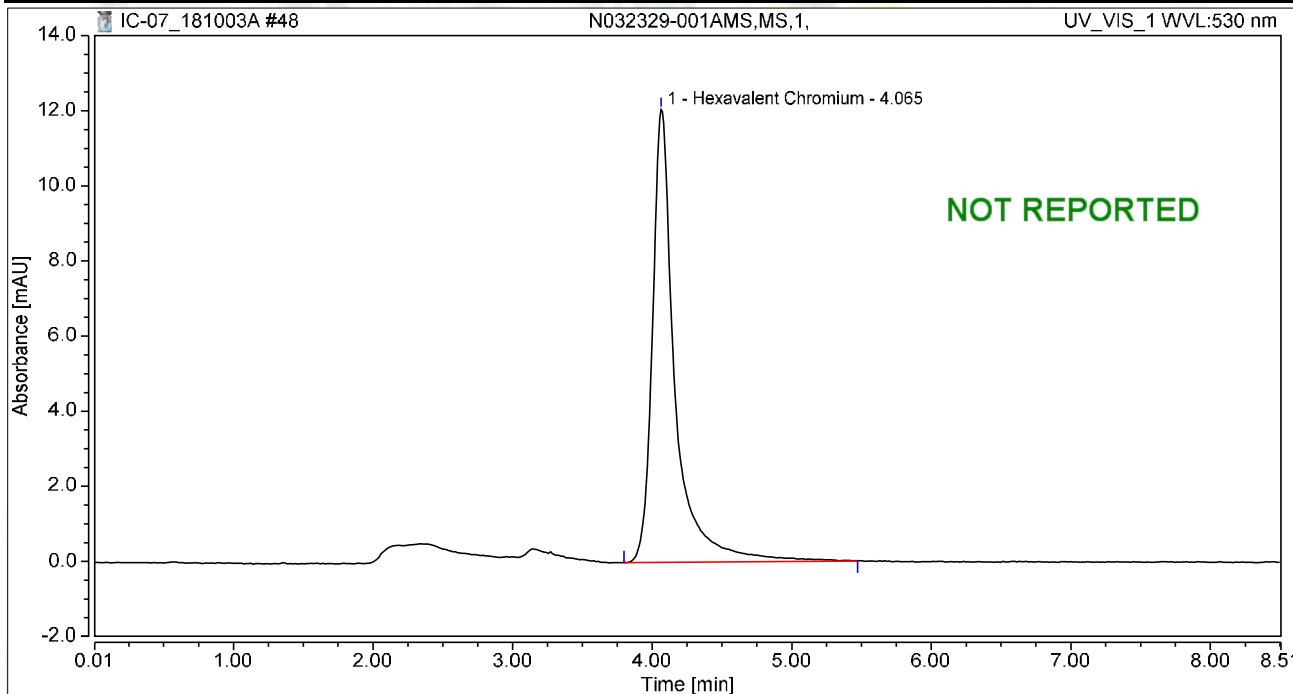
rba 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032329-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	33	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 15:18	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

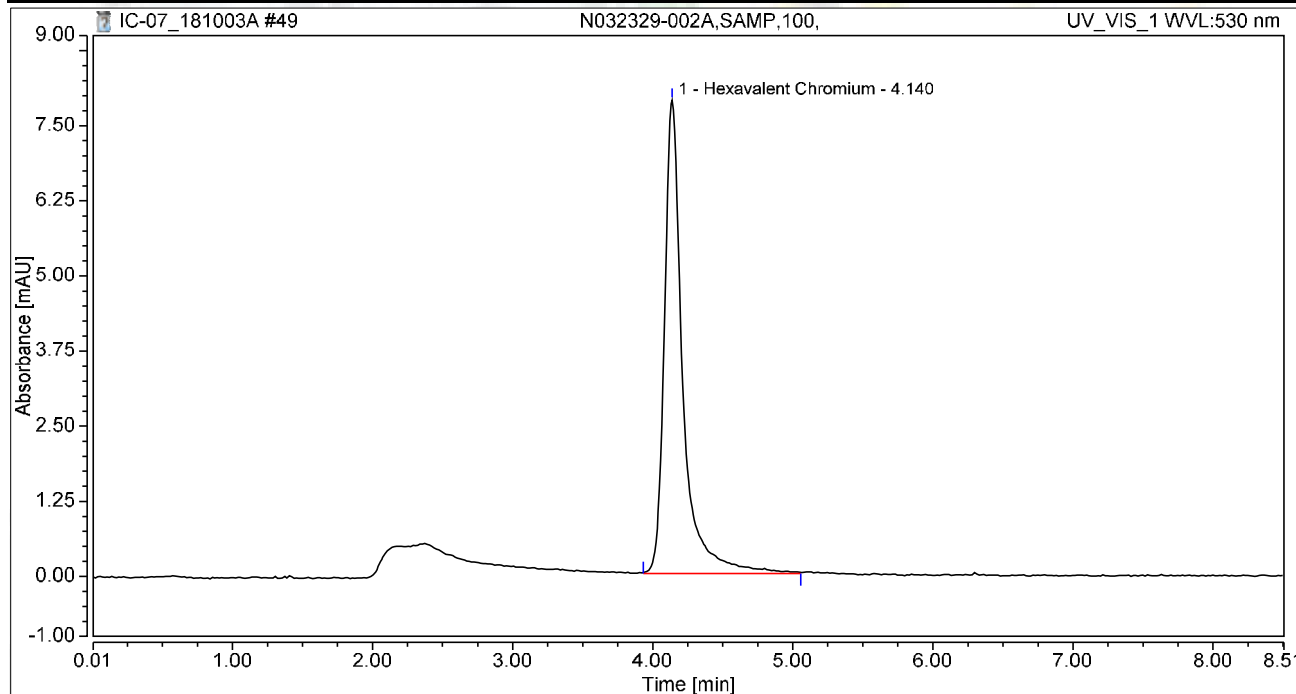
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.065	2.274	12.061	100.00	100.00	8.9986
Total:			2.274	12.061	100.00	100.00	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032329-002A,SAMP,100,	Run Time (min):	8.50
Vial Number:	34	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 15:27	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

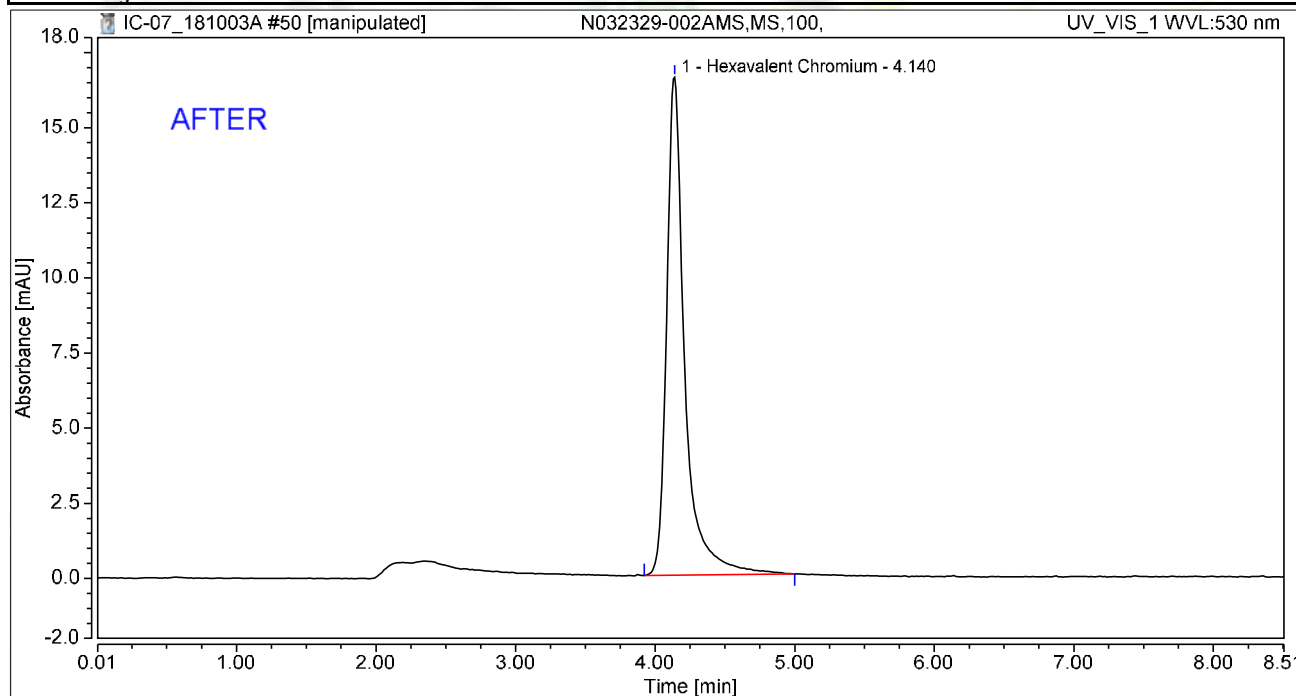
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.206	7.876	100.00	100.00	4.7720
<b>Total:</b>			<b>1.206</b>	<b>7.876</b>	<b>100.00</b>	<b>100.00</b>	

### Chromatogram and Results

**Injection Details**

Injection Name:	N032329-002AMS,MS,100,	Run Time (min):	8.50
Vial Number:	35	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 15:37	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	2.497	16.576	100.00	100.00	9.8804
<b>Total:</b>			<b>2.497</b>	<b>16.576</b>	<b>100.00</b>	<b>100.00</b>	

*jba* 10/13/2018

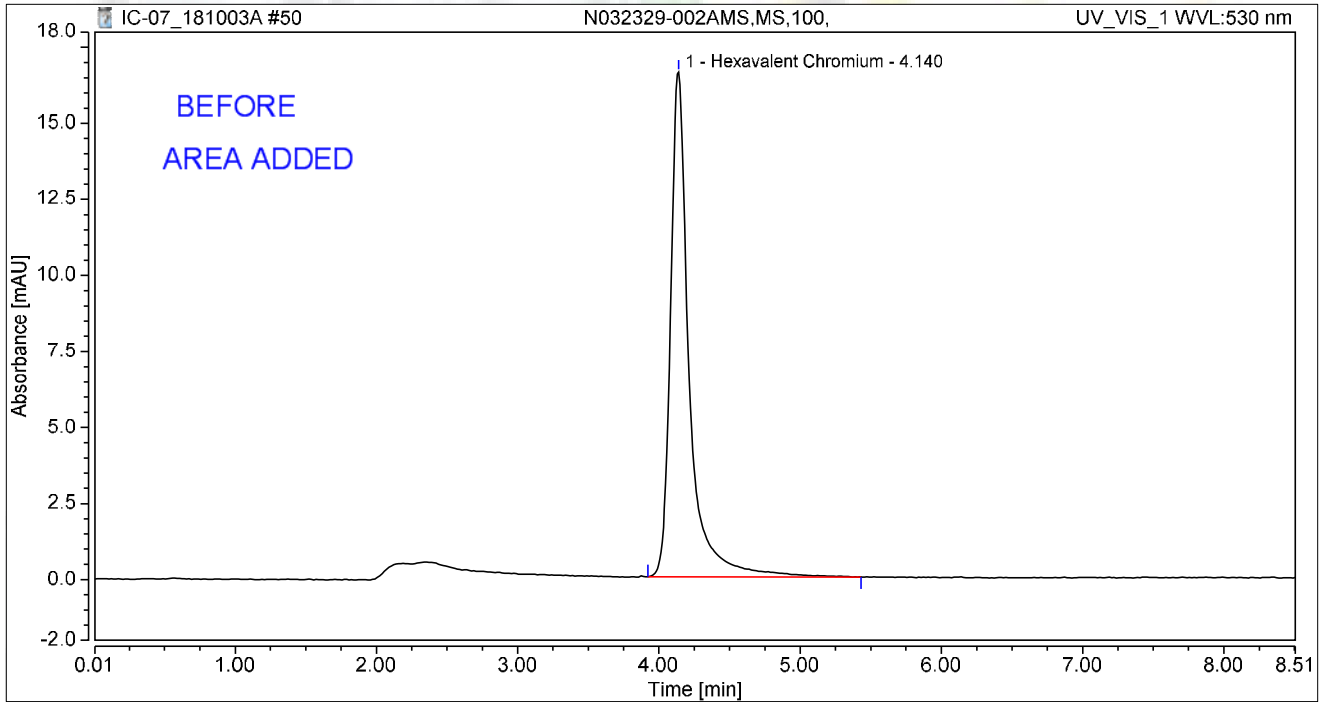
Reviewed by:  
*Nancy* 10/17/2018  
IC-07 RBA 10/8/2018 6:53:35 PM

### Chromatogram and Results

**Injection Details**

Injection Name:	N032329-002AMS,MS,100,	Run Time (min):	8.50
Vial Number:	35	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 15:37	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	2.550	16.590	100.00	100.00	10.0901
<b>Total:</b>			<b>2.550</b>	<b>16.590</b>	<b>100.00</b>	<b>100.00</b>	

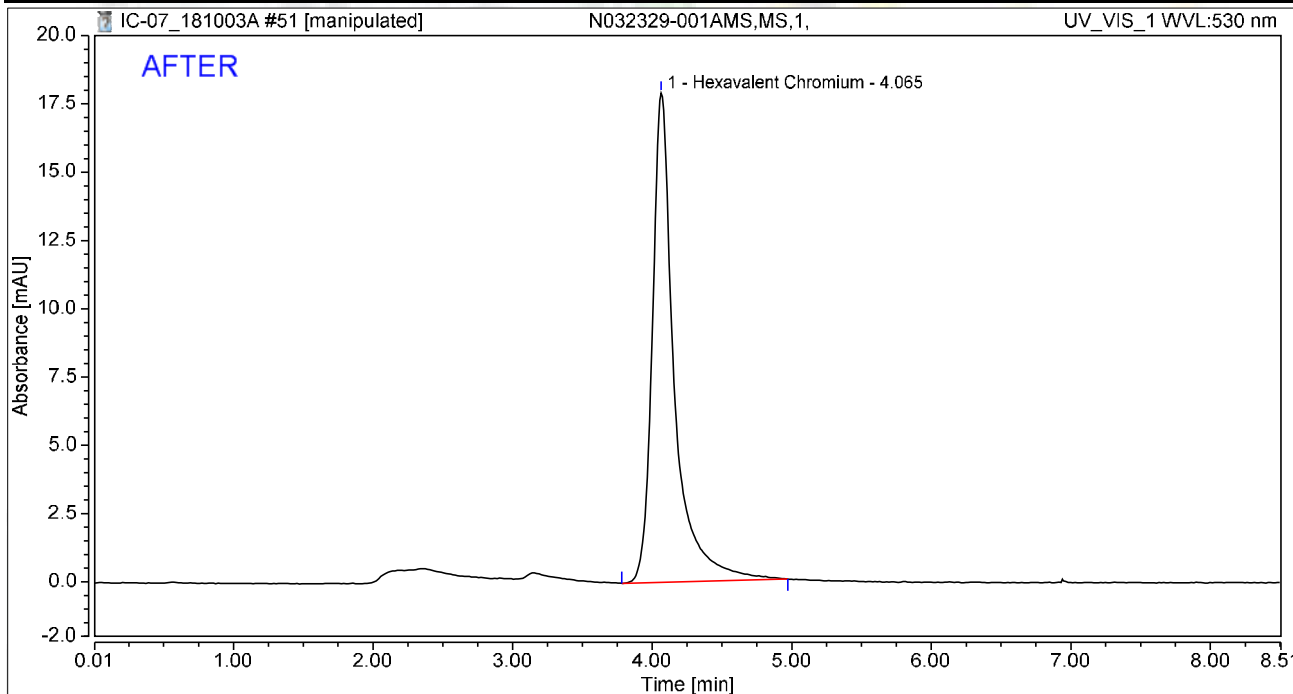
rba 10/13/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032329-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	36	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 15:46	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.065	3.277	17.904	100.00	100.00	12.9650
<b>Total:</b>			<b>3.277</b>	<b>17.904</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/13/2018

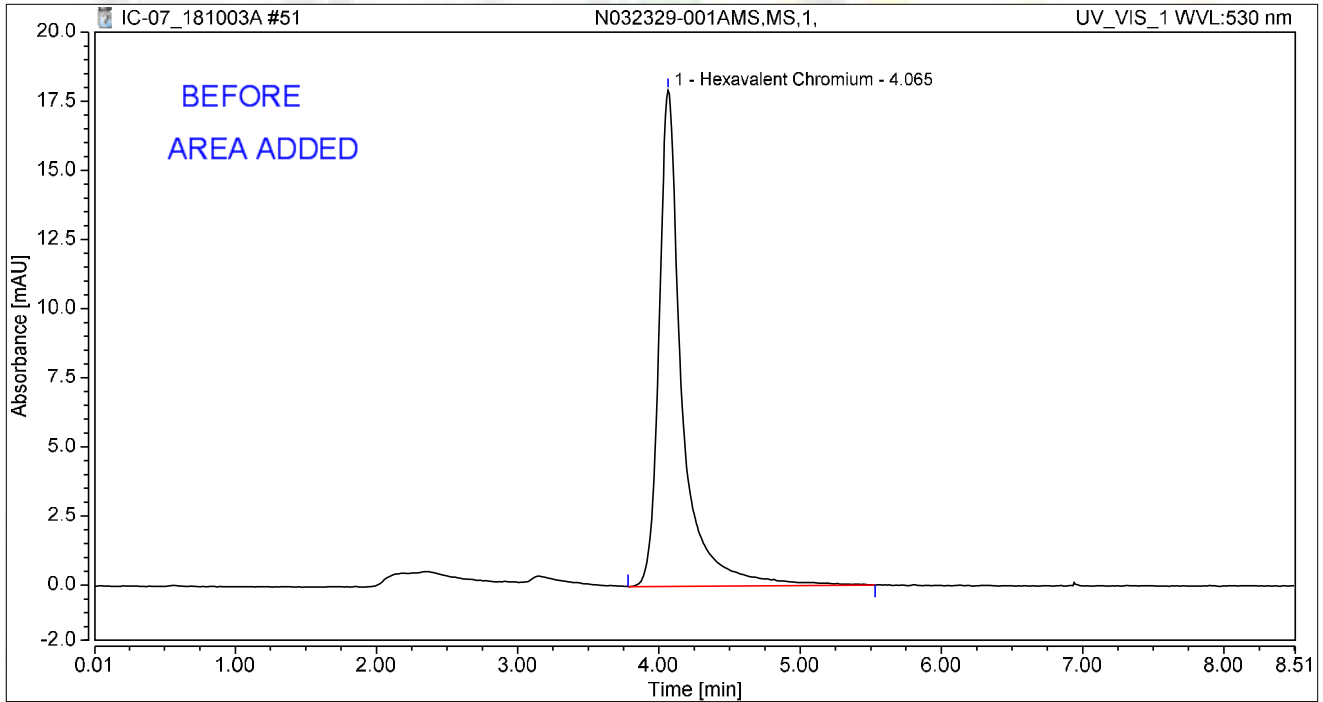
Reviewed by:  
*Henry* 10/17/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032329-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	36	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 15:46	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.065	3.390	17.935	100.00	100.00	13.4132
<b>Total:</b>			<b>3.390</b>	<b>17.935</b>	<b>100.00</b>	<b>100.00</b>	

rba 10/13/2018

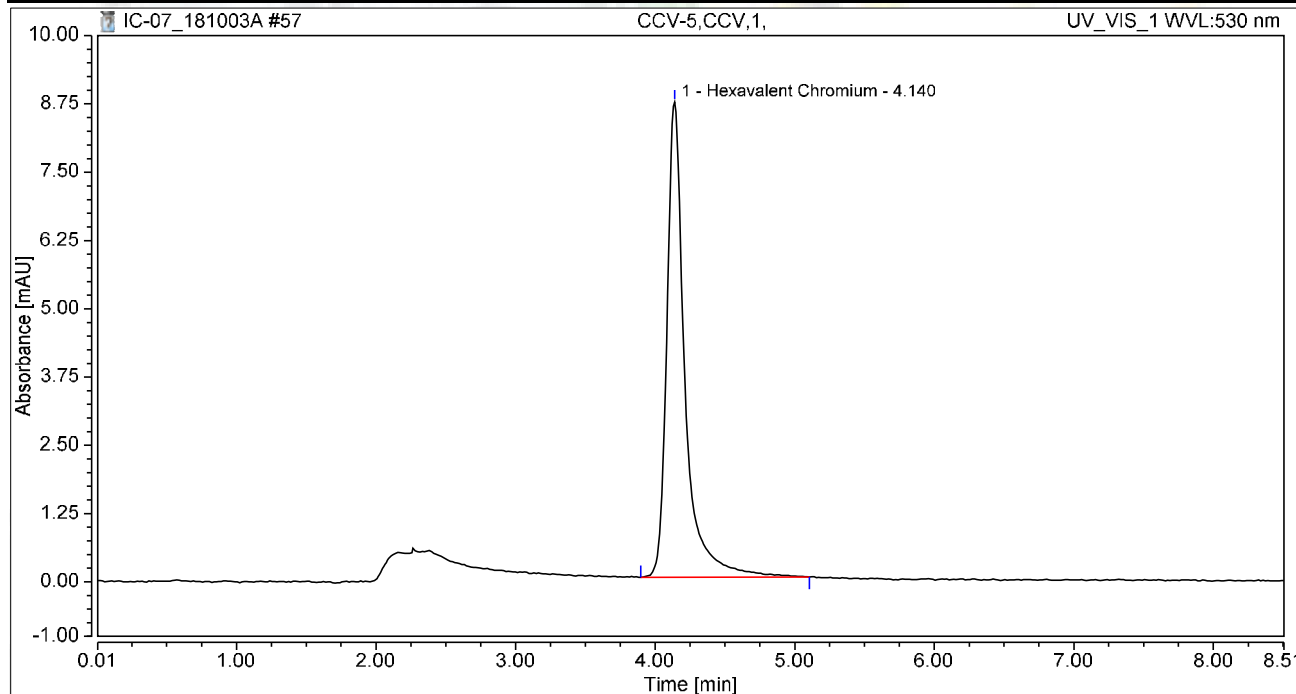


### Chromatogram and Results

**Injection Details**

Injection Name:	CCV-5,CCV,1,	Run Time (min):	8.50
Vial Number:	4	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	180921_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	03/Oct/18 17:13	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

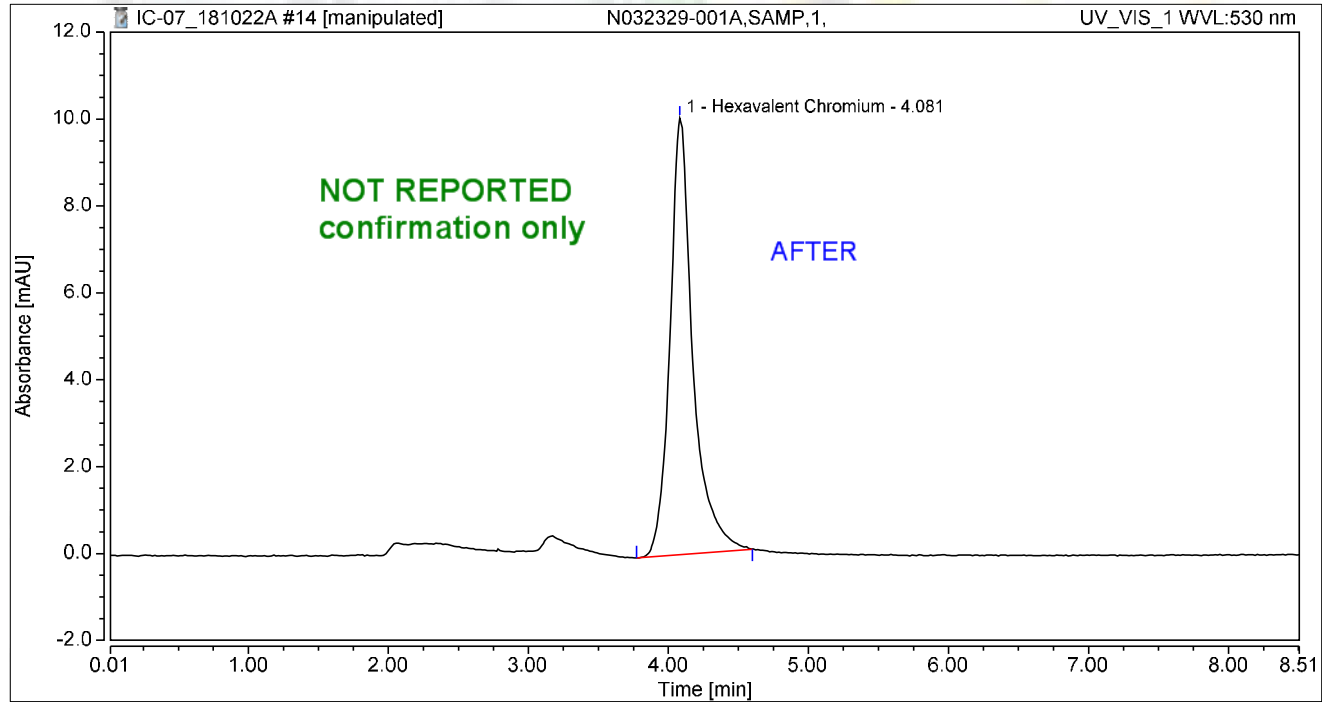
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.140	1.313	8.702	100.00	100.00	5.1955
<b>Total:</b>			<b>1.313</b>	<b>8.702</b>	<b>100.00</b>	<b>100.00</b>	



### Chromatogram and Results

Injection Details		
Injection Name:	N032329-001A,SAMP,1,	Run Time (min): 8.49
Vial Number:	16	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	181022_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	22/Oct/18 11:42	Sample Weight: 1.0000

### Chromatogram



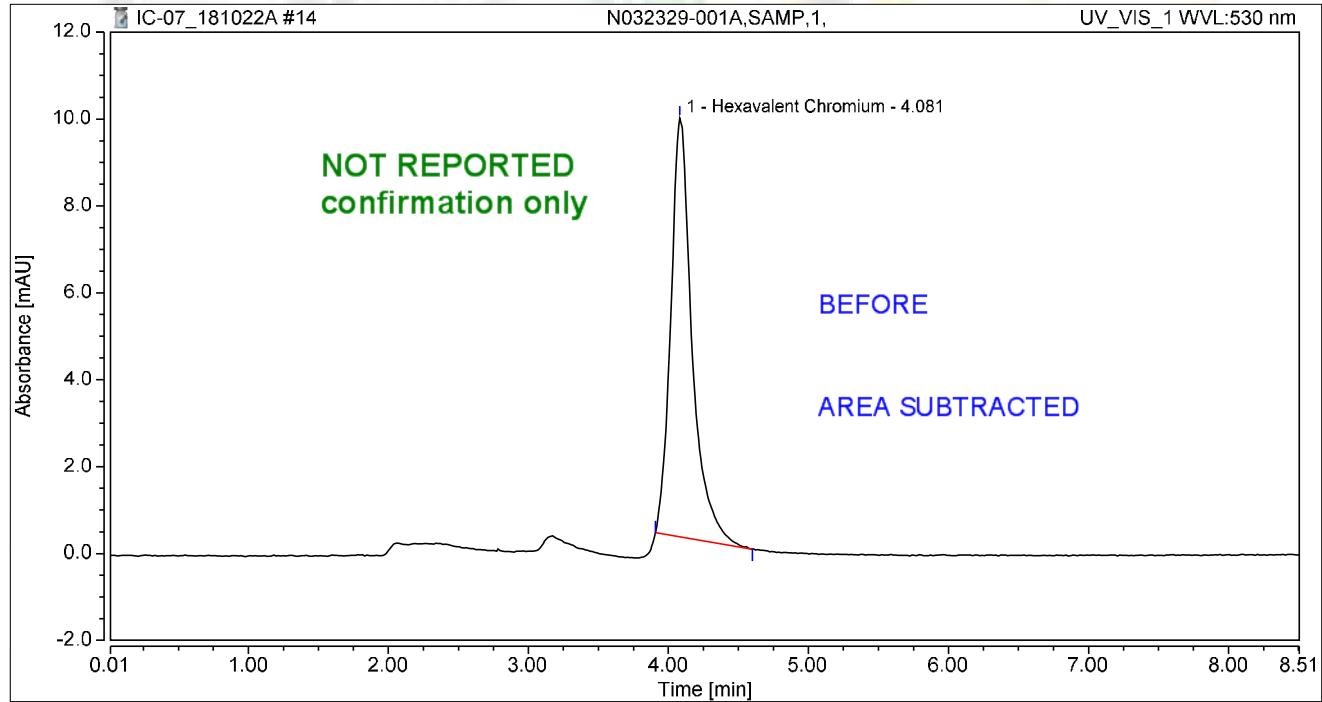
Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	1.905	10.048	100.00	100.00	7.6245
<b>Total:</b>			<b>1.905</b>	<b>10.048</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/22/2018

### Chromatogram and Results

Injection Details		
Injection Name:	N032329-001A,SAMP,1,	Run Time (min): 8.49
Vial Number:	16	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	181022_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	22/Oct/18 11:42	Sample Weight: 1.0000

### Chromatogram



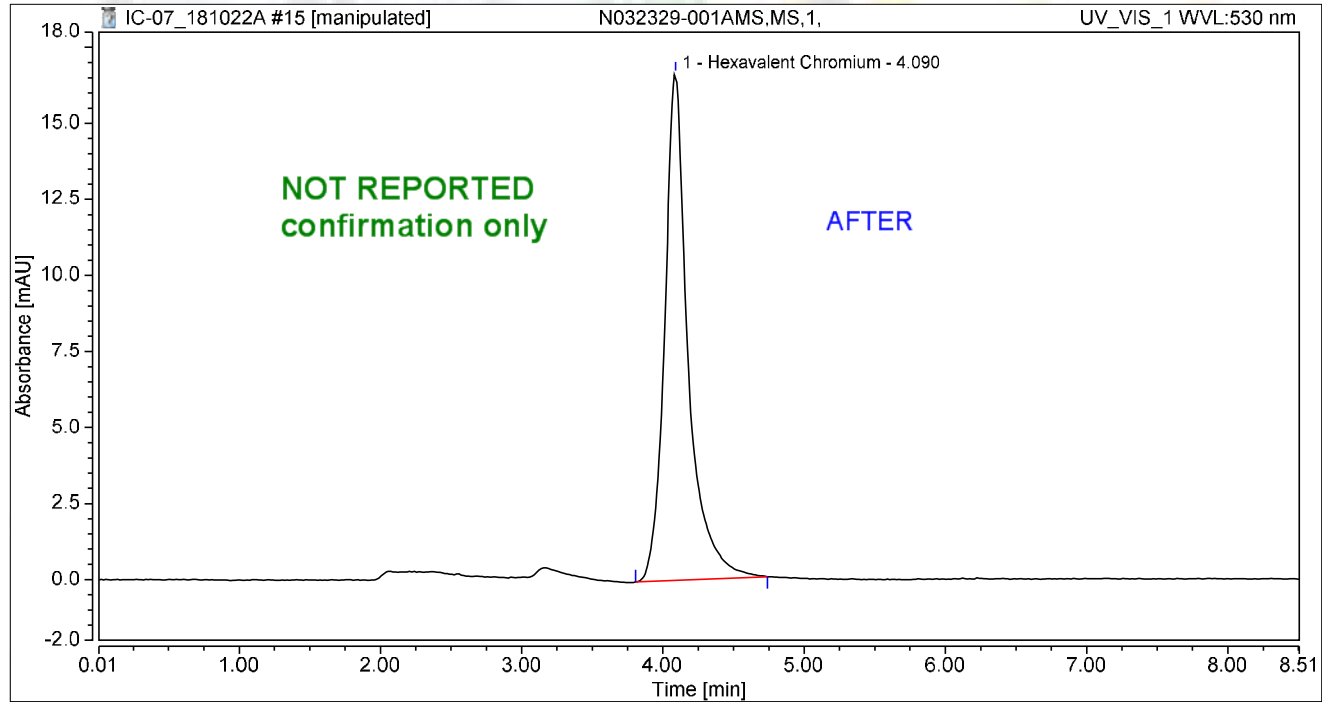
Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.081	1.701	9.639	100.00	100.00	6.8086
<b>Total:</b>			<b>1.701</b>	<b>9.639</b>	<b>100.00</b>	<b>100.00</b>	

*rba* 10/22/2018

### Chromatogram and Results

Injection Details		
Injection Name:	N032329-001AMS,MS,1,	Run Time (min): 8.50
Vial Number:	17	Injection Volume: 1000.00
Injection Type:	Unknown	Channel: UV_VIS_1
Calibration Level:		Wavelength: 530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth: n.a.
Processing Method:	181022_IC-07_Cr6_218_6_HIGH	Dilution Factor: 1.0000
Injection Date/Time:	22/Oct/18 11:52	Sample Weight: 1.0000

### Chromatogram



Integration Results							
No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	3.204	16.654	100.00	100.00	12.8221
<b>Total:</b>			<b>3.204</b>	<b>16.654</b>	<b>100.00</b>	<b>100.00</b>	

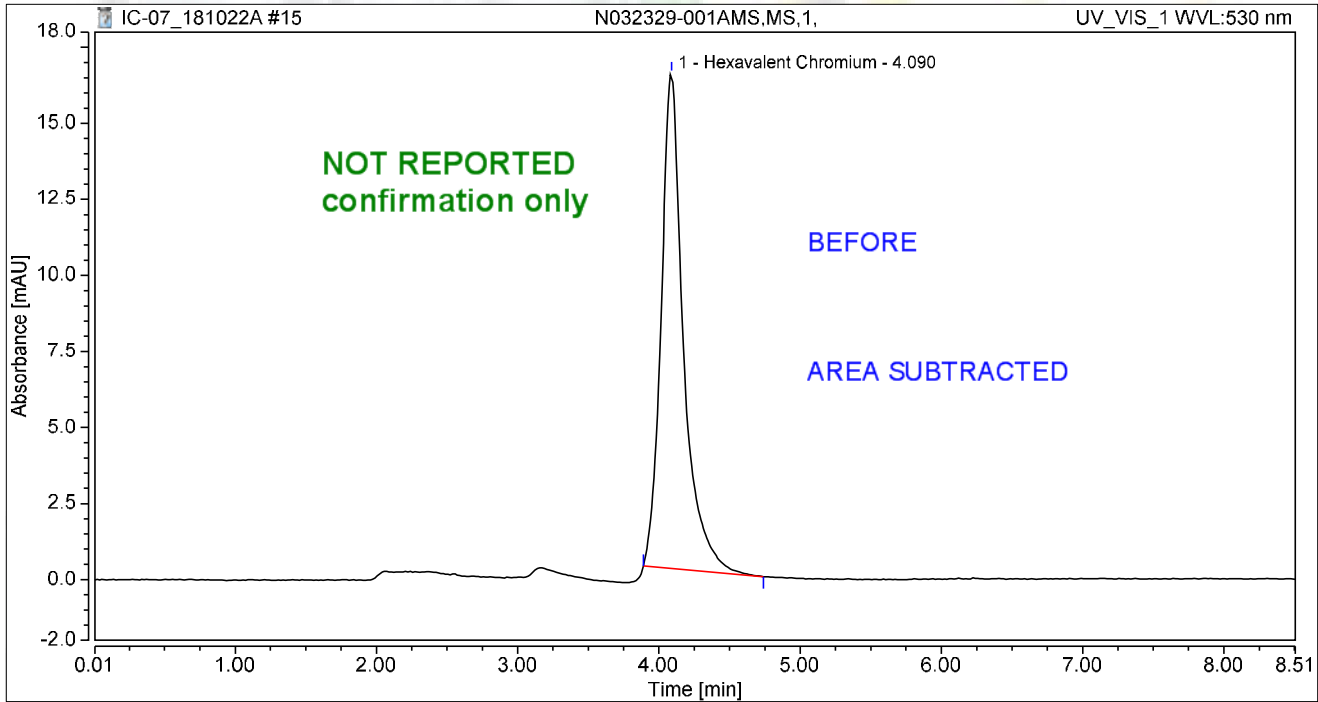
*rba* 10/22/2018

### Chromatogram and Results

**Injection Details**

Injection Name:	N032329-001AMS,MS,1,	Run Time (min):	8.50
Vial Number:	17	Injection Volume:	1000.00
Injection Type:	Unknown	Channel:	UV_VIS_1
Calibration Level:		Wavelength:	530.0
Instrument Method:	Hex Chrom 4 mm	Bandwidth:	n.a.
Processing Method:	181022_IC-07_Cr6_218_6_HIGH	Dilution Factor:	1.0000
Injection Date/Time:	22/Oct/18 11:52	Sample Weight:	1.0000

**Chromatogram**



**Integration Results**

No.	Peak Name	Retention Time min	Area mAU*min	Height mAU	Relative Area %	Relative Height %	Amount ug/L
1	Hexavalent Chromium	4.090	2.980	16.271	100.00	100.00	11.9269
<b>Total:</b>			<b>2.980</b>	<b>16.271</b>	<b>100.00</b>	<b>100.00</b>	

rba 10/22/2018

# SM 2320B



**ASSET LABORATORIES**  
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NEVADA  
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## Wet Chemistry Technical Batch Review Checklist (ARCUS02)

### ASSET LABORATORIES - LAS VEGAS

**FIRST LEVEL REVIEW:**

QC Batch Number: R129006 Analyst: LSR  
 ASSET #: N032329 Date Analyzed: 4-Oct

Method: EPA 2320

Initial Calibration	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis or every 24 hrs.			X			
2. Does correlation coefficient, r, meet criteria ?( r = 0.995)			X			
3. ICV within ± 15% of expected value.			X			
Continuing Calibration						
4. CCV after every 10 samples and at the end of analysis sequence.			X			
5. CCV within ± 15% of expected value.			X			
6. Calibration blanks run after ICV and CCV?			X			
7. Do all calibration blanks ( ICB and CCBs) meet criteria? (< 1/2 PQL)			X			
Sample Information						
8. All samples are within linear range.			X			
9. Are all samples analyzed within hold time.	X					
QC Items						
10. Method blank values are below 1/2 the reporting limit.	X					
11. LCS compounds within control limits.	X					
12. MS/MSD, RPD's are within control limits	X					
Raw Data and Miscellaneous Information						
13. Are Non-Conformances documented			X			
14. Runlog complete and included in package.	X					
15. Spectrophotometer tape included (Spec work only)			X			
16. Digestion log complete and included in package (if applicable)			X			
Preliminary Report						
17. Does the raw data match the preliminary report?	X					
18. Are analytical results correct?	X					
19. Is the QC summary report present and complete?	X					

**Comments:**

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**SECOND LEVEL REVIEW:**

	Yes	No	N/A
1. All assigned sample(s) analyzed			
2. Matrix / units correct			
3. Does batch meet QC requirements?			
4. Are analytical results correct? (Ex. dilutions, calculations.etc.)			
5. Is first level review correct and complete?			

1st Level Reviewer Silvia Ramit

Date: 10/12/2018

2nd Level Reviewer Nancy 10/27/2018  
for MM

Date: \_\_\_\_\_



# SAMPLE CALCULATION



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[www.assetlaboratories.com](http://www.assetlaboratories.com)

Sample ID: **N032329-001B @ pH 7.68**

A. Standardization of Sulfuric Acid (titrant):

$$\text{Normality of acid} = (A) (B) / (53.00) (C)$$

Where:

A, grams weighed for  $\text{Na}_2\text{CO}_3$  solution ( $\text{Na}_2\text{CO}_3$  Standardization Solution)  
B, mL  $\text{Na}_2\text{CO}_3$  solution taken for titration, and  
C, ml of sulfuric acid used to inflection point

Spike Standards

**$\text{Na}_2\text{CO}_3$  Standardization Solution**, ACS Grade (1.00 ml = 2500ug as  $\text{CaCO}_3$ ):  
Dissolve 2.650 grams of  $\text{Na}_2\text{CO}_3$  in distilled water and dilute to 1 liter.

**LCS/MS/MSD Stock**  $\text{NaHCO}_3$ , ACS Grade (1.00 ml = 5000 ug as  $\text{CaCO}_3$ ):  
Dissolve 0.8398 grams of  $\text{NaHCO}_3$  in distilled water and dilute to 1 liter.

Therefore,

$$\begin{aligned} \text{Normality of Acid} &= (2.65 \text{ g/L}) (5\text{mL}) / (53.00) (12.05 \text{ mL}) \\ &= \mathbf{0.02075 \text{ N}} \end{aligned}$$

B. CALCULATION OF ALKALINITY (for a 50 ml sample)

$$\text{Total Alkalinity (as } \text{CaCO}_3\text{), mg/L} = M_{\text{vol.}} * N \text{ H}_2\text{SO}_4 * \text{DF} * 1000$$

Where:

$M_{\text{vol.}}$  volume titrant used to reach pH 4.5, ml  
N, Normality of  $\text{H}_2\text{SO}_4$   
DF, Dilution Factor = (50 ml) / (Vol. of Sample used)

Therefore,

$$\begin{aligned} \text{Total Alkalinity (as } \text{CaCO}_3\text{), mg/L} &= (12.70) (0.02075 \text{ N}) (1) * 1000 \\ &= 263.5250 \text{ mg/L} \end{aligned}$$

Reporting results in two significant figures,

$$= \mathbf{260 \text{ mg/L as } \text{CaCO}_3}$$

*Lilia Ramit* 10/12/2018

C. SPECIATED ALKALINITY:

Phenolphthalein Alkalinity

$$\begin{aligned} \text{P alkalinity, mg/L as CaCO}_3 &= P_{\text{vol.}} \cdot N \text{ H}_2\text{SO}_4 \cdot \text{DF} \cdot 1000 \\ &= (0) (0.02075 \text{ N}) (1) \cdot 1000 \\ &= \mathbf{0} \end{aligned}$$

Total Alkalinity

$$\begin{aligned} \text{T alkalinity, mg/L as CaCO}_3 &= M_{\text{vol.}} \cdot N \text{ H}_2\text{SO}_4 \cdot \text{DF} \cdot 1000 \\ &= (12.70 \text{ mL}) (0.02075) (1) \cdot 1000 \\ &= \mathbf{263.5250 \text{ mg/L as CaCO}_3} \end{aligned}$$

Where:

- $P_{\text{vol.}}$  - Volume titrant used to reach pH 8.3, ml
- $M_{\text{vol.}}$  - Volume titrant used to reach pH 4.5, ml
- $N$  - Normality of  $\text{H}_2\text{SO}_4$
- $\text{DF}$  - Dilution Factor = (50 ml) / (Vol. of Sample used)

Then OH,  $\text{CO}_3$ ,  $\text{HCO}_3$  alkalinities as  $\text{CaCO}_3$  will be calculated as follows:

Result of Titration	OH Alkalinity as $\text{CaCO}_3$	$\text{CO}_3$ Alkalinity as $\text{CaCO}_3$	$\text{HCO}_3$ Alkalinity as $\text{CaCO}_3$
$P = 0$	0	0	T
$P < \frac{1}{2} T$	0	2P	$T - 2P$
$P = \frac{1}{2} T$	0	2P	0
$P > \frac{1}{2} T$	$2P - T$	$2(T - P)$	0
$P = T$	T	0	0

Therefore,

$$\text{OH Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{CO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{HCO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{263.5250 \text{ mg/L}}$$

Reporting results in two significant figures,

$$\text{OH Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{CO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{0}$$

$$\text{HCO}_3 \text{ Alkalinity as CaCO}_3 = \mathbf{260 \text{ mg/L}}$$

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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Sample ID	Sample Vol/Wt.	Sample pH	Std. Code	Spike Amount	Spike Conc.	Normality, Titrant	Vol. Used to pH 8.3, ml.	Vol. Used pH 8.3 to 4.5, ml.	Total Vol. Used, ml.	DF (50ml/Vsamp.)	P Alkalinity	T Alkalinity	Comments
MB-1	50	5.48				0.02075	0.00	0.05	0.05	1	0.00	1.04	
LCS-1	50	8.71				0.02075	0.10	4.70	4.80	1	2.07	99.59	
N032282-001D	50	7.88				0.02075	0.00	4.30	4.30	1	0.00	89.21	
N032329-001B	50	7.68				0.02075	0.00	12.70	12.70	1	0.00	263.49	
N032329-002B	50	7.7				0.02075	0.00	7.20	7.20	1	0.00	149.38	
N032329-002BDL	50	7.66				0.02075	0.00	7.20	7.20	1	0.00	149.38	
N032329-002BMS	50	7.9				0.02075	0.00	11.90	11.90	1	0.00	246.89	
N032329-002BMS	50	7.91				0.02075	0.00	12.00	12.00	1	0.00	248.96	

*Julia Ramit* 10/5/2018

# Speciated, Alkalinity as CaCO3

SM 2320B

Date Analyzed:	<u>10/4/18</u>
Time:	<u>9:25 AM</u>
Analyzed By:	<u>LSR</u>

SAMPLE ID	OH	CO3	HCO3	TOTAL	CHECK	COMMENT	REMARKS
MB-1	0.00	0.00	1.04	1.04	1.04		P = 0
LCS-1	0.00	4.15	95.44	99.59	99.59		P < 1/2 T
N032282-001D	0.00	0.00	89.21	89.21	89.21		P = 0
N032329-001B	0.00	0.00	263.49	263.49	263.49		P = 0
N032329-002B	0.00	0.00	149.38	149.38	149.38		P = 0
N032329-002BDUP	0.00	0.00	149.38	149.38	149.38		P = 0
N032329-002BMS	0.00	0.00	246.89	246.89	246.89		P = 0
N032329-002BMSD	0.00	0.00	248.96	248.96	248.96		P = 0

*Lilia Ramit*

10/5/2018

Alkalinity Preparation and Runlog

<b>Matrix:</b> <u>h2o</u> Date Extracted: _____ Time Extracted: <u>10/4/18</u> Extracted By: <u>USE</u> Date Analyzed: <u>10/4/18</u> Time Analyzed: <u>9:25</u> Analyzed By: _____	Reagent Lot # / Reagent ID Sodium Carbonate: <u>CAN-16205A</u> Hydrochloric Acid: _____ Sulfuric Acid: <u>P180911A</u> Sodium Bicarbonate: <u>CAN-180510A</u>	pH meter Calibration: SLOPE: <u>0.7.2%</u> pH 7 - 7.01 CAN 180511B 4 - 4.01 180515A 10 - 10.00 180131B
---	---	--

Sample ID	Sample Wt./Vol.	Sample pH	Std Code	Spike Amt Added	Spike Conc.	Norm. Titrant	Vol. At pH = 8.3	Vol. At pH = 4.5	Dilution (F/I)	Calculations	Comments
<b>STANDARDIZATION</b>											
#1	50ml	10.75	MSF180928A	5ml	0.05N	-	-	42.05	50/50	$N_{H_2SO_4} = \frac{(2.65 \text{ g/L})(50 \text{ ml})}{(53)(V_{titrant})} = 0.020746887$	
#2	1	10.74	1	1	1	-	-	12.05	1		
1) BLK	50ml	5.42	-	-	-	0.02575	0	0.65	50/50		
2) LCS		8.71	MSF180928B	1ml	0.05N		0.10	4.80			
3) N032282-1D		7.88					0	4.30			
4) N032324-1B		7.68					0	12.70			
5) 2B		7.70					0	7.20			
6) 2BDF		7.66					0	7.20			
7) 2BMJ		7.90	MSF180928B	1ml	0.05N		0	11.90			
8) 2BMSD		7.91	1	1	1		0	12.00			
9)											
10)											
11)											
12)											
13)											
14)											
15)											
16)											
17)											
18)											
19)											
20)											
MS											
MSD											
LCS											

$$P = \frac{(V_{pH 8.3})(N_{H_2SO_4})(50,000)}{V_{sx}}$$

$$T = \frac{(V_{pH 4.5})(N_{H_2SO_4})(50,000)}{V_{sy}}$$

Julia Ramit 10/5/2018



# EPA 300.0



**ASSET LABORATORIES**  
ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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IC Technical Batch Review Checklist (ARCUS02)  
ASSET LABORATORIES - LAS VEGAS

IC ARCUS  
REV 2.0  
011416

QC Batch Number: R129169  
ASSET # N032405 / N032406 / N032329

Instrument ID: IC-08  
Analyst: RBA  
Date Analyzed: 10/9/2018

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X			X		
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X			X		
3. ICV within ± 10% of expected value.	X			X		
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X			X		
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X			X		
6. Calibration blanks run after ICV and CCV?	X			X		
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)			X			X
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X			X		
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?			X			X
<b>Sample Information</b>						
10. All samples are within linear range.	X			X		
11. All samples pH within 9.3-9.7 when analyzed?			X			X
12. Duplicate sample injections for every sample. (7199 only)			X			X
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)			X			X
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			X
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			X
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)			X			X
19. EPA 3060A digestion performed on solid samples (7199 only)			X			X
20. Are all peaks within RT window, ± 0.2 min?	X			X		
21. Are all samples analyzed within hold time?	X			X		
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			X
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X			X		
24. LCS compounds are within control limits.	X			X		
25. MS/MSD, RPD's are within control limits.	X			X		
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			X
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X			X		
28. Extraction log complete and included in package (if applicable)			X			X
29. All manual integrations initialed, date and reasons included.	X			X		
30. Before and after manual integration chromatogram included in the package	X			X		
31. All samples and QC raw data present in package.	X			X		
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X			X		
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
34. Is the QC summary report present and complete?	X			X		

Comments:

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed	X		
2. Matrix / units correct	X		
3. Is QC present and complete?	X		
4. Are analytical results correct? (dilutions, calculations)	X		
5. Is first level review correct and complete?	X		

1st Level Reviewer RBA

Date: 10/14/2018

2nd Level Reviewer [Signature] 10/20/2018

Date: \_\_\_\_\_



IC Technical Batch Review Checklist (ARCUS02)  
ASSET LABORATORIES - LAS VEGAS

IC ARCUS  
REV 2.0  
011416

QC Batch Number: R129173  
ASSET # N032425 / N032426 / N032329  
N032317

Instrument ID: IC-08  
Analyst: RBA  
Date Analyzed: 10/10/2018

Method:

- EPA 300.0  
 EPA 7199

- EPA 218.6/EPA 218.7  
 EPA 218.6/EPA 218.7 LL  
 Others \_\_\_\_\_

Initial Calibration and Initial Calibration Verification	1st Level Review			2nd Level Review		
	Y	N	N/A	Y	N	N/A
1. ICAL before initial sample analysis and is not more than 4 weeks old.	X			X		
2. Does correlation coefficient, r, meet criteria ? ( r = 0.995, r =0.999 (Cr6+))	X			X		
3. ICV within ± 10% of expected value.	X			X		
<b>Continuing Calibration</b>						
4. CCV after every 10 injections and at the end of analysis sequence.	X			X		
5. CCV within ± 10% of expected value. (± 5% for EPA 218.6)	X			X		
6. Calibration blanks run after ICV and CCV?	X			X		
7. Is the buffer less than MDL? If not, discontinue analysis. (Cr6+ only)			X			X
8. Do all calibration blanks ( ICB and CCBs) meet criteria? (<1/2PQL for 300, <0.02 for Cr6+)	X			X		
9. Is low level check at PQL within ± 20% for 218.6/218.7/7199? ± 30% for 218.6/218.7LL?			X			X
<b>Sample Information</b>						
10. All samples are within linear range.	X			X		
11. All samples pH within 9.3-9.7 when analyzed?			X			X
12. Duplicate sample injections for every sample. (7199 only)			X			X
13. For Topock, matrix spike protocol performed on all samples? (Cr6+ only)			X			X
14. For Hinkley DOM samples, matrix spike protocol performed on all samples ? (Cr6+ only)			X			X
15. For samples < 4 ppb, does the Cr result differs with Cr6+ by no more than 0.7 ppb?			X			X
16. For samples > 4 ppb, does the Cr result differs with Cr6+ by no more than 20%?			X			X
17. For samples that failed Cr vs Cr6+ criteria, is matrix spike protocol performed ?			X			X
18. For dilution and MS spike protocol, spike recovery within 90-110%? (Cr6+ only)			X			X
19. EPA 3060A digestion performed on solid samples (7199 only)			X			X
20. Are all peaks within RT window, ± 0.2 min?	X			X		
21. Are all samples analyzed within hold time?	X			X		
22. For Hinkley projects (DOM & ATU only), are samples with result ≤ 0.2 ug/L analyzed by low level method? (Cr6+ only)			X			X
<b>QC Items</b>						
23. Method blank values meets criteria. (<1/2 PQL for 300, <0.02 for Cr6+)	X			X		
24. LCS compounds are within control limits.	X			X		
25. MS/MSD, RPD's are within control limits.		X		X		
26. Soluble and Insoluble matrix spike within control limits (7199 solids only)			X			X
<b>Raw Data and Miscellaneous Information</b>						
27. Runlog complete and included in package.	X			X		
28. Extraction log complete and included in package (if applicable)			X			X
29. All manual integrations initialed, date and reasons included.	X			X		
30. Before and after manual integration chromatogram included in the package	X			X		
31. All samples and QC raw data present in package.	X			X		
<b>Preliminary Report</b>						
32. Does the raw data match the preliminary report?	X			X		
33. Are analytical results correct?(Ex. dilutions, calculations.etc.)	X			X		
34. Is the QC summary report present and complete?	X			X		

Comments:

%Rec of Phosphate in N032425-001CMS/MSD failed. However, LCS passed criteria.

**SECOND LEVEL REVIEW:**

	Y	N	N/A
1. All assigned sample(s) analyzed	X		
2. Matrix / units correct	X		
3. Is QC present and complete?	X		
4. Are analytical results correct? (dilutions, calculations)	X		
5. Is first level review correct and complete?	X		

1st Level Reviewer

RBA

Date: 10/14/2018

2nd Level Reviewer

Nancy 10/20/2018

Date: \_\_\_\_\_

# SAMPLE CALCULATION



**ASSET LABORATORIES**  
SAMPLE PREPARATION SURVEILLANCE ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 300  
**TEST NAME:** INORGANIC ANIONS BY IC  
**MATRIX:** GROUNDWATER

FORMULA:

Calculate the Chloride concentration, in mg/L, in the original sample as follows:

$$\text{Chloride, mg/L} = A * DF$$

where:

A = mg/L, IC calculated concentration  
DF = dilution factor

For **N032329-001B** concentration in mg/L is calculated as follows:

$$\begin{aligned}\text{Chloride, mg/L} &= 5.4218 * 200 \\ &= 1084.36\end{aligned}$$

Reporting result in two significant values,

$$\text{Chloride, mg/L} = \mathbf{1100}$$

# ANALYSIS RUN LOG



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE ENVIRONMENTAL INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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Sequence: IC-08\_180925A  
Operator: IC-05

Page 1 of 2  
Printed: 9/25/2018 7:48:48 PM

Title:

Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 21

Created: 9/25/2018 9:35:07 AM by IC-05  
Last Update: 9/25/2018 2:38:07 PM by IC-05

No.	Name	Type	Inj. Vol.	Program	Method	Status
1	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
2	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
3	Std - 0	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
4	Std - 1	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
5	Std - 2	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
6	Std - 3	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
7	Std - 4	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
8	Std - 5	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
9	ICV	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
10	ICB	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
11	ICB	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
12	MB-H2O,MBLK,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
13	LCS-H2O,LCS,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
14	N032210-003D,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
15	N032210-003DDUP,DUP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
16	N032210-003DMS,MS,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
17	N032210-003DMSD,MSD,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
18	N032210-003DMS,MS,10	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
19	N032210-003DMSD,MSD,10	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
20	CCV-1,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
21	CCB-1,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished

*rba* 9/30/2018

Sequence: IC-08\_180925A  
Operator: IC-05

Page 2 of 2  
Printed: 9/25/2018 7:48:48 PM

Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 21

Created: 9/25/2018 9:35:07 AM by IC-05  
Last Update: 9/25/2018 2:38:07 PM by IC-05

No.	Name	Inj. Date/Time	Comment
1	BLANK,BLANK	9/25/2018 9:45:46 AM	BLANK
2	BLANK,BLANK	9/25/2018 10:20:33 AM	BLANK
3	Std - 0	9/25/2018 10:37:21 AM	BLANK
4	Std - 1	9/25/2018 11:02:43 AM	STD-LOW
5	Std - 2	9/25/2018 11:19:31 AM	STD
6	Std - 3	9/25/2018 11:36:19 AM	STD
7	Std - 4	9/25/2018 11:53:07 AM	STD
8	Std - 5	9/25/2018 12:09:56 PM	STD-HIGH
9	ICV	9/25/2018 12:26:44 PM	ICV
10	ICB	9/25/2018 12:43:31 PM	ICB
11	ICB	9/25/2018 1:00:19 PM	METHOD BLANK
12	MB-H2O,MBLK,1	9/25/2018 1:17:07 PM	METHOD BLANK
13	LCS-H2O,LCS,1	9/25/2018 1:33:55 PM	LCS
14	N032210-003D,SAMP,5	9/25/2018 1:56:43 PM	SAMP,2>10mL
15	N032210-003DDUP,DUP,5	9/25/2018 2:13:32 PM	DUP,2>10mL
16	N032210-003DMS,MS,5	9/25/2018 2:37:31 PM	MS,2>10mL
17	N032210-003DMSD,MSD,5	9/25/2018 2:54:20 PM	MSD,2>10mL
18	N032210-003DMS,MS,10	9/25/2018 3:11:08 PM	MS,5>10mL
19	N032210-003DMSD,MSD,10	9/25/2018 3:27:56 PM	MSD,5>10mL
20	CCV-1,CCV,1	9/25/2018 3:44:44 PM	CCV
21	CCB-1,CCB,1	9/25/2018 4:01:32 PM	CCB



Sequence: IC-08\_181009A  
Operator: IC-05

Page 1 of 6  
Printed: 10/10/2018 9:39:09 PM

Title:

Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 101

Created: 10/9/2018 8:53:54 AM by IC-05  
Last Update: 10/10/2018 11:17:51 AM by IC-05

No.	Name	Type	Inj. Vol.	Program	Method	Status
1	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
2	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
3	Std - 0	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
4	Std - 1	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
5	Std - 2	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
6	Std - 3	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
7	Std - 4	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
8	Std - 5	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
9	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
10	CCV-1,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
11	CCB-1,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
12	MB-H2O,MBLK,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
13	LCS-H2O,LCS,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
14	N032405-001C,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
15	N032405-002C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
16	N032406-005E,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
17	N032406-001E,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
18	N032406-002E,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
19	N032406-003E,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
20	N032406-004E,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
21	N032406-006E,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
22	CCV-2,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
23	CCB-2,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
24	N032406-007E,SAMP,10	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
25	N032406-008E,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
26	N032406-004EDUP,DUP,10	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
27	N032405-002CMS,MS,2	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
28	N032405-002CMSD,MSD,2	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
29	N032378-001B,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
30	N032415-002A,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
31	N032329-001B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
32	N032329-002B,SAMP,500	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
33	N032344-009B,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
34	CCV-3,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
35	CCB-3,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
36	N032378-001B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
37	N032378-001B,SAMP,1000	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
38	N032326-001B,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
39	N032326-002B,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
40	N032326-003A,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
41	N032329-001B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished

Sequence: IC-08\_181009A  
Operator: IC-05

Page 2 of 6  
Printed: 10/10/2018 9:39:09 PM

Title:

Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 101

Created: 10/9/2018 8:53:54 AM by IC-05  
Last Update: 10/10/2018 11:17:51 AM by IC-05

No.	Name	Inj. Date/Time	Comment
1	BLANK,BLANK	9/25/2018 9:45:46 AM	BLANK
2	BLANK,BLANK	9/25/2018 10:20:33 AM	BLANK
3	Std - 0	9/25/2018 10:37:21 AM	BLANK
4	Std - 1	9/25/2018 11:02:43 AM	STD-LOW
5	Std - 2	9/25/2018 11:19:31 AM	STD
6	Std - 3	9/25/2018 11:36:19 AM	STD
7	Std - 4	9/25/2018 11:53:07 AM	STD
8	Std - 5	9/25/2018 12:09:56 PM	STD-HIGH
9	BLANK,BLANK	10/9/2018 9:01:27 AM	BLANK
10	CCV-1,CCV,1	10/9/2018 9:18:15 AM	CCV
11	CCB-1,CCB,1	10/9/2018 9:35:03 AM	CCB
12	MB-H2O,MBLK,1	10/9/2018 10:31:27 AM	METHOD BLANK
13	LCS-H2O,LCS,1	10/9/2018 10:48:15 AM	LCS
14	N032405-001C,SAMP,1	10/9/2018 11:05:03 AM	SAMP,10mL
15	N032405-002C,SAMP,2	10/9/2018 11:21:51 AM	SAMP,5>10mL
16	N032406-005E,SAMP,1	10/9/2018 11:38:39 AM	SAMP,1>10mL
17	N032406-001E,SAMP,5	10/9/2018 11:55:27 AM	SAMP,2>10mL
18	N032406-002E,SAMP,20	10/9/2018 12:12:15 PM	SAMP,0.5>10mL
19	N032406-003E,SAMP,2	10/9/2018 12:29:03 PM	SAMP,5>10mL
20	N032406-004E,SAMP,10	10/9/2018 12:45:51 PM	SAMP,1>10mL
21	N032406-006E,SAMP,20	10/9/2018 1:02:38 PM	SAMP,0.5>10mL
22	CCV-2,CCV,1	10/9/2018 1:19:26 PM	CCV
23	CCB-2,CCB,1	10/9/2018 1:36:14 PM	CCB
24	N032406-007E,SAMP,10	10/9/2018 1:53:02 PM	SAMP,1>10mL
25	N032406-008E,SAMP,50	10/9/2018 2:09:50 PM	SAMP,0.2>10mL
26	N032406-004EDUP,DUP,10	10/9/2018 2:26:38 PM	DUP,1>10mL
27	N032405-002CMS,MS,2	10/9/2018 2:43:26 PM	MS,5>10mL
28	N032405-002CMSD,MSD,2	10/9/2018 3:00:14 PM	MSD,5>10mL
29	N032378-001B,SAMP,20	10/9/2018 3:17:02 PM	SAMP,0.5>10mL
30	N032415-002A,SAMP,1	10/9/2018 3:33:49 PM	SAMP,10mL
31	N032329-001B,SAMP,200	10/9/2018 3:50:37 PM	SAMP,0.05>10mL
32	N032329-002B,SAMP,500	10/9/2018 4:07:25 PM	SAMP,0.02>10mL
33	N032344-009B,SAMP,1	10/9/2018 4:24:13 PM	SAMP,10mL 9056
34	CCV-3,CCV,1	10/9/2018 4:41:01 PM	CCV
35	CCB-3,CCB,1	10/9/2018 4:57:49 PM	CCB
36	N032378-001B,SAMP,50	10/9/2018 5:14:38 PM	SAMP,0.2>10mL
37	N032378-001B,SAMP,1000	10/9/2018 5:31:25 PM	SAMP,0.01>10mL
38	N032326-001B,SAMP,5	10/9/2018 5:48:13 PM	SAMP,2>10mL
39	N032326-002B,SAMP,5	10/9/2018 6:05:01 PM	SAMP,2>10mL
40	N032326-003A,SAMP,20	10/9/2018 6:21:49 PM	SAMP,0.5>10mL
41	N032329-001B,SAMP,50	10/9/2018 6:38:37 PM	SAMP,0.2>10mL

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Operator: IC-05


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Title:

Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 101

Created: 10/9/2018 8:53:54 AM by IC-05  
Last Update: 10/10/2018 11:17:51 AM by IC-05

No.	Name	Type	Inj. Vol.	Program	Method	Status
42	N032329-002B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
43	N032317-005C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
44	N032317-006C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
45	N032329-002BDUP,DUP,500	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
46	CCV-4,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
47	CCB-4,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
48	N032329-001BMS,MS,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
49	N032329-001BMDS,MSD,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
50	N032326-001BDUP,DUP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
51	N032326-001BMS,MS,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
52	N032326-001BMDS,MSD,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
53	N032329-001BDUP,DUP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
54	N032317-005CMS,MS,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
55	N032317-005CMSD,MSD,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
56	CCV-5,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
57	CCB-5,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
58	LCS-2,LCS,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
59	MB-2,MBLK,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
60	N032345-003B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
61	N032344-002B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
62	N032345-008B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
63	N032345-003BMS,MS,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
64	N032345-003BMDS,MSD,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
65	N032344-002BMS,MS,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
66	N032345-008BDUP,DUP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
67	N032344-001B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
68	CCV-6,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
69	CCB-6,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
70	N032344-003B,SAMP,100	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
71	N032344-003B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
72	N032344-004B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
73	N032344-004B,SAMP,100	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
74	N032344-005B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
75	N032344-006B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
76	N032344-006B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
77	N032344-007B,SAMP,100	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
78	N032344-007B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
79	N032344-008B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
80	CCV-7,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
81	CCB-7,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
82	N032344-008B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished

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Title:

Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 101

Created: 10/9/2018 8:53:54 AM by IC-05  
Last Update: 10/10/2018 11:17:51 AM by IC-05

No.	Name	Inj. Date/Time	Comment
42	N032329-002B,SAMP,50	10/9/2018 6:55:25 PM	SAMP,0.2>10mL
43	N032317-005C,SAMP,5	10/9/2018 7:12:13 PM	SAMP,2>10mL
44	N032317-006C,SAMP,5	10/9/2018 7:29:01 PM	SAMP,2>10mL
45	N032329-002BDUP,DUP,500	10/9/2018 7:45:49 PM	SAMP,0.02>10mL
46	CCV-4,CCV,1	10/9/2018 8:02:37 PM	CCV
47	CCB-4,CCB,1	10/9/2018 8:19:25 PM	CCB
48	N032329-001BMS,MS,200	10/9/2018 8:36:13 PM	MS,0.05>10mL
49	N032329-001BMSD,MSD,200	10/9/2018 8:53:01 PM	MSD,0.05>10mL
50	N032326-001BDUP,DUP,5	10/9/2018 9:09:49 PM	DUP,2>10mL
51	N032326-001BMS,MS,5	10/9/2018 9:26:37 PM	MS,2>10mL
52	N032326-001BMSD,MSD,5	10/9/2018 9:43:26 PM	MSD,2>10mL
53	N032329-001BDUP,DUP,50	10/9/2018 10:00:13 PM	DUP,0.2>10mL
54	N032317-005CMS,MS,5	10/9/2018 10:17:01 PM	MS,2>10mL
55	N032317-005CMSD,MSD,5	10/9/2018 10:33:49 PM	MSD,2>10mL
56	CCV-5,CCV,1	10/9/2018 10:50:37 PM	CCV
57	CCB-5,CCB,1	10/9/2018 11:07:24 PM	CCB
58	LCS-2,LCS,1	10/9/2018 11:24:12 PM	CCB
59	MB-2,MBLK,1	10/9/2018 11:41:00 PM	CCB
60	N032345-003B,SAMP,200	10/9/2018 11:57:48 PM	SAMP,0.05>10mL 9056
61	N032344-002B,SAMP,200	10/10/2018 12:14:36 AM	SAMP,0.05>10mL 9056
62	N032345-008B,SAMP,200	10/10/2018 12:31:25 AM	SAMP,0.05>10mL 9056
63	N032345-003BMS,MS,200	10/10/2018 12:48:13 AM	MS,0.05>10mL 9056
64	N032345-003BMSD,MSD,200	10/10/2018 1:05:01 AM	MSD,0.05>10mL 9056
65	N032344-002BMS,MS,200	10/10/2018 1:21:48 AM	MS,0.05>10mL 9056
66	N032345-008BDUP,DUP,200	10/10/2018 1:38:36 AM	DUP,0.05>10mL 9056
67	N032344-001B,SAMP,200	10/10/2018 1:55:24 AM	SAMP,0.05>10mL 9056
68	CCV-6,CCV,1	10/10/2018 2:12:12 AM	CCV
69	CCB-6,CCB,1	10/10/2018 2:29:00 AM	CCB
70	N032344-003B,SAMP,100	10/10/2018 2:45:48 AM	SAMP,0.1>10mL 9056
71	N032344-003B,SAMP,200	10/10/2018 3:02:36 AM	SAMP,0.05>10mL 9056
72	N032344-004B,SAMP,50	10/10/2018 3:19:24 AM	SAMP,0.2>10mL 9056
73	N032344-004B,SAMP,100	10/10/2018 3:36:12 AM	SAMP,0.1>10mL 9056
74	N032344-005B,SAMP,200	10/10/2018 3:53:00 AM	SAMP,0.05>10mL 9056
75	N032344-006B,SAMP,50	10/10/2018 4:09:48 AM	SAMP,0.2>10mL 9056
76	N032344-006B,SAMP,200	10/10/2018 4:26:36 AM	SAMP,0.05>10mL 9056
77	N032344-007B,SAMP,100	10/10/2018 4:43:23 AM	SAMP,0.1>10mL 9056
78	N032344-007B,SAMP,200	10/10/2018 5:00:11 AM	SAMP,0.05>10mL 9056
79	N032344-008B,SAMP,50	10/10/2018 5:17:00 AM	SAMP,0.2>10mL 9056
80	CCV-7,CCV,1	10/10/2018 5:33:48 AM	CCV
81	CCB-7,CCB,1	10/10/2018 5:50:35 AM	CCB
82	N032344-008B,SAMP,200	10/10/2018 6:07:23 AM	SAMP,0.05>10mL 9056

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Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 101

Created: 10/9/2018 8:53:54 AM by IC-05  
Last Update: 10/10/2018 11:17:51 AM by IC-05

No.	Name	Type	Inj. Vol.	Program	Method	Status
83	N032345-001B,SAMP,20	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
84	N032345-001B,SAMP,100	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
85	N032345-002B,SAMP,100	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
86	N032345-002B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
87	N032345-004B,SAMP,100	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
88	N032345-004B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
89	N032345-005B,SAMP,100	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
90	N032345-005B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
91	N032345-006B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
92	CCV-8,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
93	CCB-8,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
94	N032345-006B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
95	N032345-007B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
96	N032345-009B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
97	N032345-010B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
98	N032345-011B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
99	N032378-001B,SAMP,1000	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
100	CCV-9,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
101	CCB-9,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished

*rba* 10/14/2018

Sequence: IC-08\_181009A  
Operator: IC-05

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Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 101

Created: 10/9/2018 8:53:54 AM by IC-05  
Last Update: 10/10/2018 11:17:51 AM by IC-05

No.	Name	Inj. Date/Time	Comment
83	N032345-001B,SAMP,20	10/10/2018 6:24:12 AM	SAMP,0.5>10mL 9056
84	N032345-001B,SAMP,100	10/10/2018 6:41:00 AM	SAMP,0.1>10mL 9056
85	N032345-002B,SAMP,100	10/10/2018 6:57:48 AM	SAMP,0.1>10mL 9056
86	N032345-002B,SAMP,200	10/10/2018 7:14:35 AM	SAMP,0.05>10mL 9056
87	N032345-004B,SAMP,100	10/10/2018 7:31:23 AM	SAMP,0.1>10mL 9056
88	N032345-004B,SAMP,200	10/10/2018 7:48:11 AM	SAMP,0.05>10mL 9056
89	N032345-005B,SAMP,100	10/10/2018 8:05:00 AM	SAMP,0.1>10mL 9056
90	N032345-005B,SAMP,200	10/10/2018 8:22:51 AM	SAMP,0.05>10mL 9056
91	N032345-006B,SAMP,50	10/10/2018 8:39:39 AM	SAMP,0.2>10mL 9056
92	CCV-8,CCV,1	10/10/2018 8:56:27 AM	CCV
93	CCB-8,CCB,1	10/10/2018 9:13:15 AM	CCB
94	N032345-006B,SAMP,200	10/10/2018 9:30:03 AM	SAMP,0.05>10mL 9056
95	N032345-007B,SAMP,200	10/10/2018 9:46:51 AM	SAMP,0.05>10mL 9056
96	N032345-009B,SAMP,200	10/10/2018 10:03:39 AM	SAMP,0.05>10mL 9056
97	N032345-010B,SAMP,200	10/10/2018 10:20:27 AM	SAMP,0.05>10mL 9056
98	N032345-011B,SAMP,200	10/10/2018 10:37:15 AM	SAMP,0.05>10mL 9056
99	N032378-001B,SAMP,1000	10/10/2018 10:54:03 AM	SAMP,0.01>10mL
100	CCV-9,CCV,1	10/10/2018 11:10:51 AM	CCV
101	CCB-9,CCB,1	10/10/2018 11:27:38 AM	CCB

Sequence: IC-08\_181010A  
Operator: IC-05


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Title:

Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 39

Created: 10/10/2018 11:16:32 AM by IC-05  
Last Update: 10/10/2018 8:59:54 PM by IC-05

No.	Name	Type	Inj. Vol.	Program	Method	Status
1	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
2	BLANK,BLANK	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
3	Std - 0	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
4	Std - 1	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
5	Std - 2	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
6	Std - 3	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
7	Std - 4	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
8	Std - 5	Standard	1000.0	Anions Default	EPA 300_0_180925	Finished
9	CCV-1,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
10	CCB-1,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
11	MB-H2O,MBLK,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
12	LCS-H2O,LCS,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
13	N032425-001C,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
14	N032425-001CMS,MS,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
15	N032425-001CMSD,MSD,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
16	N032425-001CDUP,DUP,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
17	N032426-001E,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
18	N032426-002E,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
19	N032426-003E,SAMP,100	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
20	N032426-002EMS,MS,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
21	CCV-2,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
22	CCB-2,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
23	N032426-002EMSD,MSD,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
24	N032345-012B,SAMP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
25	N032345-012BMS,MS,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
26	N032345-012BMSD,MSD,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
27	N032345-012BDUP,DUP,200	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
28	N032425-001C,SAMP,2	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
29	N032326-001B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
30	N032326-002B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
31	N032329-001B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
32	N032329-002B,SAMP,50	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
33	CCV-3,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
34	CCB-3,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
35	N032317-005C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
36	N032317-006C,SAMP,5	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
37	N032344-009B,SAMP,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
38	CCV-4,CCV,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished
39	CCB-4,CCB,1	Unknown	1000.0	Anions Default	EPA 300_0_180925	Finished

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Operator: IC-05

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Title:  
Datasource: D1NZHKQ1\_local  
Location: IC-08\_ANIONS\2\_Data\2018\_Anions  
Timebase: IC-08\_ANIONS  
#Samples: 39  
Created: 10/10/2018 11:16:32 AM by IC-05  
Last Update: 10/10/2018 8:59:54 PM by IC-05

No.	Name	Inj. Date/Time	Comment
1	BLANK,BLANK	9/25/2018 9:45:46 AM	BLANK
2	BLANK,BLANK	9/25/2018 10:20:33 AM	BLANK
3	Std - 0	9/25/2018 10:37:21 AM	BLANK
4	Std - 1	9/25/2018 11:02:43 AM	STD-LOW
5	Std - 2	9/25/2018 11:19:31 AM	STD
6	Std - 3	9/25/2018 11:36:19 AM	STD
7	Std - 4	9/25/2018 11:53:07 AM	STD
8	Std - 5	9/25/2018 12:09:56 PM	STD-HIGH
9	CCV-1,CCV,1	10/10/2018 11:48:22 AM	CCV
10	CCB-1,CCB,1	10/10/2018 12:05:11 PM	CCB
11	MB-H2O,MBLK,1	10/10/2018 12:21:59 PM	METHOD BLANK
12	LCS-H2O,LCS,1	10/10/2018 12:38:47 PM	LCS
13	N032425-001C,SAMP,1	10/10/2018 12:58:44 PM	SAMP,10mL
14	N032425-001CMS,MS,1	10/10/2018 1:22:22 PM	MS,10mL
15	N032425-001CMSD,MSD,1	10/10/2018 1:45:50 PM	MSD,10mL
16	N032425-001CDUP,DUP,1	10/10/2018 2:02:39 PM	DUP,10mL
17	N032426-001E,SAMP,50	10/10/2018 2:19:28 PM	SAMP,0.2>10mL
18	N032426-002E,SAMP,50	10/10/2018 2:49:16 PM	SAMP,0.2>10mL
19	N032426-003E,SAMP,100	10/10/2018 3:06:04 PM	SAMP,0.1>10mL
20	N032426-002EMS,MS,50	10/10/2018 3:22:52 PM	MS,0.2>10mL
21	CCV-2,CCV,1	10/10/2018 3:39:40 PM	CCV
22	CCB-2,CCB,1	10/10/2018 3:56:28 PM	CCB
23	N032426-002EMSD,MSD,50	10/10/2018 4:13:16 PM	MSD,0.2>10mL
24	N032345-012B,SAMP,200	10/10/2018 4:30:04 PM	SAMP,0.05>10mL 9056
25	N032345-012BMS,MS,200	10/10/2018 4:46:51 PM	MS,0.05>10mL 9056
26	N032345-012BMSD,MSD,200	10/10/2018 5:03:39 PM	MSD,0.05>10mL 9056
27	N032345-012BDUP,DUP,200	10/10/2018 5:20:27 PM	DUP,0.05>10mL 9056
28	N032425-001C,SAMP,2	10/10/2018 5:37:15 PM	SAMP,5>10mL
29	N032326-001B,SAMP,50	10/10/2018 5:54:03 PM	SAMP,0.2>10mL
30	N032326-002B,SAMP,50	10/10/2018 6:10:51 PM	SAMP,0.2>10mL
31	N032329-001B,SAMP,50	10/10/2018 6:27:40 PM	SAMP,0.2>10mL
32	N032329-002B,SAMP,50	10/10/2018 6:44:28 PM	SAMP,0.2>10mL
33	CCV-3,CCV,1	10/10/2018 7:01:15 PM	CCV
34	CCB-3,CCB,1	10/10/2018 7:18:03 PM	CCB
35	N032317-005C,SAMP,5	10/10/2018 7:34:51 PM	SAMP,2>10mL
36	N032317-006C,SAMP,5	10/10/2018 7:51:39 PM	SAMP,2>10mL
37	N032344-009B,SAMP,1	10/10/2018 8:08:27 PM	SAMP,10mL 9056
38	CCV-4,CCV,1	10/10/2018 8:25:15 PM	CCV
39	CCB-4,CCB,1	10/10/2018 8:42:03 PM	CCB

*rba* 10/14/2018



# INITIAL CALIBRATION DATA SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES FOR THE CONSTRUCTION INDUSTRY

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

(EPA 300) - INITIAL CALIBRATION

Instrument ID: IC-08  
Date Calibrated: 9/25/2018

Initial Calibration:

Chloride	STD0	STD1	STD2	STD3	STD4	STD5	
COMPOUND, in ug/L	0	0.5	1	2	5	10	R <sup>2</sup>
Area,mAU*min	0.0000	0.0729	0.1481	0.3050	0.7880	1.6743	0.999

	Stock
Standard Concentration:	1000000 PPB
Standard ID:	ISST-170814B

Calibration Acceptance Criteria: > 0.995 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

(EPA 300) - INITIAL CALIBRATION

Instrument ID: IC-08  
Date Calibrated: 9/25/2018

Initial Calibration:

Sulfate	STD0	STD1	STD2	STD3	STD4	STD5	
COMPOUND, in ug/L	0	0.5	2	4	10	20	R <sup>2</sup>
Area,mAU*min	0.0000	0.0554	0.2247	0.4541	1.1672	2.4269	1.000

	Stock
Standard Concentration:	1000000 PPB
Standard ID:	ISST-170814G

Calibration Acceptance Criteria: > 0.995 Correlation

\* Please note that the instrument printout for Area were represented in three decimal places. The exact values are represented in the ICAL summary for calculation purposes.

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_CLPGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129169</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129169</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3168924</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	2.186	0.50	2.000	0	109	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129169</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129169</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168926</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.968	0.50	2.000	0	98.4	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129169</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129169</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168930</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.932	0.50	2.000	0	96.6	90	110				

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129169</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129169</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168934</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.939	0.50	2.000	0	97.0	90	110				

Sample ID <b>CCV-4</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129169</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129169</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168938</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.938	0.50	2.000	0	96.9	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_CLPGE**

Sample ID <b>CCV-5</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129169</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129169</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168942</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	1.936	0.50	2.000	0	96.8	90	110				

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129173</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129173</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3169323</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	4.047	0.50	4.000	0	101	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129173</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129173</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3169325</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.947	0.50	4.000	0	98.7	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129173</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129173</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3169329</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.945	0.50	4.000	0	98.6	90	110				

Sample ID <b>CCV-3</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129173</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129173</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3169340</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.965	0.50	4.000	0	99.1	90	110				

Sample ID <b>CCV-4</b>	SampType: <b>CCV</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129173</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129173</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3169345</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	3.929	0.50	4.000	0	98.2	90	110				

**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# SUMMARY OF INSTRUMENT BLANKS



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 300\_W\_CLPGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129169</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R129169</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3168925</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129169</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129169</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168927</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	0.196	0.50									

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129169</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129169</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168931</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	0.169	0.50									

Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129169</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129169</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168935</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	0.167	0.50									

Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129169</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129169</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168939</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_CLPGE**

Sample ID <b>CCB-5</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_CLP</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129169</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129169</b>	TestNo: <b>EPA 300.0</b>		Analysis Date: <b>10/9/2018</b>	SeqNo: <b>3168943</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloride	ND	0.50									

**Qualifiers:**

B Analyte detected in the associated Method Blank  
ND Not Detected at the Reporting Limit  
Calculations are based on raw values

E Value above quantitation range  
R RPD outside accepted recovery limits

H Holding times for preparation or analysis exceeded  
S Spike/Surrogate outside of limits due to matrix interference

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

## ANALYTICAL QC SUMMARY REPORT

**TestCode: 300\_W\_SO4PGE**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129173</b>
Client ID: <b>ICB</b>	Batch ID: <b>R129173</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>9/25/2018</b>	SeqNo: <b>3169324</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	ND	0.50									
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Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129173</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129173</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3169326</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	ND	0.50									
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Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129173</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129173</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3169330</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	ND	0.50									
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Sample ID <b>CCB-3</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129173</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129173</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3169341</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	ND	0.50									
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Sample ID <b>CCB-4</b>	SampType: <b>CCB</b>	TestCode: <b>300_W_SO4P</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129173</b>
Client ID: <b>CCB</b>	Batch ID: <b>R129173</b>	TestNo: <b>EPA 300.0</b>	Analysis Date: <b>10/10/2018</b>	SeqNo: <b>3169346</b>	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sulfate	0.224	0.50									
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**Qualifiers:**

- |   |  |  |
|---|--|--|
| B Analyte detected in the associated Method Blank | E Value above quantitation range       | H Holding times for preparation or analysis exceeded           |
| ND Not Detected at the Reporting Limit            | R RPD outside accepted recovery limits | S Spike/Surrogate outside of limits due to matrix interference |
- Calculations are based on raw values

# RETENTION TIME SUMMARY



**ASSET LABORATORIES**  
ANALYTICAL SERVICES • SURVEILLANCE • ENVIRONMENTAL • TECHNOLOGICAL

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

*"Serving Clients with Passion and Professionalism"*

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-08

### Analytical Sequence

Date Analyzed: 10/9/2018

<u>Sample Name</u>		<u>Retention Time</u>	<u>Evaluation</u>
ICV	Chloride	4.704	
CCV-1	Chloride	4.644	
CCV-2	Chloride	4.640	
CCV-3	Chloride	4.640	
CCV-4	Chloride	4.640	
CCV-5	Chloride	4.637	
	<b>Average</b>	4.640	
	<b>Applied RT Window</b>	4.440 - 4.840	
MB-R129169_CL	Chloride	4.640	PASS
LCS-R129169_CL	Chloride	4.640	PASS
N032329-001B	Chloride	4.644	PASS
N032329-002B	Chloride	4.640	PASS
N032329-002BDUP	Chloride	4.640	PASS
N032329-001BMS	Chloride	4.643	PASS
N032329-001BMSD	Chloride	4.643	PASS

## RETENTION TIME (RT) SUMMARY

Instrument ID: IC-08

### Analytical Sequence

Date Analyzed: 10/10/2018

<u>Sample Name</u>		<u>Retention Time</u>	<u>Evaluation</u>
ICV	Sulfate	12.624	
CCV-1	Sulfate	12.177	
CCV-2	Sulfate	12.174	
CCV-3	Sulfate	12.140	
CCV-4	Sulfate	12.120	
	<b>Average</b>	12.153	
	<b>Applied RT Window</b>	11.953 - 12.353	
MB-R129173_SO4	Sulfate	N.A.	PASS
LCS-R129173_SO4	Sulfate	12.177	N.A.
N032345-012BMS	Sulfate	12.170	PASS
N032345-012BMSD	Sulfate	12.170	PASS
N032345-012BDUP	Sulfate	12.167	PASS
N032329-001B	Sulfate	12.143	PASS
N032329-002B	Sulfate	12.140	PASS

# MDL STUDY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **INORGANIC IONS by Ion Chromatography**  
 Method Number: EPA 300.0  
 Analysis Date(s): 5/23/2017 ; 5/24/2017; 5/25/2017  
 Analyst/Technician: Ria Abes

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **IC-08**

Acceptance Criteria: MDL < spike < 10XMDL

	Datafile	170523A D36	170523A D37	170523A D38	170524A D17	170524A D18	170525A D45	170525A D46					
Analyte	#1	#2	#3	#4	#5	#6	#7	Spike Conc., mg/L	SD	MDL	LOD	PQL	
Fluoride	0.020	0.022	0.021	0.020	0.023	0.026	0.024	0.020	0.0021	<b>0.0065</b>	0.020	0.10	
Chloride	0.133	0.136	0.136	0.133	0.141	0.133	0.136	0.025	0.0029	<b>0.0091</b>	0.020	0.50	
Nitrite	0.030	0.028	0.027	0.028	0.028	0.027	0.027	0.020	0.0010	<b>0.0030</b>	0.010	0.05	
Bromide	0.037	0.042	0.043	0.038	0.040	0.032	0.025	0.040	0.0062	<b>0.0196</b>	0.040	0.20	
Nitrate	0.035	0.034	0.033	0.033	0.033	0.031	0.030	0.020	0.0016	<b>0.0050</b>	0.010	0.05	
Phosphate	0.047	0.051	0.049	0.046	0.052	0.047	0.059	0.040	0.0043	<b>0.0135</b>	0.030	0.10	
Sulfate	0.213	0.199	0.208	0.216	0.199	0.201	0.198	0.050	0.0073	<b>0.0229</b>	0.050	0.50	



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ANALYTICAL SERVICES FOR ENVIRONMENTAL & INDUSTRIAL

CALIFORNIA  
 11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
 P: 562.219.7435 F: 562.219.7436

NEVADA  
 3151 W. Post Rd., Las Vegas, NV 89118  
 P: 702.307.2659 F: 702.307.2691

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## MDL/LOD & PQL Verification 2018 (1st Quarter)

Method Name: **Inorganic Ions by Ion Chromatography (Low Level)**  
 Method Number: EPA Method 300.0  
 Analysis Date(s): 3/29-30/2018  
 Analyst: Ria B. Abes

Matrix: **WATER**  
 Unit: mg/L

Instrument Name: **IC-08**

Compound	MDL	LOD Spike Conc., mg/L	LOD Actual Conc., mg/L	PQL Spike Conc., mg/L	PQL Actual Conc., mg/L	%Recovery
Fluoride	<b>0.0065</b>	0.020	0.0252	0.10	0.087	<b><u>87</u></b>
Chloride	<b>0.0091</b>	0.020	0.1193	0.50	0.5757	<b><u>115</u></b>
Nitrite	<b>0.0030</b>	0.010	0.0237	0.05	0.0638	<b><u>128</u></b>
Bromide	<b>0.0196</b>	0.040	0.0405	0.20	0.1993	<b><u>100</u></b>
Nitrate	<b>0.0050</b>	0.010	0.0191	0.05	0.0561	<b><u>112</u></b>
Phosphate	<b>0.0135</b>	0.030	0.0415	0.10	0.1216	<b><u>122</u></b>
Sulfate	<b>0.0229</b>	0.050	0.3682	0.50	0.6549	<b><u>131</u></b>



# SM 4500-NO3F



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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# SAMPLE CALCULATION



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P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Sample Calculation

**METHOD:** EPA 4500N03F  
**TEST NAME:** Nitrate/Nitrite-N by Automated Cadmium Reduction  
**MATRIX:** Groundwater

FORMULA:

Calculate the Nitrate/Nitrite-N concentration, in mg/L, in the original sample as follows:

$$\text{Nitrate/Nitrite-N, mg/L} = A * DF$$

where:

A = mg/L, instrument calculated concentration  
DF = dilution factor

For: **N032329-001C**

The concentration in mg/L is calculated as follows:

$$\begin{aligned} \text{Nitrate/Nitrite-N} &= 0.3303 * 1 \\ &= 0.3303 \text{ mg/L} \end{aligned}$$

Reporting result in two significant figures,

$$\text{Nitrate/Nitrite-N} = 0.33 \text{ mg/L}$$

# INITIAL CALIBRATION DATA SUMMARY



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## EPA 353.2 NO3 as N (NO3CD) - Endpoint

## General setup

Measuring unit	ppm
Number of decimals	4
Stabilization time (sec)	26
Measurement time (sec)	3
Sample volume (µl)	450
Filter	546
Reagent prime	No
CD Reduction	Yes

## Limits and dilution

Low level	-0.2
High level	4
Max linearity	4
Blank min	0
Blank max	0.049
Postdilution factor %	10
Factor Calculations	No

## Washes

Number of final washes	6
Wash every	R1, R2

## O.D. Corrections

Carry Over	No
Carry Over value	0.0000
Blank	No
Gain	No

## Reagents

N.	Volume (µl)	Incubation time (sec)
1	200	102
2	300	663
3	0	0

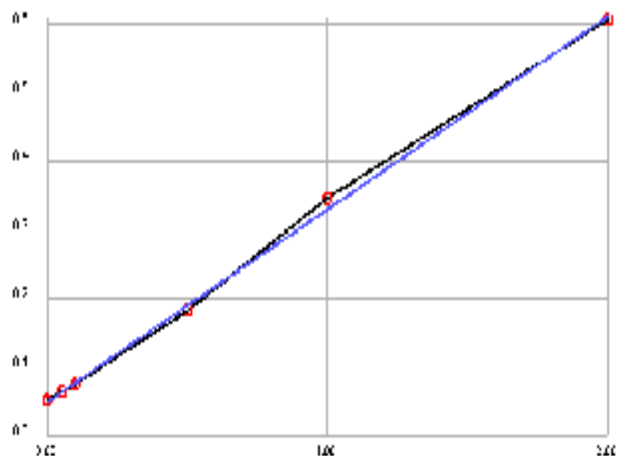
## QC

N.	Value	Tolerance
1	1	0.1

## Calibration

Curve type	Linear (Calibrants)
Curve forced to zero	No
Blank inclusion	No

Formula	$y = 0.2805x + 0.0498$
Correlation	.999305



Calibrant	Energy	Set	Conc
1	0.0511	0.0000	0.0045
2	0.0638	0.0500	0.0497
3	0.0751	0.1000	0.0900
4	0.1820	0.5000	0.4711
5	0.3455	1.0000	1.0539
6	0.6055	2.0000	1.9808

Notes:

# INITIAL CALIBRATION AND CONTINUING CALIBRATION VERIFICATION SUMMARY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**320**



**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>ICV</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171930</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.478	0.050	0.5000	0	95.6	90	110				

Sample ID <b>CCV-1</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171941</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.467	0.050	0.5000	0	93.4	90	110				

Sample ID <b>CCV-2</b>	SampType: <b>CCV</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>CCV</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171946</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	0.486	0.050	0.5000	0	97.2	90	110				

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# INITIAL CALIBRATION AND CONTINUING CALIBRATION BLANK SUMMARY



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ANALYTICAL SUPPORT SERVICES FOR ENVIRONMENTAL TECHNOLOGIES

CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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**322**

**CLIENT:** ARCADIS U.S., Inc. - California  
**Work Order:** N032329  
**Project:** PG&E Topock - PMP, RC000753.801D

**ANALYTICAL QC SUMMARY REPORT**

**TestCode: 4500N03F\_W**

Sample ID <b>ICB</b>	SampType: <b>ICB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>ICB</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171931</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-1</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171942</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

Sample ID <b>CCB-2</b>	SampType: <b>CCB</b>	TestCode: <b>4500N03F_W</b>	Units: <b>mg/L</b>	Prep Date:	RunNo: <b>129235</b>						
Client ID: <b>CCB</b>	Batch ID: <b>R129235</b>	TestNo: <b>SM4500-NO3</b>	Analysis Date: <b>10/12/2018</b>	SeqNo: <b>3171947</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrate/Nitrite as N	ND	0.050									

**Qualifiers:**

- B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - H Holding times for preparation or analysis exceeded
  - ND Not Detected at the Reporting Limit
  - R RPD outside accepted recovery limits
  - S Spike/Surrogate outside of limits due to matrix interference
- Calculations are based on raw values

# LOGBOOK DATA, QUANTITATION REPORT and/or SPECTRA



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11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## Advanced Technology Laboratories, Inc.

3151 W. Post Rd.  
Las Vegas, NV. 89118  
702-307-2659  
702-307-2691  
[www.atl-labs.com](http://www.atl-labs.com)

Time start: 10-12-2018 15:53

Time end: 10-12-2018 17:52

		EPA 353.2 NO3 as N		
		ppm	Flags	OD
1	<BLANK>	17:26:19	-0.0205	0.0441
2	<BLANK>	17:27:14	0.0037	0.0509
3	<CAL1>	17:28:14	0.0045 [0]	0.0511
4	<CAL2>	17:29:09	0.0497 [0.05]	0.0638
5	<CAL3>	17:30:10	0.0900 [0.1]	0.0751
6	<CAL4>	17:31:06	0.4711 [0.5]	0.1820
7	<CAL5>	17:32:05	1.0539 [1]	0.3455
8	<CAL6>	17:33:01	1.9808 [2]	0.6055
9	,BLANK,BLANK,1, <b>NOT REPORTED</b>	17:33:56	0.0572	0.0659
10	,ICV,ICV,1,	17:34:56	0.4779	0.1839
11	,ICB,ICB,1,	17:35:52	0.0205	0.0556
12	,MB-H2O,MBLK,1,	17:36:35	-0.0002	0.0498
13	,LCS-H2O,LCS,1,	17:37:23	0.5050	0.1915
14	,N032305-002C,SAMP,1,	17:38:13	0.0476	0.0632
15	,N032329-001C,SAMP,1,	17:38:55	0.3303	0.1425
16	,N032329-002C,SAMP,5,	17:39:38	0.5271	0.1977
17	,N032329-002CMS,MS,5,	17:40:27	1.0400	0.3416
18	,N032329-002CMSD,MSD,5,	17:41:09	0.9106	0.3053
19	,N032305-001C,SAMP,5,	17:41:53	0.7139	0.2501
20	,N032305-001CDUP,DUP,5,	17:42:41	0.7260	0.2535
21	,BLANK, <b>NOT REPORTED</b>	17:43:24	0.0251	0.0569
22	,CCV-1,CCV,1,	17:44:06	0.4672	0.1809
23	,CCB-1,CCB,1,	17:44:55	0.0148	0.0540
24	,N032328-001C,SAMP,1,	17:45:39	1.0325	0.3395
25	,N032328-002C,SAMP,1,	17:46:21	0.9951	0.3290
26	,N032254-001C,SAMP,200,	17:47:10	0.6137	0.2220

			EPA 353.2 NO3 as N		
			ppm	Flags	OD
27	,BLANK,	<b>NOT REPORTED</b>	17:47:52	0.0180	0.0549
28	,BLANK,	<b>NOT REPORTED</b>	17:48:35	-0.0016	0.0494
29	,CCV-2,CCV,1,		17:49:23	0.4861	0.1862
30	,CCB-2,CCB,1,		17:50:07	0.0144	0.0539

ICAL/CCV: ISST180914E  
ICV/LCS/MS/MSD: ISST180523E



# MDL STUDY



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CALIFORNIA  
11110 Artesia Blvd., Ste B, Cerritos, CA 90703  
P: 562.219.7435 F: 562.219.7436

NEVADA  
3151 W. Post Rd., Las Vegas, NV 89118  
P: 702.307.2659 F: 702.307.2691

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## METHOD DETECTION LIMIT 2017

Method Name: **Nitrate/Nitrite by Cadmium Reduction**  
 Method Number: SM4500NO3F  
 Analysis Date(s): 10/25,2017, 10/26/2017, 10/27/2017  
 Analyst/Technician: Quennie B. Manimtim

Matrix: **Water**  
 Unit: mg/L  
 Spike Conc: 0.05 mg/L

Analyte	#1	#2	#3	#4	#5	#6	#7	Ave	SD	t <sub>(n-1)</sub> value	MDL	PQL
Nitrate/Nitrite as N	0.0573	0.0562	0.0500	0.0730	0.0698	0.0637	0.0564	0.0609	0.0082	3.143	0.0259	0.05
<b>Method Blank</b>												
Nitrate/Nitrite as N	0.0160	0.0067	0.0064	0.0204	0.0173	0.0036	0.0083	0.0112	0.0065	3.143	0.0317	0.05
<b>MDL:</b>	<b>0.0317</b>	<b>mg/L</b>										

